

PHASE II ENVIRONMENTAL SITE ASSESSMENT

Yakima Valley Transportation Company

3rd Avenue South & West Pine Street

Yakima, Washington

HWA Project No. 2006-116-22

Prepared for

Menke Jackson Beyer Elofson Ehlis & Harper LLP

August 16, 2007



HWA GEOSCIENCES INC.

- *Geotechnical Engineering*
- *Hydrogeology*
- *Geoenvironmental Services*
- *Inspection & Testing*

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November 16, 2007

Washington State Department of Ecology
Central Regional Office
15 West Yakima Avenue, Suite 200
Yakima, WA 98902-3452

HAND DELIVERED



RE: *Release reporting pursuant to MTCA*

To Whom it May Concern:

Please be advised that my client, the City of Yakima, wishes to notify the Department of Ecology regarding the likely existence of a release of hazardous substances occurring as a consequence of past practices in the vicinity of South Third Avenue and West Pine Street, Yakima, Washington.

Additional information regarding this release can be found in the following enclosed document: "Phase II Environmental Site Assessment: Yakima Valley Transportation Company."

This letter is being provided to you within 90 days of my client's receipt of the above-described document.

If you require additional information related to this release report, please do not hesitate to contact me.

Very truly yours,

A handwritten signature in black ink, appearing to be "Kenneth W. Harper", written over a horizontal line.

Kenneth W. Harper

KWH:ksl
Enclosure

cc: Client



HWA GEOSCIENCES INC.

Geotechnical & Pavement Engineering • Hydrogeology • Geoenvironmental • Inspection & Testing

August 16, 2007

HWA Project No. 2006-116-22

Menke Jackson Beyer Elofson Ehliis & Harper, LLP

807 North 39th Avenue

Yakima, WA 98902

Attention: Kenneth W. Harper

Subject: **PHASE II ENVIRONMENTAL SITE ASSESSMENT**
Yakima Valley Transportation Co. Trolley Repair Barn & Substation
3rd Avenue South and West Pine Street
Parcel No. 18132444465
Yakima, Washington

Dear Mr. Harper,

Please find the enclosed Phase II Environmental Site Assessment report for the above listed property. The purpose of this assessment was to provide an independent professional opinion regarding the potential presence of soil or ground water contamination that may present liability issues or require additional investigation or remediation costs.

Please feel free to call us if you have any questions or need more information.

Sincerely,

HWA GEOSCIENCES INC.

Vance Atkins, L.G., L.H.G.
Senior Hydrogeologist

Arnie Sugar, L.G., L.H.G.
Vice President

Cc: Brett Sheffield, City of Yakima

Enclosure: Phase II Environmental Site Assessment Report

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EXECUTIVE SUMMARY

HWA GeoSciences Inc. conducted a Phase II Environmental Site Assessment for the City of Yakima on the Yakima Valley Transportation Company property. The parcel is located at the southwest corner of the intersection of 3rd Avenue South and West Pine Street, in Yakima, Washington. The purpose of this assessment was to provide an independent professional opinion regarding the potential presence of soil or ground water contamination that may present liability issues or require additional investigation or remediation costs.

HWA completed a geophysical investigation at the location of a suspected underground storage tank (UST) located beneath the Substation Building at the subject property. HWA drilled two air rotary soil borings at locations adjacent to the former Substation Building on the subject property. One boring was completed as a monitoring well. HWA collected soil and ground water samples to a maximum depth of 20 feet below ground surface at the two borings. HWA drilled three hand auger borings in drains observed in maintenance pits located in the Trolley Barn Building. HWA collected soil samples for analysis at 0.5 feet below ground surface at two of the borings. HWA collected two samples of oil from unused electrical equipment in the Substation Building. Selected soil, ground water, and oil samples were submitted to the project laboratory for analysis of total petroleum hydrocarbons (TPH), volatile organic compounds (VOCs), carcinogenic polynuclear hydrocarbons (cPAHs), polychlorinated biphenyls (PCBs), and metals.

Analytical results were compared to Department of Ecology Model Toxics Control Act (MTCA) cleanup levels, as a screening level evaluation of the environmental quality of the sites investigated. These cleanup levels may not apply at these sites, and do not necessarily trigger any cleanup action.

Soil samples from two of the four sampling locations contained detectable concentrations of TPH in soil, which exceeded MTCA cleanup levels. Those two soil samples also contained concentrations of cadmium and lead that exceeded MTCA cleanup levels. PCBs were detected in soils, but did not exceed MTCA cleanup levels.

One ground water sample was submitted for analysis of TPH, VOCs, cPAHs, and MTCA metals. Cadmium was detected in exceedance of MTCA cleanup levels in both the dissolved and total metals analysis. The ground water sample did not contain TPH, VOCs, or cPAHs above laboratory reporting limits or MTCA cleanup levels.

The two oil samples collected from unused electrical equipment did not contain PCBs above laboratory reporting limits.

PHASE II ENVIRONMENTAL SITE ASSESSMENT YAKIMA VALLEY TRANSPORTATION COMPANY YAKIMA, WASHINGTON

1.0 INTRODUCTION

This report presents the results of the Phase II Environmental Site Assessment (ESA) conducted for the City of Yakima (Yakima) by HWA GeoSciences, Inc. (HWA). HWA prepared a Phase I ESA, which was submitted previously (HWA, 2006).

This study and report were prepared in general accordance with the Washington State Department of Transportation (WSDOT) Environmental Procedures Manual (WSDOT, 2007). This work was authorized by Menke Jackson Beyer Eloffson Ehlis & Harper, LLP.

The subject property is under evaluation by Yakima for purchase for the purpose of preservation and operation of the city's historic electric trolley car operations and museum.

1.1 Scope of Work

The objective of this Phase II ESA was to assess the potential presence of soil or ground water contamination that may present liability issues or require additional investigation or remediation costs.

The scope of this investigation consisted of:

- 1) Reviewing available data
- 2) Preparing a project work plan, and health and safety plan
- 3) Perform a geophysical survey at suspected UST location
- 4) Drilling and sampling four soil borings and one ground water monitoring well
- 5) Collecting selected soil samples
- 6) Collecting one ground water sample
- 7) Collecting electrical equipment oil samples
- 8) Submitting samples for laboratory analysis
- 9) Preparing site assessment report

1.2 Background

HWA performed a Phase I ESA of the subject property (HWA, 2006). The Phase I ESA included a database review, site reconnaissance, interviews, and review of historical resources (including Polk Directories, Sanborn Fire Insurance Maps, and historical aerial and land photos). Detailed results of this research are outlined in the Phase I ESA Report

(HWA, 2006). The primary environmental concerns at the site are associated with the following features:

- Maintenance pits within the trolley repair barn had concrete floors with sumps or drains, and significant petroleum staining was observed at on the walls and floors of the pits as a result of maintenance of the trolleys and drips from equipment. Soils under the pits may be impacted with petroleum hydrocarbons and possibly heavy metals, PCBs, or other compounds associated with waste oil.
- Railroad sidings and switch yards are typically associated with petroleum and other impacts to soil.
- The presence of pre-1974 oil-filled electrical equipment suggests the possibility of PCBs. Releases of PCBs to the environment may have occurred depending on historic site practices (e.g., the common practice before the 1970's of oiling unpaved surfaces).
- The subject property formerly contained three USTs, which were reportedly removed, although no records of removal or documentation of UST locations were reviewed.
- An apparent UST fill port was observed in the floor of the Substation Building. The cap could not be removed during our site visit for inspection of tank contents.
- A bulk fuel facility has been present approximately 350 feet south of the subject property for up to 50 years. A search of databases and other records did not reveal evidence of releases, remediations, or monitoring at the facility; however, based on the age of the facility, there is the potential for releases to soil or ground water.

2.0 SITE DESCRIPTION

2.1 Location

The subject property is located at 3rd Avenue South and West Pine Street, Yakima, Washington and is approximately 1.4 acres in area. Other location descriptions include:

- Latitude and Longitude: 46.5948°N, 120.5106°W
- SE ¼ SE ¼ Section 24, Township 13 North, Range 18 East
- Parcel No. 18132444465

Figure 1 presents a regional perspective of the subject property location. Figure 2 shows the site boundaries and general features and is based on an aerial photograph of the vicinity of the subject property taken in 2003. Figures 3 and 4 show sampling locations.

2.2 Physical Setting and Features

The subject property is generally flat with an elevation of approximately 1,060 feet above mean sea level (USGS, 1985). The site is located south of the downtown area of Yakima, and the surrounding land is generally flat.

Geologic information for the subject property was obtained from a geologic map of the vicinity (Jones, et al, 2006). According to the document, the city of Yakima is situated in the Yakima Basin, and east-west trending basin. The basin is bounded to the north and south by two structural ridges, the Yakima Ridge and the Ahtanum Ridge, respectively. The basin in the Yakima vicinity is filled with Quaternary unconsolidated sediments, consisting primarily of alluvial sediments and loess, and older Tertiary sedimentary deposits of the Ellensburg Formation. The surficial soils in the vicinity of the subject property consist of Quaternary terrace deposits, a stratified mixture of silt to gravel-sized material deposited by the Yakima River. The deposits are up to 350 feet thick in the basin and average 80 to 90 feet thick.

Based on HWA's Phase II ESA at the subject property, ground water was encountered at a depth of approximately 16 feet below ground surface (bgs). Well logs in the subject property vicinity (Ecology, 2006) indicate depth to shallow ground water of up to approximately 30 feet bgs.

Shallow ground water occurs within the terrace deposits, which are described as silty sand and gravels. Regional ground water flow, based on topography, is likely to the north and east towards the Yakima River, although local variations in flow direction may be present due to topography or subsurface features. The nearest surface water body to the subject property is the Yakima River, located approximately two miles to the north and east of the subject property.

3.0 FIELD INVESTIGATION ACTIVITIES

The following sections describe the site investigation methodologies, including location of underground utilities, field sample screening, field sample collection, sample naming conventions, quality assurance/quality control (QA/QC) procedures, and health and safety practices.

3.1 Sampling Program Summary

HWA performed a geophysical survey and collected a total of 10 soil samples, one ground water sample, and two oil samples on May 14, 16, and 17, 2007. Samples were collected from five borings. Proposed sampling locations are described in the Sampling and Analysis Plan (SAP) prepared by HWA on May 8, 2007. All other sampling was conducted in accordance with the SAP. A copy of the SAP is included in Appendix A. Figures 3 and 4 shows the boring locations, and Appendix B includes photographs of the sample locations and conditions.

3.2 Geophysical Survey

Under subcontract to HWA, Philip Duoos, Geophysical Consultant performed a geophysical survey of the suspected UST located under the floor of the Substation Building. The UST location was investigated using ground penetrating radar (GPR). GPR is a geophysical method in which a high frequency electromagnetic signal is emitted into the ground during a linear traverse. Reflections of this signal are recorded and processed to yield a visual image (cross-section) of the subsurface. GPR is a useful tool for determining depth, shape and orientation of buried objects and subsurface features based on density differences.

The GPR was used to delineate the ends and approximate depth of the UST beneath the floor slab of the building. The UST was found to be approximately four to six feet below the floor slab, and was approximately seven to eight feet in length. A copy of the geophysical investigation report is included as Appendix C.

HWA also attempted to access the UST for measurement and to determine if product is still present in the UST, but was unable to remove the fill port cap after multiple attempts. HWA has requested that the City assist in removing the fill cap for further investigation of the UST and removal of remnant product in the UST, if necessary.

3.3 Field Screening Instruments

HWA conducted field screening of soil from the borings for the presence of volatile organic vapors using a Mini-Rae PGM 75 photoionization detector (PID). Visual

indications of contamination and odor were also noted. Although the PID is not capable of quantifying or identifying specific organic compounds, this instrument is capable of measuring relative concentrations of a variety of organic vapors with ionization potentials less than the energy of the ultraviolet source (in this case, 10.6 eV). The PID is useful for providing qualitative information with respect to the presence and relative concentration of organic vapors. PID readings are shown on the boring logs.

The PID was calibrated with 100 parts per million isobutylene standard at the beginning of the day. Fifty to 100 milliliters of soil from a discrete depth were placed in a plastic bag, sealed, and permitted to sit at least 10 minutes prior to analyzing the vapor in the sample bag. The bag was then perforated by the PID sample tip to obtain the reading. Samples were screened with the PID when sufficient sample volume was available. Exact depths of field PID sample screening and concentration values were recorded on the boring logs.

3.4 Soil Sampling

HWA completed three hand auger soil borings through two drain holes and one sump observed in the floors of maintenance pits located in the Trolley Barn (Figure 3). Two borings, 'Pit-1-N' and 'Pit-1-S' were completed in the west maintenance pit, and one boring 'Pit-2' was completed in the east maintenance pit. HWA sampled the three borings to 0.5 feet below grade. The boring depths were limited by dense site soils and limited access within the maintenance pits.

Under subcontract to HWA, Environmental West Drilling, Inc. (Environmental West) conducted drilling operations on May 16, 2007. Environmental West provided a 'tubex' air rotary drilling rig to collect soil samples and construct a ground water monitoring well. HWA field staff collected soil samples at 5-foot intervals, starting at approximately 10 feet bgs. Soil samples were collected using a 300-pound autohammer and Dames & Moore split-spoon soil samplers driven ahead of the drill casing. Soil samples were then retrieved from the sampler and removed for logging, field screening, and sampling. Soil cuttings were contained in 55-gallon drums pending analyses.

HWA sampled two air rotary soil borings (HWA-B1 and HWA-MW1) to depths up to 20 feet below grade. Figure 4 shows the boring locations. The boring locations were selected for proximity to the UST location and to assess potential shallow soil impacts from historical rail yard usage; however, access was limited due to above-ground and underground utilities.

Appendix D contains the boring logs. An HWA environmental geologist collected soil samples. The HWA geologist logged soils and selected samples for analysis based on the results of field screening for organic vapors, visual, and odor characteristics.

After the soil boring reached its maximum depth, Environmental West withdrew the steel temporary casing from the ground and grouted the boring to the ground surface using hydrated granular bentonite.

3.5 Well Construction

Environmental West converted one soil boring (HWA-MW1) to a ground water monitoring well. The monitoring well was constructed using 2-inch-diameter, schedule 40, PVC casing, with 0.010-inch, mill slotted well screen. For the well, 10 feet of well screen was installed, terminating at approximately 23 feet bgs.

The well was constructed in accordance with Ecology Minimum Standards for Construction and Maintenance of Wells, Chapter 173-160 WAC. A flush mount wellhead was installed using a steel road-rated well cover with a watertight gasket. The well cover is completed flush with existing grade. The well was provided with a locking cap.

3.6 Well Development

After the well was installed, it was developed to improve hydraulic connection and water clarity. The well was developed by surging and pumping. Development water was contained in a 55-gallon drum pending analyses.

3.7 Well Sampling

At least 24-hours after the well installation and development, the well was sampled in general accordance with EPA's low-flow ground water sampling protocol. The well was purged using a peristaltic pump equipped with dedicated disposable polyethylene tubing. The well was purged such that drawdown was kept to a minimum and until water parameters (pH, temperature, conductivity, and dissolved oxygen) had stabilized.

All ground water samples were transferred to laboratory-provided glassware, placed in a cooler with "blue ice" and transferred under chain-of-custody protocol to the analytical laboratory.

3.8 Electrical Equipment Oil Samples

Two oil samples were collected from unused electrical equipment in the Substation Building (Figure 4). The samples were collected from the two locations using dedicated disposable polyethylene pipets.

3.9 Sample Numbering

Soil samples were numbered by the location and approximate depth of sampling interval. Split spoon samples were generally collected from an up to 1.5-foot depth interval where the last number on the sample identification represented the upper extent of this interval. For example, HWA-B1-10 was collected from borehole HWA-B1, at a depth of 10 to 11.5 feet below grade.

Ground water samples were numbered by the location from which they were collected (HWA-MW1).

Oil samples were numbered by the locations from which they were collected (Switch-1, Switch-2).

3.10 Field Controls

The overall data quality objective for this investigation was to ensure that all laboratory and field data on which decisions were based are technically sound, statistically valid, and properly documented. There were two parts to the QA/QC program for this project: field and laboratory. Section 6.3 addresses laboratory QC issues. Field QA included proper documentation of field activities and sampling/handling procedures consisting of:

- Careful observation of soil characteristics to help assure that soil samples submitted for analysis would represent "worst case" intervals.
- Confirmation by the driller and geologist of sample depth as each sample was collected.
- Placement of samples in sealed, labeled jars.
- Packing of soil samples into jars to eliminate sample headspace.
- Comparison of sample labels with the Chain of Custody documentation to verify sample documentation and confirm label accuracy.
- Refrigeration of samples in ice chests with "Blue Ice" until delivery to the lab.
- Completion of boring location maps prior to leaving the site.

3.11 Decontamination Methods

To prevent cross-contamination of samples, Environmental West washed the split spoon sampler in a detergent solution, rinsed with tap water and then rinsed again with deionized water. Ground water was sampled with dedicated disposable polyethylene tubing.

3.12 Health and Safety

HWA prepared a Health and Safety Plan (HSP) for coverage of the subject property. The HSP included sections on work conditions, exposure assessment, personal protective equipment, air monitoring requirements, emergency procedures, and notification

requirements. Prior to starting field work, HWA conducted a health and safety briefing, including reviewing the HSP, identifying quickest hospital routes, and potential hazards unique to the subject property.

3.13 Underground Utilities

Prior to field operations, the Underground Utilities Location Center (public resource) and Philip Duoos, Geophysical Consultant (a private geophysical subcontractor) were contacted to locate site utilities.

4.0 LABORATORY ANALYSIS

4.1 General

HWA collected 10 soil samples, one ground water sample, and two oil samples and submitted them to CCI Analytical, Inc., Everett, Washington (CCI). Of these, five soil samples were initially submitted for one of more of the following analyses:

Analysis	Method
Petroleum Hydrocarbons – diesel, oil	NWTPH-Dx
MTCA Metals (As, Cd, Cr, Hg, Pb)	EPA Method 6010/7000 series
Polychlorinated Biphenyls (PCBs)	EPA Method 8081

Ground water samples were submitted for the following analyses.

Analysis	Method
Petroleum Hydrocarbons – diesel, oil	NWTPH-Dx
cPAHs	EPA Method 8270 SIM
MTCA Metals (As, Cd, Cr, Hg, Pb)	EPA Method 6010/7000 series
(total and dissolved)	
PCBs	EPA Method 8081

HWA measured pH, conductivity, and temperature during ground water sampling.

Oil samples were submitted for the following analyses.

Analysis	Method
PCBs	EPA Method 8081

4.2 Analytical Results

Table 1 summarizes the soil analytical data. Tables 2 and 3 summarize the ground water analytical and field parameter data. Table 4 summarizes the electrical equipment oil analytical data. The complete laboratory reports with all of the analytical results are included in Appendix E.

TABLE 1
SOIL ANALYTICAL DATA
(all results in mg/kg)

		Petroleum Hydrocarbons		PCBs*		MTCA Metals				
Sample	Depth	Diesel Range	Lube Oil Range	PCB-1254	PCB-1260	Arsenic	Cadmium	Chromium	Lead	Mercury
PIT-1-S-0.5	0.5	<1,600	29,000	<0.1	0.4	<5.0	6.1	37	440	0.08
PIT-2-0.5	0.5	<5,600	91,000	0.8	<0.1	<5.0	18	9.3	1400	0.13
HWA-MW1-15	15	<25	<50							
HWA-B1-5	5	<25	<50							
HWA-B1-15	15	<25	<50							
MTCA-A		2,000	2,000	1.0**		20	2	***	250	2

Blank – not analyzed

BOLD – indicates exceedance of MTCA cleanup level

< - Not detected at reporting limits

MTCA-A – Ecology Chapter 173-340 WAC MTCA Method A soil cleanup levels for unrestricted land use. MTCA Method A cleanup levels are shown for reference only, as a guide to relative soil quality and potential impacts to the site

* - No other 8081 list PCBs detected above reporting limits (see Appendix E for complete list of compounds analyzed).

** - The Method A soil cleanup level for total PCB's is 1 mg/kg

*** - The Method A soil cleanup levels for Chromium are 19 mg/kg for Cr VI and 2000 mg/kg for Cr III.

TABLE 2
GROUND WATER ANALYTICAL RESULTS
(all results in µg/L, except where noted)

Sample	Petroleum Hydrocarbons		VOGs*	cPAHs*	MTCA Metals*** (mg/l)	
	Diesel Range	Lube Oil Range			Cadmium (total)	Cadmium (dissolved)
HWA-MW1	<130	<250	ND	ND	62	62
MTCA-A	500	500	Varies	0.1**	5	5

MTCA Method A cleanup levels are shown for reference only, as a guide to relative ground water quality and potential impacts to the site
* - No 8260 list VOCs or 8270 list cPAHs detected above reporting limits (see Appendix E for complete list of compounds analyzed).

** - The Method A soil cleanup level for total carcinogenic PAHs (cPAHs); (Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthracene, Indeno(1,2,3-cd)pyrene, Benzo(k)fluoranthene, Benzo(a)anthracene, and Benzo(b)fluoranthene) is 0.1 µg/L.

*** - No other MTCA metals detected above reporting limits (see Appendix E for complete list of metals compounds analyzed).

TABLE 3
GROUND WATER FIELD PARAMETERS

Sample	Parameters		
	pH	Conductivity (μ S/cm)	Temperature ($^{\circ}$ C)
HWA-MW-1	6.8	120	15.1

TABLE 4
ELECTRICAL EQUIPMENT ANALYTICAL DATA
(all results in mg/kg)

Sample	PCB's*
SWITCH-1	ND
SWITCH-2	ND

ND - Not detected at reporting limits

* - No 8081 list PCBs detected above reporting limits (see Appendix E for complete list of compounds analyzed).

5.0 DISCUSSION OF FINDINGS AND CONCLUSIONS

HWA conducted soil, ground water, and electrical equipment oil sampling at selected locations within the Yakima Valley Transportation Company trolley yard in Yakima, Washington.

5.1 Results Summary

All laboratory analytical data were compared to the MTCA Method A cleanup levels. The MTCA Method A cleanup levels shown can be used as screening levels. Method A values are intended to be protective of all exposure pathways, but are only provided for a limited list of contaminants.

MTCA Method A levels are intended to provide conservative values, typically for voluntary or routine cleanups. MTCA states that the Method A values *"should not automatically be used to define cleanup levels that must be met for financial, real estate, insurance coverage or placement, or similar transactions or purposes. Exceedances of the values in this table do not necessarily mean the soil/water must be restored to these levels at a site"*.

Soil samples from two of the four sampling locations submitted to CCI for analysis of TPH (Pit-1-S-0.5 and Pit-2-0.5) contained concentrations that exceeded the MTCA Method A cleanup levels. Petroleum hydrocarbons were not detected in samples submitted from the remaining sampling locations.

Two of the soil samples submitted to CCI for analysis of PCBs (Pit-1-S-0.5 and Pit-2-0.5) contained detectable concentrations of PCBs, but at concentrations below MTCA Method A cleanup levels.

Two of the four soil samples submitted to CCI for analysis of MTCA metals, (Pit-1-S-0.5 and Pit-2-0.5) contained concentrations of cadmium and lead that exceed the MTCA Method A cleanup level. Other metals were either not detected, or detected at concentrations below the MTCA Method A cleanup levels.

Ground water sample HWA-MW1 did not contained concentrations of TPH, VOCs, or PCBs above laboratory reporting limits or MTCA cleanup levels.

Ground water sample HWA-MW1, analyzed for total (unfiltered) and dissolved (filtered) MTCA metals exceeded MTCA Method A cleanup levels for cadmium. Other metals were not detected in the total or dissolved ground water sample.

The electrical equipment oil samples (Switch-1 and Switch-2) did not contain PCBs above laboratory reporting limits.

5.2 Contaminant Characteristics

Contaminants encountered in soil included petroleum hydrocarbons, PCBs, and lead. Due to the present and historical land use of the subject property, railroad car maintenance at the Trolley Barn location is a likely source of contamination. The extent of the impacts was not able to be determined at the time of this investigation. Likely migration pathways include soil to shallow ground water.

5.3 Quality Control Review

Laboratory QC included analysis of method blanks, trip blanks, and surrogate samples. These analyses provide information about accuracy, precision, and detection limits.

HWA reviewed quality control results of the analytical data. These analyses provide information about accuracy, precision, and detection limits. Surrogate recoveries, spike blanks, and spike blank duplicates were all within control limits with the following exceptions:

- Diesel range petroleum detection limits were raised in soil samples Pit-1-S-0.5 and Pit-2-0.5 due to overlap with oil range hydrocarbon detection
- Two C25 surrogate recoveries for NWTPH-Dx analysis of the soil samples were out of calibration range. Surrogate samples are compounds not on the target analyte list added to the sample so results can be compared with the known added concentrations. Some samples with elevated petroleum concentrations require dilution, which raises the detection limits, and can dilute some surrogates out of calibration range.
- One TCMX surrogate recovery for PCB analysis of the soil samples was outside (above) control limits, and attributed to matrix interference by the lab. Samples with elevated organic contaminant concentrations are often associated with poor surrogate recoveries.

CCI did not flag any other results with qualifiers, which would indicate that a given result was suspect. All samples were extracted and analyzed within holding times. Laboratory method blank analyses were all below detection limits. The trip blank did not contain any volatile organic compounds above laboratory detection limits.

The analyses of the soil and ground water samples collected in May 2007 were determined to be acceptable for their intended use.

CCI did not flag any other results with qualifiers, which would indicate that a given result was suspect. All samples were extracted and analyzed within holding times. Laboratory method blank analyses were all below detection limits. The trip blank did not contain any volatile organic compounds above laboratory detection limits.

All data are considered useable for the intended purpose.

5.4 Conclusions

5.4.1 Soil

Petroleum hydrocarbons and lead were detected exceeding MTCA cleanup levels in soils associated with drains and sumps in the floor of the Trolley Barn maintenance pits. Transformer oil or hydraulic fluids may have been released at this location due to the presence of PCBs identified in the soil samples. The vertical and lateral extent of the affected soils was not able to be determined due to restricted access and the limited boring depth beneath the building.

Petroleum hydrocarbons were not detected in soil samples collected from borings located east and south of the Substation Building. This indicates that large or site-wide releases from the UST located beneath the building are not likely; however, site access limitations (structures, overhead utilities) limited the proximity of borings with respect to the building and UST.

5.4.2 Ground Water

One ground water sample was collected from a monitoring well installed adjacent south of the Substation Building. Petroleum hydrocarbons and other organic compounds were not detected in the ground water sample, indicating that large area plumes, such as from a historical release associated with the UST or bulk petroleum facility south of the subject property, are unlikely.

Total and dissolved cadmium concentrations above MTCA cleanup levels were detected in the ground water sample. The total and dissolved concentrations (62 mg/L) were the same, indicating all cadmium was dissolved. Elevated cadmium concentrations were also detected in soil samples Pit-1-S-0.5 and Pit-2-0.5, suggesting a possible on-site source. Potential sources of cadmium at this site include waste oil, batteries, and pigments.

5.4.3 Electrical Equipment

Two oil samples collected from unused electrical equipment at the Substation Building did not contain PCBs. However, this does not preclude the presence of PCBs in other, untested equipment in the building.

5.4.4 UST Location

The UST located beneath the Substation Building was found, using geophysical techniques, to be approximately four feet below the floor slab, and between seven and eight feet long. HWA attempted to access the UST through the fill port for measurements and to determine the nature of the contents, but was unable to remove the fill port cap after multiple attempts.

6.0 RECOMMENDATIONS

6.1 Trolley Barn

The drain holes and sumps identified in the floor of the maintenance pits should be sealed with concrete to prevent further potential contaminant migration into soils underlying the building. MTCA regulations (Chapter 173-340-300 WAC) do not require the excavation and removal of contaminated soils located beneath buildings, however; source control of potential contaminants and pathways should be undertaken.

6.2 Substation Building

Soil and ground water sampling completed outside the Substation Building did not detect evidence of significant releases from the UST located beneath the building, although elevated cadmium concentrations were detected in ground water.

The UST was not able to be accessed in order to assess its diameter and contents. The UST should be accessed, and if necessary, remaining product should be pumped and rinsed by a tank cleaning subcontractor and disposed of at a licensed facility. The UST should be closed in place per Chapter 173-360-385 (Ecology, 1998) and applicable local regulations by filling with an inert solid (e.g., controlled-density fill, sand, etc.) Because of the UST location, it may not be possible to perform a UST Site Check or Site Assessment in accordance with Ecology regulations and guidance (Ecology, 1998, 2003).

Remnant oil in unused electrical equipment should be removed and containerized, tested for PCBs and disposed of according to the results (i.e., as ordinary waste oil if no PCBs) at a licensed facility.

6.3 Reporting

Pursuant to MTCA regulations (Chapter 173-340-300 WAC), the property owner or operator may be required to notify Ecology within 90 days of discovery that an uncontrolled release of a hazardous substance was discovered. This report may be used for reporting purposes. The local Ecology office is:

Washington State Department of Ecology
Central Regional Office
15 West Yakima Ave, Suite 200
Yakima, WA 98902-3452
509-575-249

6.4 Worker Safety

HWA recommends that appropriate health and safety measures be taken during excavation in areas where contaminated soils or ground water may be present. These measures may include, but are not limited to, preparation of a site specific health and safety plan, air monitoring, site control/access, protective and decontamination measures, worker training, certification, and medical monitoring. We recommend an industrial hygienist or health and safety specialist be consulted to determine the applicability of these requirements. Construction specifications should include all available analytical results including this and other available reports.

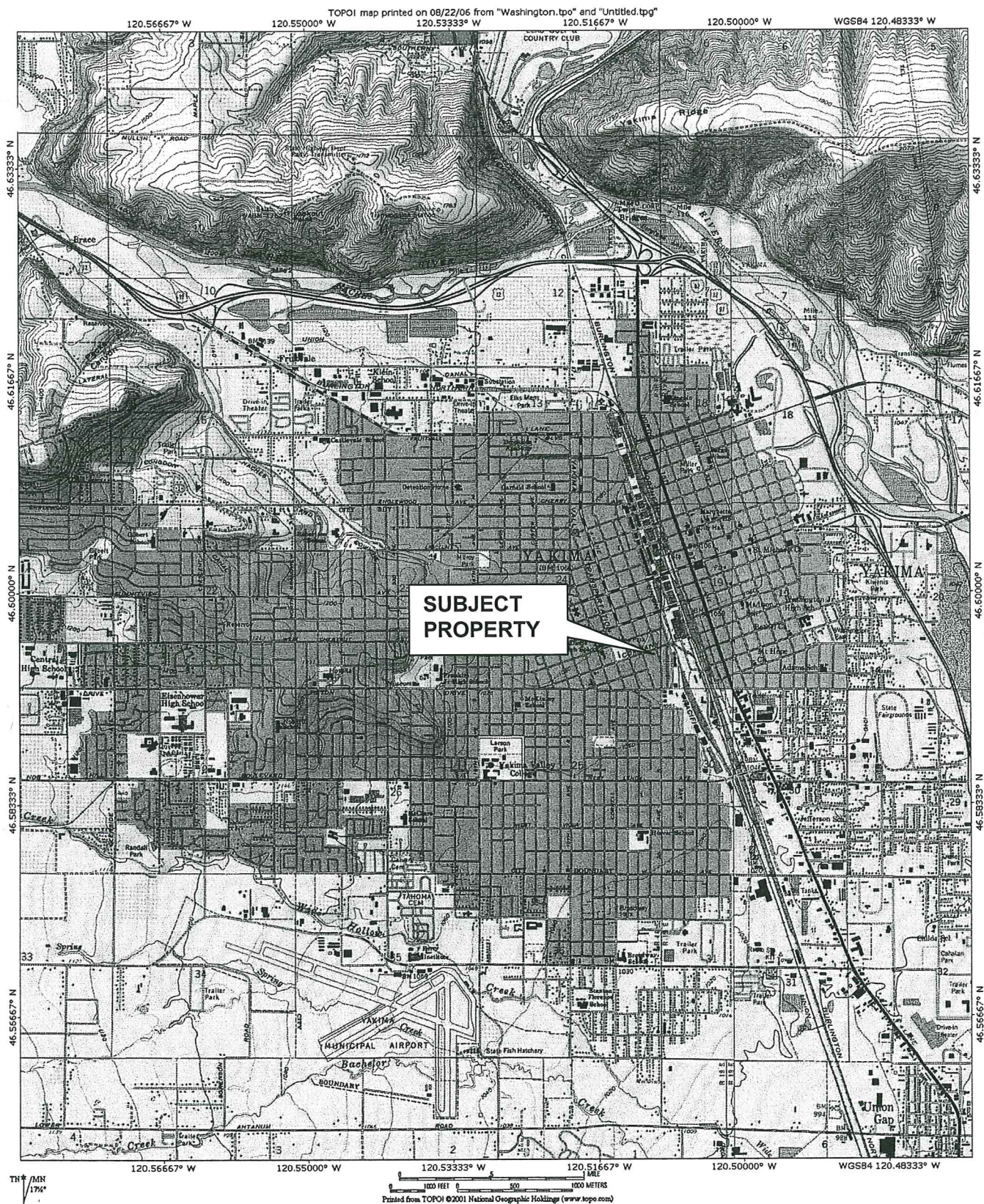
7.0 LIMITATIONS

The conclusions expressed by HWA are based solely on material referenced in this report. Observations were made under the conditions stated. Within the limitations of scope, schedule and budget, HWA attempted to execute these services in accordance with generally accepted professional principles and practices in the area at the time the report was prepared. No warranty, express or implied, is made. Experience has shown that subsurface soil and ground water conditions can vary significantly over small distances. It is always possible that contamination may exist in areas that were not sampled. HWA's findings and conclusions must not be considered as scientific or engineering certainties, but rather as our professional opinion concerning the significance of the limited data gathered and interpreted during the course of the assessment.

This study and report have been prepared on behalf of Menke Jackson Beyer Elofson Ehlis & Harper, LLP and the City of Yakima, for the specific application to the subject property. This report should be provided in its entirety to prospective contractors for bidding and estimating purposes; however, the conclusions and interpretations presented in this report should not be construed as a warranty of the subsurface conditions. We are not responsible for the impacts of any changes in environmental standards, practices, or regulations subsequent to performance of services. We do not warrant the accuracy of information supplied by others, nor the use of segregated portions of this report.

8.0 REFERENCES

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- Washington State Department of Ecology, *Underground Storage Tank Regulations Chapter 173-360 WAC* (January 14, 1998).
- Washington State Department of Ecology, *Model Toxics Control Act Cleanup Regulation Chapter 173-340 WAC* (Amended February 12, 2001).
- Washington State Department of Ecology, *Guidance for Site Checks and Site Assessments for Underground Storage Tanks, Publication #90-52*, (Revised April 2003).
- Washington State Department of Transportation (WSDOT) *Environmental Procedures Manual*, April 2007.



SITE LOCATION MAP

YAKIMA VALLEY TRANSPORTATION CO.
3RD AVENUE SOUTH & WEST PINE STREET
YAKIMA, WASHINGTON

FIGURE NO.

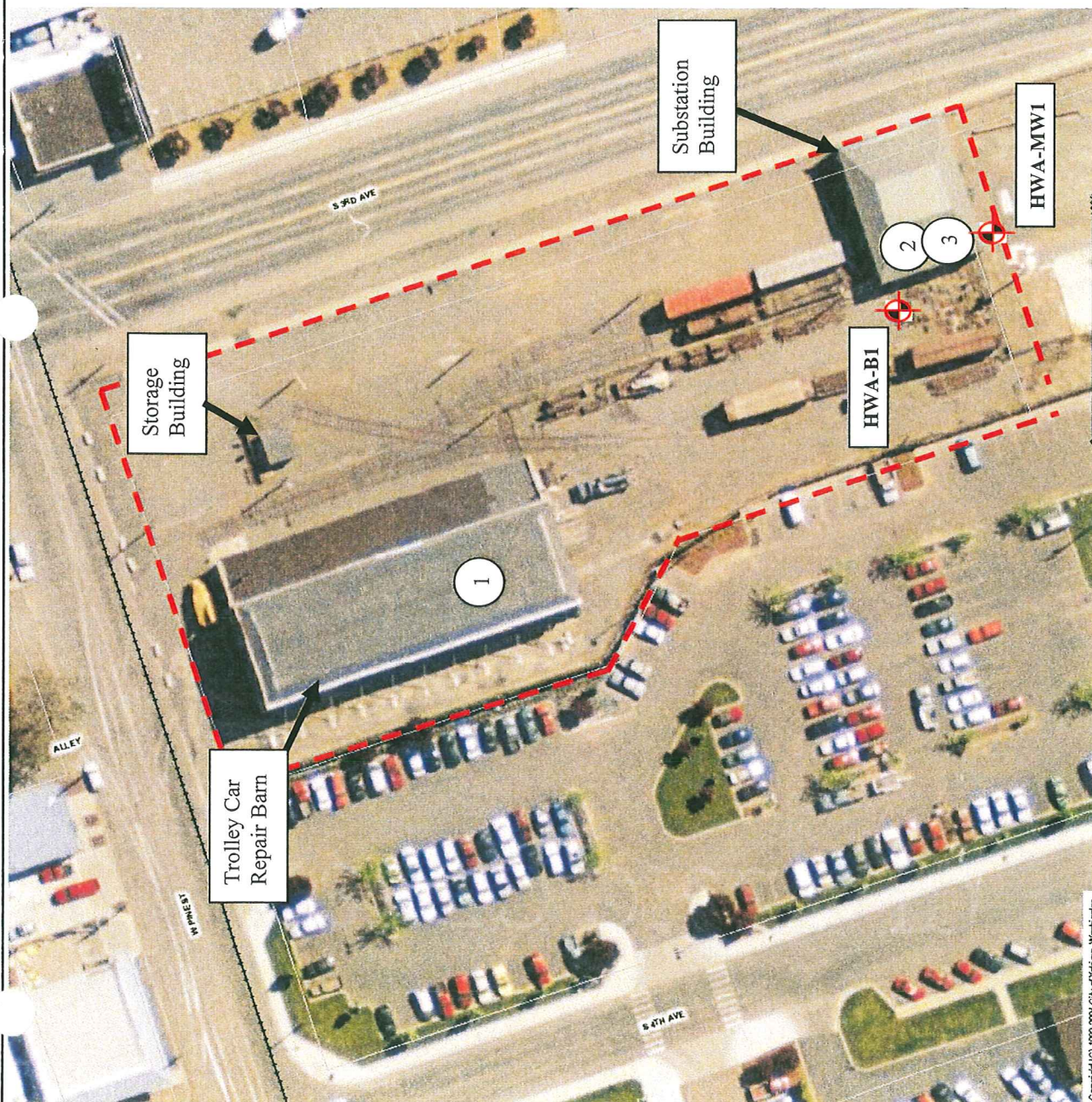
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PROJECT NO.

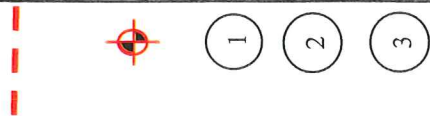
2006-116-22



HWA GEOSCIENCES INC.



Property line, approximate
HWA boring/monitoring well location
Trolley maintenance pits
Unused electrical equipment
UST location



NORTH



Source: Aerial Photograph from City of Yakima Planning Division (2006)

SITE MAP

FIGURE NO.

2

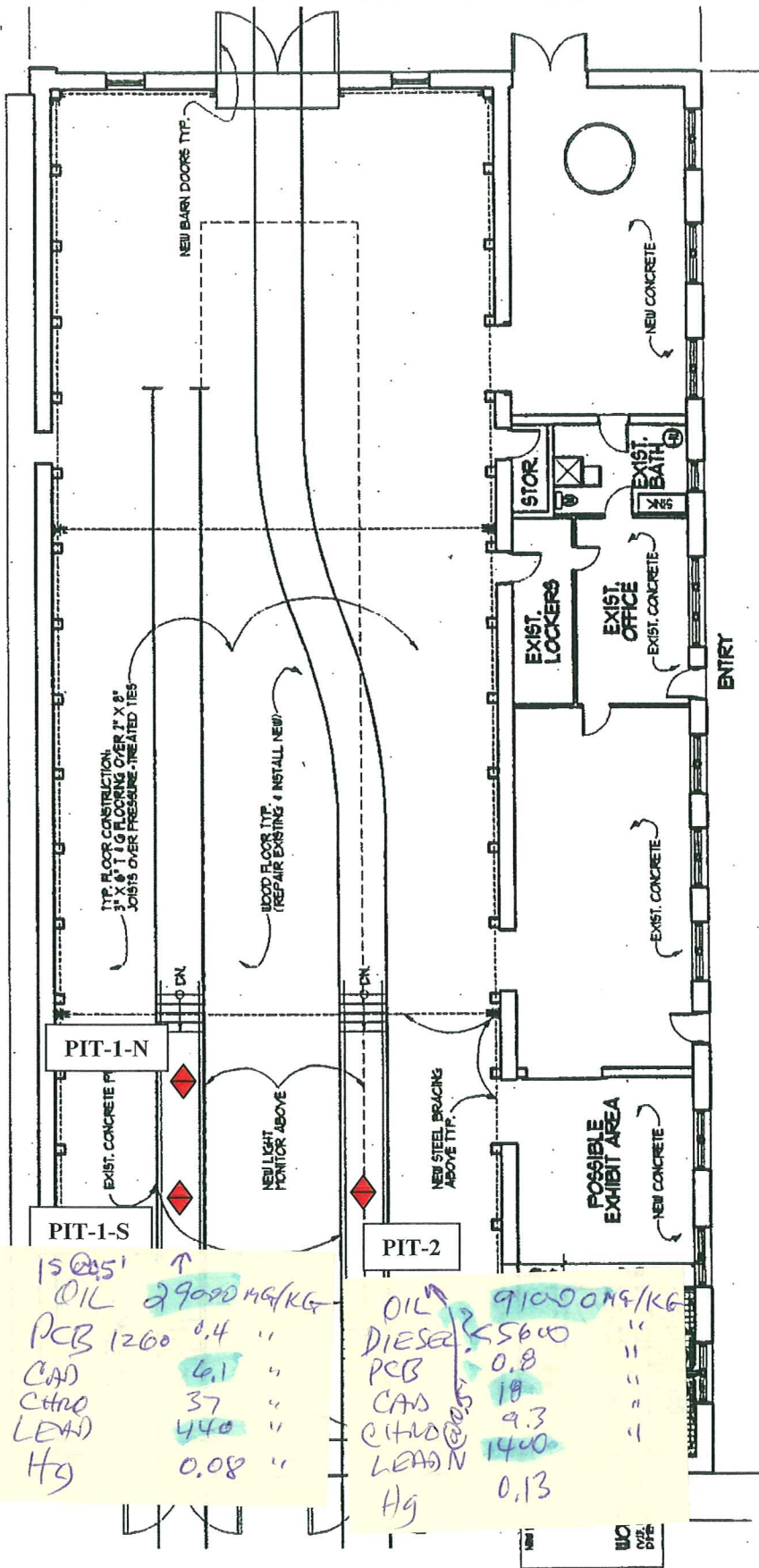
PROJECT NO.

2006-116-22

YAKIMA VALLEY TRANSPORTATION CO.
3RD AVENUE SOUTH & WEST PINE STREET
YAKIMA, WASHINGTON

HWA GEOSCIENCES INC.





15 @ 25' ↑
 OIL 29000 MG/KG
 PCB 1200 0.4 "
 CAD 6.1 "
 CHLORO 37 "
 LEAD 440 "
 Hg 0.08 "

OIL 91000 MG/KG
 DIESEL 5500 "
 PCB 0.8 "
 CAD 18 "
 CHLORO 9.3 "
 LEAD 1400 "
 Hg 0.13 "

◆ Maintenance Pit Sample Location

NORTH

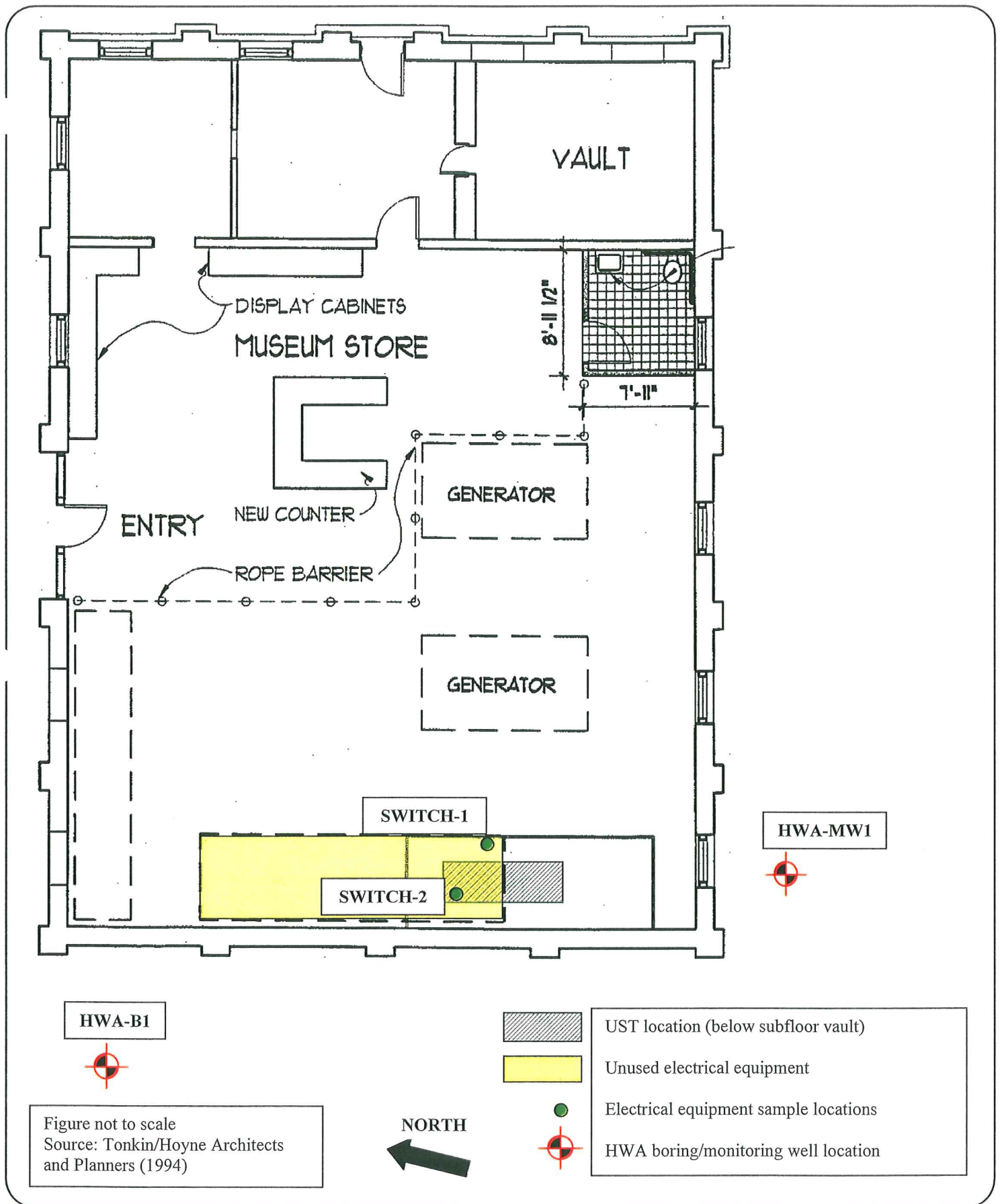


Figure not to scale
 Source: Tonkin/Hoyne Architects and Planners (1994)

TROLLEY BARN SAMPLING LOCATIONS

YAKIMA VALLEY TRANSPORTATION CO.
3RD AVENUE SOUTH & WEST PINE STREET
YAKIMA, WASHINGTON

FIGURE NO.
3
 PROJECT NO.
 2006-116



SUBSTATION SAMPLING LOCATIONS

YAKIMA VALLEY TRANSPORTATION CO.
3RD AVENUE SOUTH & WEST PINE STREET
YAKIMA, WASHINGTON

FIGURE NO.

4

PROJECT NO.

2006-116



HWA GEOSCIENCES INC.

APPENDIX A

SAMPLING AND ANALYSIS PLAN

**PHASE II ENVIRONMENTAL SITE ASSESSMENT
YAKIMA TRANSPORTATION COMPANY
3RD AVENUE SOUTH AND WEST PINE STREET
YAKIMA, WASHINGTON
SAMPLING AND ANALYSIS PLAN**

Project No. 2006-116-22

May 8, 2007

Prepared For

Menke Jackson Beyer Elofson Ehlis & Harper, LLP



HWA GEOSCIENCES INC.

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**PHASE II ENVIRONMENTAL SITE ASSESSMENT
YAKIMA TRANSPORTATION COMPANY
3RD AVENUE SOUTH AND WEST PINE STREET YAKIMA, WASHINGTON
SAMPLING AND ANALYSIS PLAN**

1.0 INTRODUCTION AND BACKGROUND

This Sampling and Analysis plan provides the scope and rationale for HWA GeoSciences Inc. (HWA's) field sampling efforts associated with a site investigation conducted for the City of Yakima at the Yakima Valley Transportation Company trolley yard (subject property). Figure 1 shows the subject property location and Figure 2 provides a site plan and proposed sampling locations.

We understand the City of Yakima plans to purchase the historic Yakima Valley Transportation Company Trolley Repair Barn and Substation located at 3rd Avenue South and West Pine Street in Yakima, Washington.

HWA previously completed a Phase I ESA at the subject property in October, 2006. Recognized environmental conditions associated with former site operations and maintenance were identified.

The body of this plan outlines our field sampling and laboratory analytical methods.

1.1 PURPOSE AND OBJECTIVES

The purpose of this investigation is to identify potential soil and ground water contamination present at the property.

1.2 PROJECT ORGANIZATION

Personnel involved with this project and roles are listed below:

Vance Atkins, HWA project manager (425) 774-0106, cell (206) 794-3124
Jeff Speck, HWA (425) 774-0106, cell (206) 794-3128
Brett Sheffield, City of Yakima (509) 576-6797
Phil Duuos, Geophysicist (425) 882-2634, cell (425) 765-6316
Rick Bagan, CCI Analytical Laboratories (425) 356-2600
Dan Classen, Environmental West, Inc. (509) 534-2740

1.3 PROJECT SCHEDULE

A proposed project schedule is shown below:

	Week	0	1	2	3	4	5	6	7
Notice to proceed		x							
Work plans		xxxxxx							
Schedule subcontractors		xxxxxxx							
Geophysics									
and UST cleaning				x					
Underground utilities				xxx					
Drilling and Sampling				xx					
Lab analysis				xxxxxxxxxxxxxxxx					
Report							xxxxxxxxxx		

1.4 SITE LOCATION

The subject property is located at 3rd Avenue South and West Pine Street, Yakima, Washington, Parcel No. 18132444465.

2.0 SAMPLING

The scope of work for the environmental assessment is summarized below:

- 1) Review available data
- 2) Prepare this project work plan, and health and safety plan
- 3) Advance and sample up to 4 hand auger borings in trolley maintenance pits
- 4) Collect soil samples from hand auger borings
- 5) Sample unused electrical equipment in the substation building for the presence of PCBs.
- 6) Access the UST for contents and tank diameter, and perform a ground penetrating radar (GPR) survey to attempt to determine the length and orientation of the UST.
- 7) Pump and rinse the UST by a tank cleaning subcontractor
- 8) Complete two soil borings exterior of the substation building adjacent to the tank's location to the measured depth of the UST.
- 9) Collect soil samples from borings.
- 10) Complete one soil boring as a ground water monitoring well.
- 11) Collect ground water samples from monitoring well.
- 12) Submit samples for laboratory analysis
- 13) Prepare site assessment report

Planned site sampling is described in the following sections.

2.1 SAMPLING RATIONALE AND LOCATION

Sample locations will be selected based on the findings of the Phase I ESA (HWA, 2006). Based on the previous Phase I, several areas of concern were identified; however, delineation of potentially contaminated areas was not accomplished as part of the Phase I ESA scope of work. Areas of concern included:

- Maintenance pits within the trolley repair barn had earthen floors, and significant petroleum staining was observed on the walls and floors of the pits as a result of maintenance of the trolleys and drips from equipment. Soils under the pits may be impacted with petroleum hydrocarbons and possibly heavy metals, PCBs, or other compounds associated with waste oil.
- Railroad sidings and switch yards are typically associated with petroleum and other impacts to soil.
- The presence of pre-1974 oil-filled electrical equipment suggests the likelihood of PCBs. Releases of PCBs to the environment may have occurred depending on historic site practices (e.g., the common practice before the 1970's of oiling unpaved surfaces).
- The subject property formerly contained three USTs, which were reportedly removed, although no records of removal or documentation of UST locations were reviewed.
- An apparent UST fill port was observed in the floor of the substation building. The cap could not be removed during our Phase I ESA for inspection of tank contents.
- A bulk fuel facility has been present south of the subject property for up to 50 years. A search of databases and other records did not reveal evidence of releases, remediations, or monitoring at the facility; however, based on the age of the facility, there is the potential for releases to soil or ground water.

Based on these findings, HWA recommends approximately 8 sampling locations at the subject property to assess impacts based on historical activities investigation at the subject property. Sampling locations and number may be modified based upon site observations and field screening results. The sampling locations are described below and summarized on Table 1 and Figure 2.

2.1.1 Trolley Maintenance Building

Significant petroleum staining was observed on the walls and floors of the maintenance pits as a result of maintenance of the trolleys and drips from equipment. Based on these findings, HWA proposes one hand auger boring placed within each pit to characterize the

stained soils and assess the depth of staining beneath the floor of the pit. Soil samples will be collected for analysis of selected analytes (see Section 2.3.6).

Where sample locations have been identified, two soil samples will be submitted at the boring location for analysis: the sample with the highest field screening results, and the underlying sample where no impacts are observed. Samples not submitted for analysis will be archived at the laboratory for possible follow-up analysis.

2.1.2 Rail Yard

If surficial staining is observed within the rail yard area (access was not available at the time of HWA's site visit), shallow soil samples will be collected from observed stained areas. The samples will be collected with hand equipment at the surface and immediately underlying the extent of stained soils. Soil samples will be collected for analysis of selected analytes (see Section 2.3.6).

Where sample locations have been identified, one soil sample will be submitted from each boring for analysis. If field screening indicates impacts such as odors or sheen, two soil samples will be submitted at the boring location for analysis: the sample with the highest field screening results, and the underlying sample where no impacts are observed. Samples not submitted for analysis will be archived at the laboratory for possible follow-up analysis.

2.1.3 Electrical Equipment, Substation Building

Sample unused electrical equipment in the substation building for the presence of PCBs. Up to three samples of oil or fluid from selected switches, transformers or other electrical equipment will be sampled and submitted to an analytical laboratory. Oil samples will be collected for analysis of PCBs (see Section 2.3.6).

2.1.4 UST Location, Substation

Access the UST for contents and tank diameter, and perform a ground penetrating radar (GPR) survey to attempt to determine the length and orientation of the UST. The GPR survey will be conducted by a geophysical subcontractor. Pump and rinse the UST by a tank cleaning subcontractor.

Complete two soil borings exterior of the substation building adjacent to the tank's location to the measured depth of the UST. The soil borings will be completed by a Washington-licensed drilling contractor with air rotary drilling equipment. Soil samples will be collected from depths equivalent to the base of the UST, or at locations of obvious staining or indications of impacts. One boring will be completed as a ground water monitoring well. Depth to ground water at the site is unknown, but estimated to be 20 to 40 feet below grade, based on review of nearby well logs. A ground water sample will be

collected after well installation. Soil and ground water samples will be collected for analysis of selected analytes (see Section 2.3.6).

Table 1
Soil Sampling Locations

Area of Concern	Number of Samples and Analytes
Maintenance Pits	4- NWTPH-Dx, 4- Metals, 2- cPAHs , 4 – PCBs
Rail Yard	2 – NWTPH-Dx, 2- Metals, 2- cPAHs , 2 – PCBs
Electrical Equipment	3 - PCBs
UST Soil Boring	3 – NWTPH-Dx

Table 2
Ground Water Sampling Location

Area of Concern	Number of Samples and Analytes
Ground Water	NWTPH-Dx, Metals - total, Metals - dissolved (archive), cPAHs , VOCs

Notes:

NWTPH-Dx – Diesel and oil-range petroleum hydrocarbons

NWTPH-Gx – Gasoline-range petroleum hydrocarbons

cPAHs - Semivolatile organic compounds (carcinogenic polynuclear aromatic hydrocarbons only)

Metals – MTCA 5 metals (Arsenic, Cadmium, Chromium, Lead, Mercury). TCLP analyses will follow up based on total metals results.

* - Additional soil samples may be selected if field screening indicates the potential presence of contaminants.

2.2 SOIL SAMPLING, HAND AUGER BORINGS

HWA will collect soil samples at the subject property using a hand auger. The hand auger borings will be advanced to a depth consistent with previous sampling (less than 2 feet) if no hydrocarbon impacts are observed, until field screening does not indicate the presence of petroleum hydrocarbons, ground water, or refusal, whichever occurs first.

At each sampling interval, the geologist will log the soil samples and obtain and record pertinent information including soil sample depths, stratigraphy, ground water occurrence and any visual or olfactory observations regarding the presence of contamination. Soil classifications presented on exploration soil logs will be based on visual and laboratory observations, in general accordance with ASTM D-2487, ASTM D-2488, and the Unified Soil Classification System (USCS).

HWA will screen soil samples by photoionization detector (PID) headspace analysis. Although the PID is not capable of quantifying or identifying specific organic compounds, this instrument is capable of measuring relative concentrations of a variety of organic vapors. The geologist/engineer collecting samples will place approximately two ounces of soil in a resealable (i.e. ziplock) plastic bag with ample air headspace. After a minimum of five minutes at ambient temperature, the sampler will agitate the sample for ten seconds, insert the PID probe through a small opening in the plastic bag, and record the highest reading within ten seconds.

For each borehole, samples with the highest level of organic vapors and/or most discernible visual/olfactory contamination will be shipped to the laboratory for chemical analysis. Field staff will deliver samples to the analytical laboratory within 24 hours of sampling. We will employ full chain-of-custody procedures to allow tracking and handling of the samples.

HWA will submit soil samples to CCI Environmental Laboratories (CCI) of Everett, Washington, a Washington Department of Ecology (Ecology) accredited analytical laboratory for analysis.

2.3 SOIL BORING AND MONITORING WELL INSTALLATION

2.3.1 Underground Utilities/Site Access

HWA will attempt to locate underground utilities by calling the Utilities Underground Location Center before drilling. HWA will also subcontract a private locating service (APS, Inc.) to attempt to locate and mark underground utilities at proposed boring locations. PVC and concrete utilities can not be located.

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2.3.2 Soil Borings

Under subcontract to HWA, Environmental West, Inc. (EWI) will drill soil borings at the approximate locations shown in Figure 2.

The drillers will advance the borings with a truck-mounted tubex air rotary drilling rig, using 6-inch outside diameter threaded casing. They will place all soil boring cuttings in sealed, labeled drums in a selected location at the site pending analytical results. All field work will be supervised by an HWA geologist or engineer.

Maximum boring depth will be 50 feet (at least 10 feet below ground water). HWA field staff will collect soil samples at a minimum of 5 foot intervals, starting at or above five feet below grade. They will collect soil samples through the casing using a standard split spoon sampler or modified split barrel sampler driven or pushed ahead of the casing, depending on soil conditions.

Soil samples will be collected from the approximate depth of the base of the Substation UST for characterization. We will submit soil samples to CCI for analysis.

HWA will screen soil samples by PID headspace analysis as per section 2.2.

At each sampling interval, the geologist will log the soil samples as per section 2.2.

2.3.3 Well Construction

One soil boring will be completed as a monitoring well. The monitoring well will be constructed using 2-inch-diameter, schedule 40, PVC casing, with ten feet of 0.010-inch, mill slotted well screen. Well screens will be installed to intersect the ground water surface, as determined during drilling.

After drilling has advanced to the desired depth, casing will be installed. A bottom cap will be attached to the lowermost section of screened casing. Screened and blank casing will then be lowered into the center of the temporary drilling casing, one section at a time.

After all of the PVC casing is installed, the top section will be temporarily capped to prevent entry of stray materials. Filter pack in the form of #10-20 mesh silica sand will be introduced into the annular space surrounding the PVC casing, while slowly raising the drilling casing. Sand will be kept in the annular space at all times to ensure complete filling of the well annulus with sand, and to prevent caving or sloughing of the borehole. The sand filter pack will be extended 2-3 feet above the top of the screen. The remainder of the well annulus will be filled to within 18 inches of the surface with hydrated granular or pelletized bentonite, or a bentonite slurry.

A flush mount wellhead will be installed using a steel road rated well cover with watertight gasket. The well cover will be completed flush with existing grade. The well will be provided with a locking cap.

2.3.4 Well Development

After the well is installed, it will be developed to improve hydraulic connection and water clarity. The well will be developed by surging with a surge block and pumping or bailing. Development water will be collected and stored for disposal or treatment.

2.3.5 Ground Water Sampling

A ground water sample will be collected from the monitoring well after development. Ground water samples will be retrieved using a peristaltic pump or stainless steel/Teflon electric submersible pump, depending on ground water depth. New pump tubing will be used at each location.

The monitoring well will be purged before sample collection to obtain groundwater samples that are representative of the formation water. The well will be purged and sampled using low-flow purging methods. Sampling staff will measure the groundwater level to the nearest 0.01-foot using a decontaminated electronic well probe prior to collection of samples. Prior to collection of the groundwater sample, the well will be purged by pumping a small volume of water to ensure sampled water represents aquifer conditions. The volume pumped will be determined in the field based on stabilization of field parameters: specific conductance, dissolved oxygen, and pH. Wells will be purged by very slowly lowering semi-rigid polyethylene tubing to a depth corresponding to roughly the midpoint of the screen, securing the tubing to prevent vertical movement, connecting it to a peristaltic pump, and then pumping at a rate not to exceed 0.5 liters/minute (0.13 gallons/minute). At a minimum, two pump and tubing volumes will be purged (1/2" I.D. tubing = 0.010 gallon/lineal foot, 0.17" I.D. tubing = 0.001 gallon/lineal foot = 5 ml/lineal foot). Samples will be collected once the parameter values have stabilized over the course of three sets of measurements as follows:

specific conductance	10 μ S/cm
dissolved oxygen	0.2 mg/L
pH	0.1

If a well can be pumped dry prior to reaching the desired purge volume, it will be allowed to recover prior to sampling, using the minimum time between purging and sampling that would allow collection of sufficient sample volume. Samples will be pumped directly into the appropriate containers, as provided by the laboratory. A Field Data Sampling Sheet (provided in Appendix A) will be filled out for each sample. New tubing will be used at each location.

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2.3.6 Soil and Ground Water Analysis

The laboratory will analyze soil, oil and ground water samples for any or all of the following constituents (based on preliminary data):

Analysis	Method
Petroleum Hydrocarbons – diesel, oil	NWTPH-Dx
Polynuclear Aromatic Hydrocarbons (cPAHs)	EPA Method 8270 SIM
MTCA Metals (As, Cd, Cr, Hg, Pb)	EPA Method 6010/7000 series
Polychlorinated Biphenyls (PCBs)	EPA Method 8081
TCLP metals	EPA Method 6010/7000 series

The sample bottle requirements are as follows:

Bottle Type	Method	Holding Time
Soil		
8 oz. Glass	NWTPH-Dx cPAHs EPA # 8270 SIM PCBs # 8081 Metals # 6010/7000 series	14 days
Ground water		
1 liter Amber	NWTPH-Dx	14 days
1 liter Amber	cPAHs EPA # 8270 SIM PCBs # 8081	14 days
500 ml polyethylene, unpreserved	Total metals	14 days
500 ml polyethylene, HNO ₃ to pH<2 Field Filter	Dissolved Metals	14 days
Electrical Equipment Oil		
40 ml VOA, unpreserved	PCBs # 8081	14 days

After collection, the samples will be labeled, chilled in a cooler to 4°C, and shipped to CCI for analysis. Samples will be submitted for standard turnaround time analysis. CCI's standard turnaround time is ten working days. Follow-up analyses, based on initial analytical results may result in a total turnaround time of up to three weeks.

We have budgeted analysis of up to 11 samples by NWTPH-Dx and metals, and 4 to 8 samples each for the remaining analyses (cPAHs, PCBs, and TCLP metals). HWA will allocate the analytical testing based on field screening results and sample recovery (e.g., if strong odor is detected, etc.) TCLP analyses will be based upon total metals results. This

flexible approach ensures the best use of resources to characterize the site based on the field data.

Field staff will determine the number, depth and location of additional samples in the field, based on field screening results.

2.4 QUALITY ASSURANCE/QUALITY CONTROL

Samples will be collected and analyzed with sufficient quality assurance/quality control (QA/QC) to ensure representative and reliable results. The overall QA objective for this investigation is to ensure that all laboratory and field data on which decisions are based are technically sound, statistically valid, and properly documented. There are two parts to the QA/QC program for this project: field and laboratory.

Field QA/QC includes proper documentation of field activities and sampling/handling procedures, as described in Section 2.5. Field QA/QC samples will consist of the following:

Soil

- None

Ground Water

- 1 trip blank per sample shipment (archive for optional analysis for VOCs or TPH-Gas/BTEX depending on sample results)

Duplicates are used to confirm analytical results from a given sample point. Duplicate samples are collected in the field using a matching set of laboratory-supplied bottles and sampling from the selected well, as requested. Each duplicate should be sampled by alternating between the regular and the duplicate sample bottles, proceeding in the designated sampling order (VOCs first). The well where the duplicate is collected must be identified on the field sampling data sheet. All duplicates shall be blind-labeled (i.e., the well designation is not listed on the sample bottle or Chain-of-Custody form). Once a duplicate is collected, it is handled and shipped in the same manner as the rest of the samples. Duplicate results will be reported in the laboratory results as separate samples, using the designation DUP-#).

Split samples are collected when a well is sampled with a third party. Split samples should be collected using the same method as a duplicate, alternating between sample bottles, and proceeding in the designated sampling order. The well at which a split sample is collected must be identified on the field sampling data sheet. Also note the condition of the bottles or preservatives, the sample-collection method (if different from the standard), and the selected third party laboratory.

Trip blanks are used to detect contamination that may be introduced in bottle preparation, in transit to or from the sampling site, or in the field. Trip blanks are samples of volatile-

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organic-free, laboratory-quality water (Type II reagent grade) that are prepared at the laboratory. They remain with the sample bottles while in transit to the site, during sampling, and during the return trip to the laboratory. Trip blank sample bottles are not opened at any time during this process. Trip blanks are to be reported in the laboratory results as separate samples, using the designation TB-#. Each sample cooler that includes bottles for VOC analysis must include a trip blank, whether it was requested or not.

Field blanks are used to detect contamination that may be introduced in the field. Field blanks will be prepared in the field by pumping laboratory reagent-quality water through new tubing and into the equipment blank bottles. The location at which the equipment blank is prepared must be identified on the field sampling data sheet. Field blank results will be reported in the laboratory results as separate samples, using the designation FB-#.

Equipment blanks are not anticipated because dedicated or disposable sampling equipment will be used.

Laboratory QC analyses provide information about accuracy, precision, and detection limits. Method-specific QC samples may include the following, depending on the analysis:

- Method blanks
- Duplicates
- Instrument calibration verification standards
- Laboratory control samples
- Surrogate spiked samples
- Spike blank/Spike blank duplicate samples
- Matrix spike/matrix spike duplicate samples

2.4.1 Data Evaluation

Data evaluation will include checking holding times, method blank results, surrogate recovery results, field and laboratory duplicate results, completeness, detection limits, laboratory control sample results, and Chain-of-Custody forms.

2.6 EQUIPMENT DECONTAMINATION

To prevent potential cross-contamination of samples, HWA will maintain appropriate decontamination procedures. Between sampling intervals, we will wash all sampling devices in a detergent solution, rinse with tap water and then rinse again with deionized water.

2.7 FIELD DOCUMENTATION AND CHAIN-OF-CUSTODY

The following sections describe the recording system for documenting all site field activities, and the sample chain-of-custody program.

2.7.1 Field Log Book

An accurate chronological recording of all field activities is vital to the documentation of any environmental investigation. To accomplish this, field team members will maintain field log books providing a daily record of significant events, observations, deviations from the sampling plan and measurements collected during the field activities.

2.7.2 Sample Identification

Following sample collection, field personnel will affix labels to each sample container. Samplers will use waterproof ink, plastic bags, or clear tape to ensure labels remain legible even when wet. Samplers will record the following information on the labels:

- Project name and number
- Sample identification number
- Date and time of collection
- Required test methods
- Name of sample collector

2.7.3 Chain-Of-Custody Record

The objective of the chain-of-custody program is to allow the tracking of possession and handling of individual samples from the time of field collection through laboratory analysis. Once a sample is collected, it becomes part of the chain-of-custody process. A sample is "in custody" when (1) it is in someone's possession, (2) it is within visual proximity of that person, (3) it is in that person's possession, but locked up and sealed (e.g., during transport), or (4) it is in a designated secure sample storage area. Sampling staff will complete a chain-of-custody record which will accompany each batch of samples. The record will contain the following information:

- Project name and number
- Names of sampling team members
- Requested testing program
- Required turnaround time
- Sample number
- Date and time collected
- Sample type
- Number of containers
- Special Instructions
- Signatures of persons involved in the chain of possession

When sample custody is transferred to another individual, the samples must be relinquished by the present custodian and received by the new custodian. This will be recorded at the bottom of the chain-of-custody report where the persons involved will sign, date and note the time of transfer.

Sampling team members will keep sample coolers in locked vehicles while not in active use or visual range. If couriers are used to transport samples, chain of custody seals will be affixed to sample coolers.

3.0 HEALTH AND SAFETY

HWA personnel conducting this field program are required to follow the health and safety protocol presented in the HWA site specific Health and Safety Plan. Subcontractors and other authorized visitors to the site are responsible for their own health and safety. The Health and Safety Plan will be made available to subcontractors and other site visitors who request it. Health and Safety precautions will be communicated to subcontractors by HWA personnel in site safety briefings at the beginning of each field day. To acknowledge review and comprehension of this plan, HWA personnel must sign the appropriate section included in the back of the document.

APPENDIX B

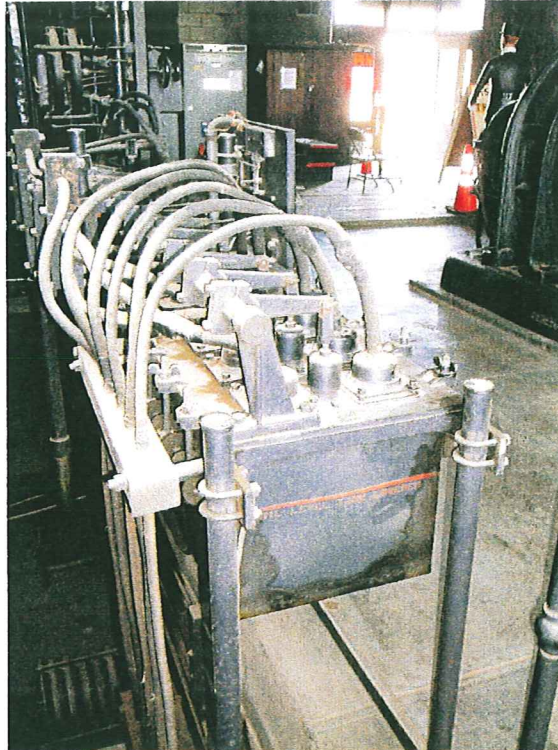
SITE PHOTOGRAPHS



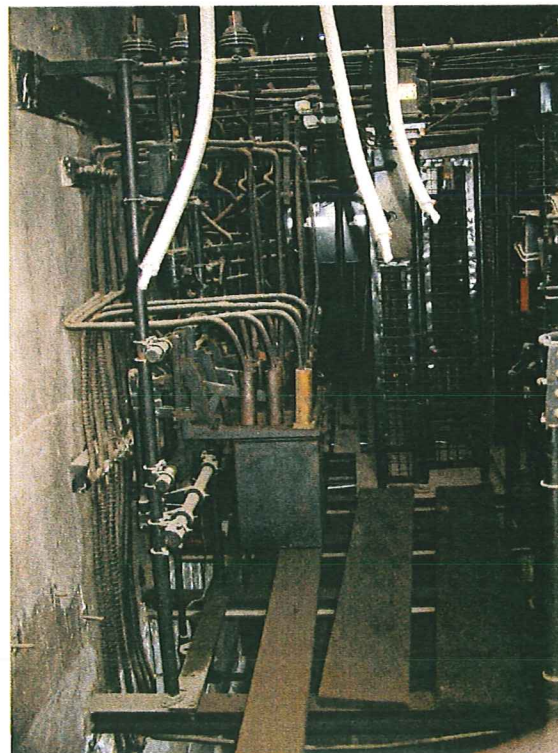
UST fill port, Substation building.



UST in Substation building with location/length marked based on GPR survey.



‘Switch 1’ sample collected from unused electrical equipment in foreground.



‘Switch 2’ sample collected from unused electrical equipment in foreground.



'Pit-1-S' sample location in west maintenance pit, Trolley Barn.



'Pit-2' sample location in east maintenance pit, Trolley Barn.



Rail yard and west side of Substation building. HWA-B1 location in foreground.



Southwest corner of Substation building. HWA-MW1 location near corner of building.

APPENDIX C

GEOPHYSICAL SURVEY REPORT

GEOPHYSICAL INVESTIGATION REPORT

**TROLLEY BARN SITE
YAKIMA, WASHINGTON**

FOR

**HWA GEOSCIENCES, INC.
LYNNWOOD, WASHINGTON**

MAY 2007

**PHILIP H. DUOOS
GEOPHYSICAL CONSULTANT**

May 18, 2007

Our Ref: 787-07

Mr. Vance Atkins
HWA Geosciences Inc.
19730 64th Ave. West, Suite 200
Lynnwood, WA 98036

GEOPHYSICAL INVESTIGATION: Trolley Barn Site
Yakima, Washington

Dear Mr. Atkins:

This short letter report summarizes the geophysical investigation that I performed on May 14 at the Trolley Barn Site in Yakima, Washington. The purpose of the investigation was to locate possible buried utilities in proximity to two proposed borings outside the building, and to delineate the underground storage tank (UST) inside the building.

The proposed boring locations were investigated using ground penetrating radar (GPR) and a utility locator. The UST was investigated using only the GPR method. A brief description of the methods is attached. The instruments used were:

GSSI SIR-3000 GPR system with a 400 MHz antenna to locate metal and non-metal utilities.

Radiodetection (RD) utility locator to delineate 50/60 Hz signals from energized lines and metal utilities using passive VLF radio frequency induced signals, and to locate signals induced by the RD transmitter onto nearby disconnected electrical lines.

Field Methodology

Scanning of the area was performed using the various methods and the results were marked in the field. The results are also shown on the attached sketch map (Figure 1). The inactive power lines (at the time of the survey) were located using the RD locator with the transmitter connected to nearby electrical outlets. These lines were also confirmed with the GPR. They are marked with red pin flags and red spray paint. The two possible utilities to the south of the building were located using the GPR and marked with pink flags and pink paint. The southernmost utility is questionable.

The depth of penetration of the GPR signal outside the building is about 6 feet. At about 6 feet a fairly strong horizontal reflection is observed and may indicate a soil change (perhaps the base of a layer of fill material).

Inside the building the GPR was used to delineate both ends of the UST. The UST is in an area with limited space, and the diameter of the UST could not be determined with the GPR. The UST is interpreted to extend from about the fill pipe to the north about 7.5 feet (see Figure 1). The location of the reference grid with respect to the fill pipe and the walls to the east and west is accurate. The locations of the walls to the south and north of the UST are approximate.

An example GPR data profile along the UST centerline is provided on Figure 2. The distance marks along the top of the profile correspond to the reference marks along the survey line (marked at 2-foot intervals). The depth to the top of the UST is estimated to be about 6 feet deep, and is denoted by the strong reflection highlighted with the dashed line. This seems a bit deep, and should be investigated further once the fill port can be accessed.

A change at about 4 feet deep is observed, and while it is perhaps a more common depth to the top of the UST, the GPR signature is not typical. However, the GPR data is fairly clear that the UST extends to the north from the fill pipe about 7.5 feet.

Conclusions

Although no geophysical method will detect all types of utilities under all conditions, these geophysical methods provided a rapid and non-intrusive means of investigating the area of interest for utilities and the UST. All geophysical methods have limitations depending on the instrument used, the site conditions, the size and type of buried feature and the depth of burial.

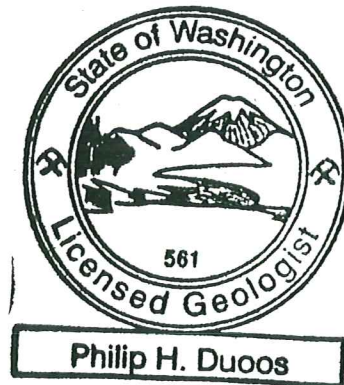
Because of the numerous variables involved in geophysical investigations, only direct observations using pot holes, test pits or other means can ultimately characterize the anomalies and other subsurface conditions. A review of this report by personnel familiar with the site may also provide some insight into the interpreted results.

Please feel free to contact me at my phone/fax (425-882-2634) or cellular (425-765-6316) if you have any questions or comments regarding this information.

Sincerely,



Philip H. Duoos
Geophysical Consultant



DESCRIPTION OF METHODS

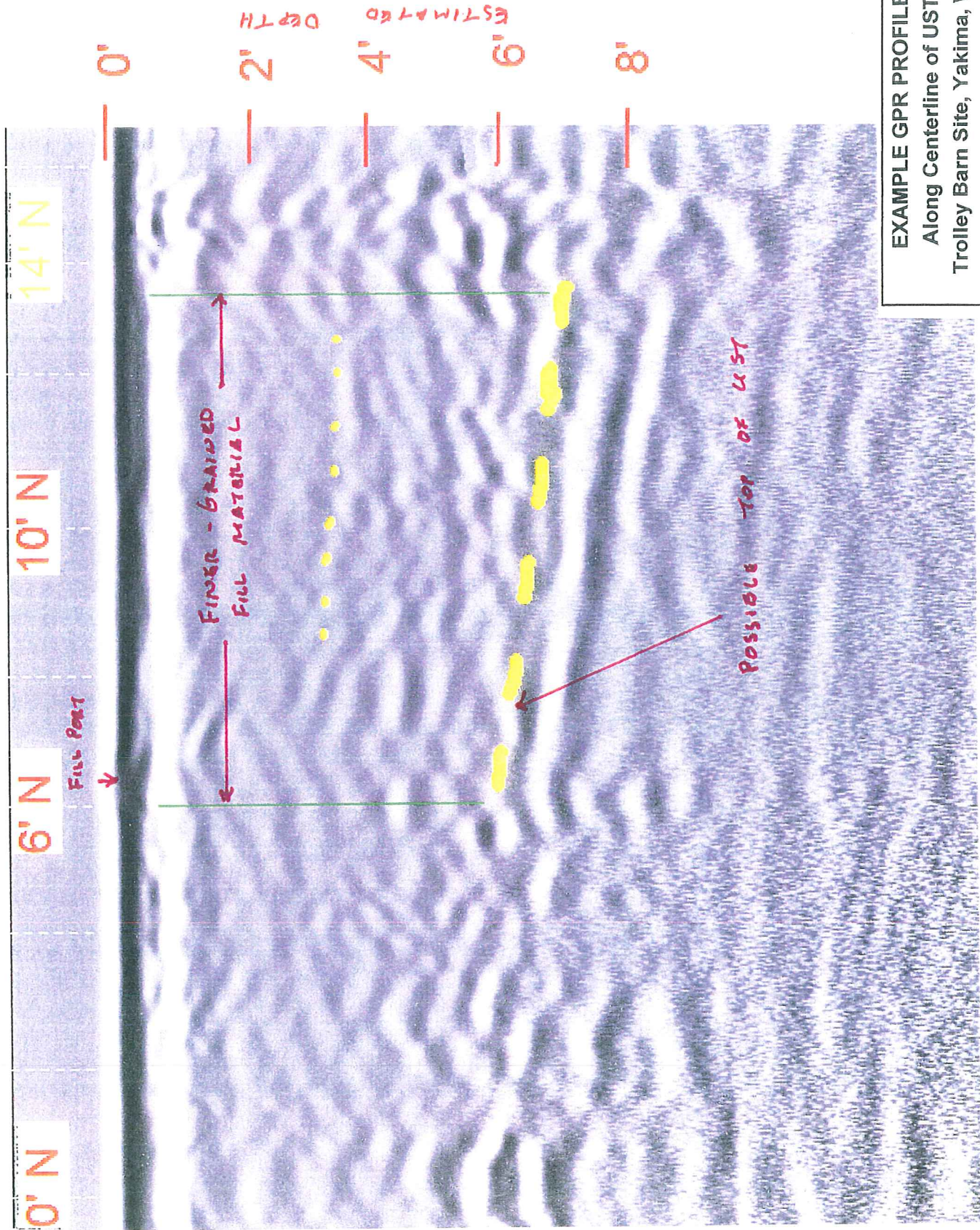
GROUND PENETRATING RADAR

Some of the uses of GPR include locating buried utilities, tanks and drums, delineating boundaries of landfills and trenches, and defining voids and geologic stratigraphy. Although other techniques can also provide this information, GPR is less affected by cultural interferences such as overhead powerlines, buildings, and fences. GPR can also provide higher resolution of the target in many cases. Depths of investigation range from a few feet in water-saturated clayey materials to tens of feet in dry, clean sand and gravels. A variety of antennas (ranging from 80 to 900 MHz) can be used depending on subsurface conditions and the objective of the survey. Resolution of shallow objects requires higher frequencies, while lower frequencies work better for deeper investigations.

Several factors can affect the effectiveness of the GPR method including reinforced concrete at the surface, the presence of highly conductive materials (such as clays and water), the size, depth, and physical property of the target and; in stratigraphic investigations, the conductivity contrast between stratigraphic units. The presence of numerous buried objects may mask objects and/or stratigraphy below them. The GPR method is most effective in areas with even terrain and free of heavy brush.

RADIODETECTION UTILITY LOCATING

The Radiodetection RD-PDL is an electromagnetic instrument that is used to locate utilities (such as metal pipes, electrical conduit, and communication lines). A handheld receiver unit detects the presence of electromagnetic fields in the pipes. These fields may be caused by the 50/60 Hz energy in active powerlines, or can be induced by VLF radio frequency energy passing through the earth. Most metal utilities can be located using the VLF field that is induced by a world-wide system of communication transmitters. In cases where a valve, vent pipe, or other portion of the utility is accessible, a small transmitter can be used to enhance detectability. This portable transmitter can be connected directly onto or located near the pipe.



EXAMPLE GPR PROFILE
Along Centerline of UST
Trolley Barn Site, Yakima, WA
FIGURE 2

RELATIVE DENSITY OR CONSISTENCY VERSUS SPT N-VALUE

COHESIONLESS SOILS			COHESIVE SOILS		
Density	N (blows/ft)	Approximate Relative Density(%)	Consistency	N (blows/ft)	Approximate Undrained Shear Strength (psf)
Very Loose	0 to 4	0 - 15	Very Soft	0 to 2	<250
Loose	4 to 10	15 - 35	Soft	2 to 4	250 - 500
Medium Dense	10 to 30	35 - 65	Medium Stiff	4 to 8	500 - 1000
Dense	30 to 50	65 - 85	Stiff	8 to 15	1000 - 2000
Very Dense	over 50	85 - 100	Very Stiff	15 to 30	2000 - 4000
			Hard	over 30	>4000

USCS SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			GROUP DESCRIPTIONS			
Coarse Grained Soils	Gravel and Gravelly Soils	Clean Gravel (little or no fines)		GW	Well-graded GRAVEL	
				GP	Poorly-graded GRAVEL	
		More than 50% of Coarse Fraction Retained on No. 4 Sieve	Gravel with Fines (appreciable amount of fines)		GM	Silty GRAVEL
					GC	Clayey GRAVEL
	Sand and Sandy Soils	Clean Sand (little or no fines)		SW	Well-graded SAND	
				SP	Poorly-graded SAND	
		50% or More of Coarse Fraction Passing No. 4 Sieve	Sand with Fines (appreciable amount of fines)		SM	Silty SAND
					SC	Clayey SAND
Fine Grained Soils	Silt and Clay	Liquid Limit Less than 50%		ML	SILT	
				CL	Lean CLAY	
				OL	Organic SILT/Organic CLAY	
	50% or More Passing No. 200 Sieve Size	Silt and Clay	Liquid Limit 50% or More		MH	Elastic SILT
					CH	Fat CLAY
					OH	Organic SILT/Organic CLAY
					PT	PEAT
Highly Organic Soils						

TEST SYMBOLS

%F	Percent Fines
AL	Atterberg Limits: PL = Plastic Limit LL = Liquid Limit
CBR	California Bearing Ratio
CN	Consolidation
DD	Dry Density (pcf)
DS	Direct Shear
GS	Grain Size Distribution
K	Permeability
MD	Moisture/Density Relationship (Proctor)
MR	Resilient Modulus
PID	Photoionization Device Reading
PP	Pocket Penetrometer Approx. Compressive Strength (tsf)
SG	Specific Gravity
TC	Triaxial Compression
TV	Torvane Approx. Shear Strength (tsf)
UC	Unconfined Compression

SAMPLE TYPE SYMBOLS

	2.0" OD Split Spoon (SPT) (140 lb. hammer with 30 in. drop)
	Shelby Tube
	3-1/4" OD Split Spoon with Brass Rings
	Small Bag Sample
	Large Bag (Bulk) Sample
	Core Run
	Non-standard Penetration Test (3.0" OD split spoon)

GROUNDWATER SYMBOLS

	Groundwater Level (measured at time of drilling)
	Groundwater Level (measured in well or open hole after water level stabilized)

COMPONENT DEFINITIONS

COMPONENT	SIZE RANGE
Boulders	Larger than 12 in
Cobbles	3 in to 12 in
Gravel	3 in to No 4 (4.5mm)
Coarse gravel	3 in to 3/4 in
Fine gravel	3/4 in to No 4 (4.5mm)
Sand	No. 4 (4.5 mm) to No. 200 (0.074 mm)
Coarse sand	No. 4 (4.5 mm) to No. 10 (2.0 mm)
Medium sand	No. 10 (2.0 mm) to No. 40 (0.42 mm)
Fine sand	No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt and Clay	Smaller than No. 200 (0.074mm)

COMPONENT PROPORTIONS

PROPORTION RANGE	DESCRIPTIVE TERMS
< 5%	Clean
5 - 12%	Slightly (Clayey, Silty, Sandy)
12 - 30%	Clayey, Silty, Sandy, Gravelly
30 - 50%	Very (Clayey, Silty, Sandy, Gravelly)
Components are arranged in order of increasing quantities.	

NOTES: Soil classifications presented on exploration logs are based on visual and laboratory observation. Soil descriptions are presented in the following general order:

Density/consistency, color, modifier (if any) GROUP NAME, additions to group name (if any), moisture content. Proportion, gradation, and angularity of constituents, additional comments.
(GEOLOGIC INTERPRETATION)

Please refer to the discussion in the report text as well as the exploration logs for a more complete description of subsurface conditions.

MOISTURE CONTENT

DRY	Absence of moisture, dusty, dry to the touch.
MOIST	Damp but no visible water.
WET	Visible free water, usually soil is below water table.

LEGEND OF TERMS AND SYMBOLS USED ON EXPLORATION LOGS

DRILLING COMPANY: Environmental West Explorations SURFACE ELEVATION: ± feet

DATE STARTED: 5/16/2007

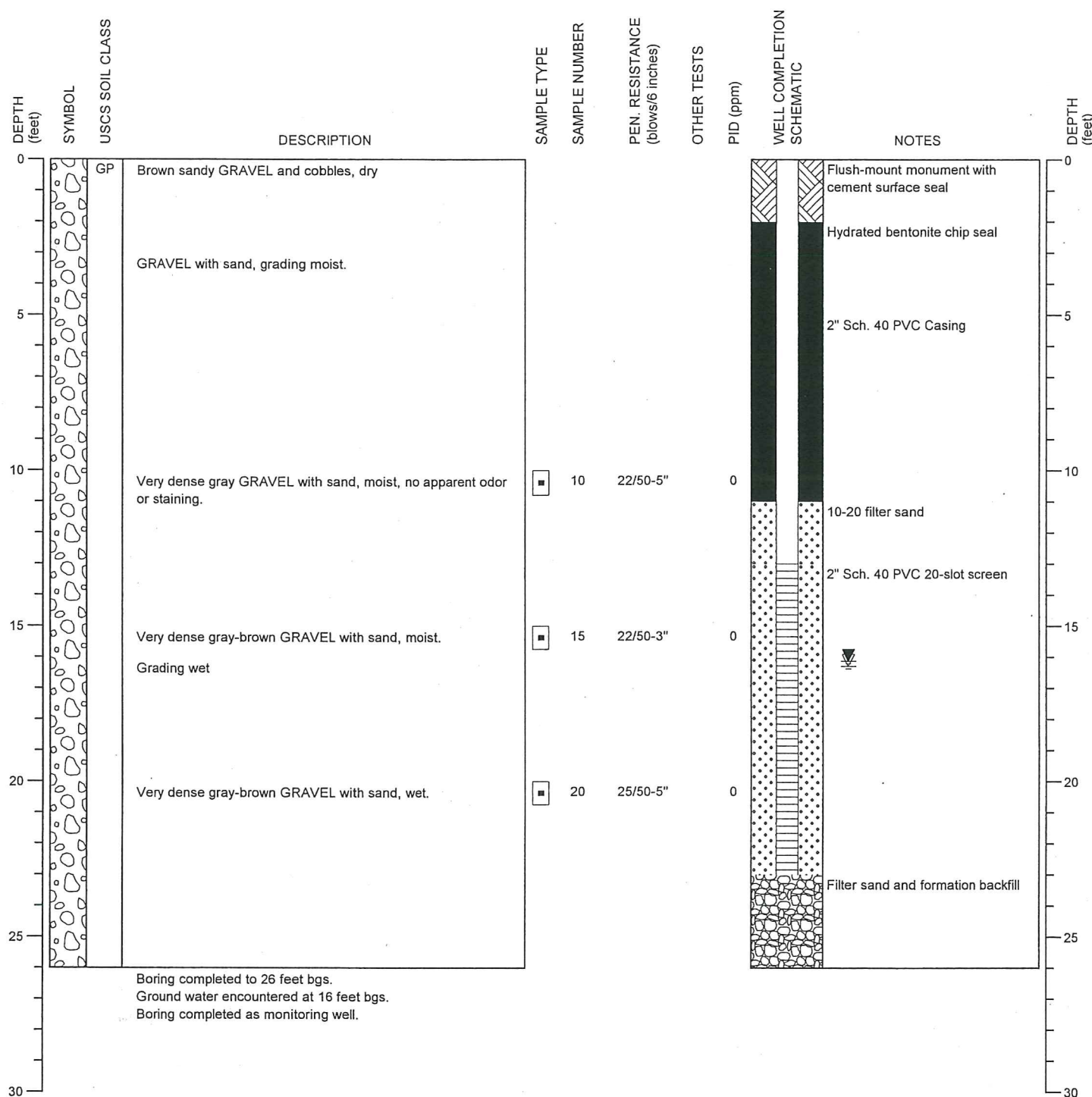
DRILLING METHOD: Mobile B-80 Tubex Air Rotary

DATE COMPLETED: 5/16/2007

SAMPLING METHOD: D&M Sampler

LOGGED BY: V. Atkins

LOCATION: West side of Power House Building



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.



Yakima Valley Transportation Company

HWAGEOSCIENCES INC.

MONITORING WELL:
HWA-MW1

PAGE: 1 of 1

PROJECT NO.: 2006-116-22

FIGURE:

D-2

DRILLING COMPANY: Environmental West Explorations SURFACE ELEVATION: ± feet

DRILLING METHOD: Mobile B-80 Tubex Air Rotary

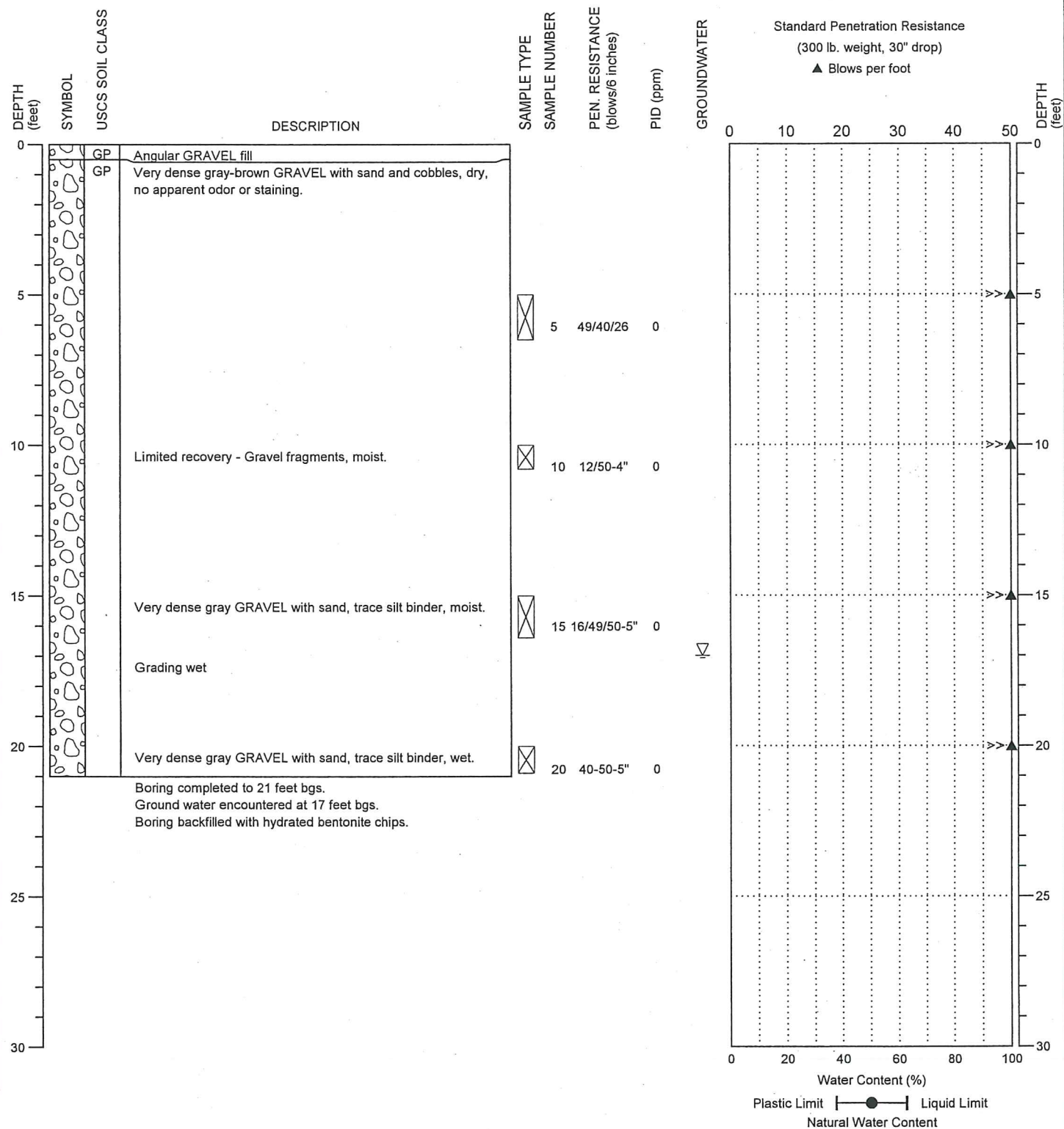
SAMPLING METHOD: D&M Sampler

LOCATION: Southwest corner of Power House Building

DATE STARTED: 5/16/2007

DATE COMPLETED: 5/16/2007

LOGGED BY: V. Atkins



NOTE: This log of subsurface conditions applies only at the specified location and on the date indicated and therefore may not necessarily be indicative of other times and/or locations.



Yakima Valley Transportation Company

HWAGEOSCIENCES INC.

BORING:
HWA-B1

PAGE: 1 of 1

PROJECT NO.: 2006-116-22

FIGURE:

D-3

APPENDIX E

LABORATORY REPORTS



CCI
ANALYTICAL
LABORATORIES

CERTIFICATE OF ANALYSIS

CLIENT: HWA GEOSCIENCES
19730 64TH AVE. W. SUITE 200
LYNNWOOD, WA 98036

DATE: 5/30/2007
CCIL JOB #: 0705077
DATE RECEIVED: 5/15/2007
WDOE ACCREDITATION #: C142

CLIENT CONTACT: VANCE ATKINS
CLIENT PROJECT ID: YUTC
CLIENT SAMPLE ID: 5/14/2007 13:20 SWITCH-1
CCIL SAMPLE #: -01

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
PCB-1016	EPA-600/4-81-045	ND(<1.0)	MG/KG	5/17/2007	RAL
PCB-1221	EPA-600/4-81-045	ND(<1.0)	MG/KG	5/17/2007	RAL
PCB-1232	EPA-600/4-81-045	ND(<1.0)	MG/KG	5/17/2007	RAL
PCB-1242	EPA-600/4-81-045	ND(<1.0)	MG/KG	5/17/2007	RAL
PCB-1248	EPA-600/4-81-045	ND(<1.0)	MG/KG	5/17/2007	RAL
PCB-1254	EPA-600/4-81-045	ND(<1.0)	MG/KG	5/17/2007	RAL
PCB-1260	EPA-600/4-81-045	ND(<1.0)	MG/KG	5/17/2007	RAL

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.

** UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY:

CERTIFICATE OF ANALYSIS

CLIENT: HWA GEOSCIENCES
19730 64TH AVE. W. SUITE 200
LYNNWOOD, WA 98036

DATE: 5/30/2007
CCIL JOB #: 0705077
DATE RECEIVED: 5/15/2007
WDOE ACCREDITATION #: C142

CLIENT CONTACT: VANCE ATKINS
CLIENT PROJECT ID: YUTC
CLIENT SAMPLE ID: 5/14/2007 13:30 SWITCH-2
CCIL SAMPLE #: -02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
PCB-1016	EPA-600/4-81-045	ND(<1.0)	MG/KG	5/18/2007	RAL
PCB-1221	EPA-600/4-81-045	ND(<1.0)	MG/KG	5/18/2007	RAL
PCB-1232	EPA-600/4-81-045	ND(<1.0)	MG/KG	5/18/2007	RAL
PCB-1242	EPA-600/4-81-045	ND(<1.0)	MG/KG	5/18/2007	RAL
PCB-1248	EPA-600/4-81-045	ND(<1.0)	MG/KG	5/18/2007	RAL
PCB-1254	EPA-600/4-81-045	ND(<1.0)	MG/KG	5/18/2007	RAL
PCB-1260	EPA-600/4-81-045	ND(<1.0)	MG/KG	5/18/2007	RAL

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.

** UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY:



CERTIFICATE OF ANALYSIS

CLIENT: HWA GEOSCIENCES
19730 64TH AVE. W. SUITE 200
LYNNWOOD, WA 98036

DATE: 5/30/2007
CCIL JOB #: 0705077
DATE RECEIVED: 5/15/2007
WDOE ACCREDITATION #: C142

CLIENT CONTACT: VANCE ATKINS
CLIENT PROJECT ID: YUTC
CLIENT SAMPLE ID: 5/14/2007 15:30 PIT-1-S-0.5
CCIL SAMPLE #: -04

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	ND(<1600)	MG/KG	5/17/2007	EBS
TPH-Oil Range	NWTPH-DX	29000	MG/KG	5/17/2007	EBS
PCB-1016	EPA-8082	ND(<0.1)	MG/KG	5/21/2007	RAL
PCB-1221	EPA-8082	ND(<0.1)	MG/KG	5/21/2007	RAL
PCB-1232	EPA-8082	ND(<0.1)	MG/KG	5/21/2007	RAL
PCB-1242	EPA-8082	ND(<0.1)	MG/KG	5/21/2007	RAL
PCB-1248	EPA-8082	ND(<0.1)	MG/KG	5/21/2007	RAL
PCB-1254	EPA-8082	ND(<0.1)	MG/KG	5/21/2007	RAL
PCB-1260	EPA-8082	0.4	MG/KG	5/21/2007	RAL
Arsenic	EPA-6010	ND(<5.0)	MG/KG	5/16/2007	ICP
Cadmium	EPA-6010	6.1	MG/KG	5/16/2007	ICP
Chromium	EPA-6010	37	MG/KG	5/16/2007	ICP
Lead	EPA-6010	440	MG/KG	5/16/2007	ICP
Mercury	EPA-7471	0.08	MG/KG	5/16/2007	ICP

NOTE: CHROMATOGRAM INDICATES SAMPLE CONTAINS PRODUCT WHICH IS LIKELY LUBE OIL.

DIESEL RANGE REPORTING LIMIT RAISED DUE TO OIL RANGE PRODUCT OVERLAP.

ND INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.

**UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY:



CERTIFICATE OF ANALYSIS

CLIENT: HWA GEOSCIENCES
19730 64TH AVE. W. SUITE 200
LYNNWOOD, WA 98036

DATE: 5/30/2007
CCIL JOB #: 0705077
DATE RECEIVED: 5/15/2007
WDOE ACCREDITATION #: C142

CLIENT CONTACT: VANCE ATKINS
CLIENT PROJECT ID: YUTC
CLIENT SAMPLE ID: 5/14/2007 15:30 PIT-2-0.5
CCIL SAMPLE #: -05

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	ND(<5600)	MG/KG	5/17/2007	EBS
TPH-Oil Range	NWTPH-DX	91000	MG/KG	5/17/2007	EBS
PCB-1016	EPA-8082	ND(<0.1)	MG/KG	5/21/2007	RAL
PCB-1221	EPA-8082	ND(<0.1)	MG/KG	5/21/2007	RAL
PCB-1232	EPA-8082	ND(<0.1)	MG/KG	5/21/2007	RAL
PCB-1242	EPA-8082	ND(<0.1)	MG/KG	5/21/2007	RAL
PCB-1248	EPA-8082	ND(<0.1)	MG/KG	5/21/2007	RAL
PCB-1254	EPA-8082	0.8	MG/KG	5/21/2007	RAL
PCB-1260	EPA-8082	ND(<0.1)	MG/KG	5/21/2007	RAL
Arsenic	EPA-6010	ND(<5.0)	MG/KG	5/16/2007	ICP
Cadmium	EPA-6010	18	MG/KG	5/16/2007	ICP
Chromium	EPA-6010	9.3	MG/KG	5/16/2007	ICP
Lead	EPA-6010	1400	MG/KG	5/16/2007	ICP
Mercury	EPA-7471	0.13	MG/KG	5/16/2007	ICP

NOTE: CHROMATOGRAM INDICATES SAMPLE CONTAINS PRODUCT WHICH IS LIKELY LUBE OIL.

DIESEL RANGE REPORTING LIMIT RAISED DUE TO OIL RANGE PRODUCT OVERLAP.

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19730 64TH AVE. W. SUITE 200
LYNNWOOD, WA 98036

DATE: 5/30/2007
CCIL JOB #: 0705077
DATE RECEIVED: 5/15/2007
WDOE ACCREDITATION #: C142

CLIENT CONTACT: VANCE ATKINS
CLIENT PROJECT ID: YUTC

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

CCIL SAMPLE ID	METHOD	SUR ID	% RECV
0705077-01	EPA-600/4-81-045	TCMX	96
0705077-01	EPA-600/4-81-045	DCB	96
0705077-02	EPA-600/4-81-045	TCMX	117
0705077-02	EPA-600/4-81-045	DCB	111
0705077-04	NWTPH-DX	C25	*
0705077-04	EPA-8082	TCMX	121
0705077-04	EPA-8082	DCB	80
0705077-05	NWTPH-DX	C25	*
0705077-05	EPA-8082	TCMX	151**
0705077-05	EPA-8082	DCB	54

* SURROGATE DILUTED OUT OF CALIBRATION RANGE.

** SURROGATE OUTSIDE OF CONTROL LIMITS OF 16-134% POSSIBLY DUE TO MATRIX INTERFERENCE.



CCI
ANALYTICAL
LABORATORIES

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CLIENT: HWA GEOSCIENCES
19730 64TH AVE. W. SUITE 200
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DATE: 5/30/2007
CCIL JOB #: 0705077
DATE RECEIVED: 5/15/2007
WDOE ACCREDITATION #: C142

CLIENT CONTACT: VANCE ATKINS
CLIENT PROJECT ID: YUTC

QUALITY CONTROL RESULTS

BLANK RESULTS

METHOD	MATRIX	QC BATCH ID	ASSOCIATED SAMPLES	ANALYTE	RESULT	UNITS
EPA-600/4-81-045	Other	PS051707-1	0705077 -01 to 02	PCB-1016	ND(<0.1)	MG/KG
EPA-600/4-81-045	Other	PS051707-1	0705077 -01 to 02	PCB-1221	ND(<0.1)	MG/KG
EPA-600/4-81-045	Other	PS051707-1	0705077 -01 to 02	PCB-1232	ND(<0.1)	MG/KG
EPA-600/4-81-045	Other	PS051707-1	0705077 -01 to 02	PCB-1242	ND(<0.1)	MG/KG
EPA-600/4-81-045	Other	PS051707-1	0705077 -01 to 02	PCB-1248	ND(<0.1)	MG/KG
EPA-600/4-81-045	Other	PS051707-1	0705077 -01 to 02	PCB-1254	ND(<0.1)	MG/KG
EPA-600/4-81-045	Other	PS051707-1	0705077 -01 to 02	PCB-1260	ND(<0.1)	MG/KG
NWTPH-DX	Soil	DS051007-2	0705077 -04 to 05	TPH-Diesel Range	ND(<25)	MG/KG
NWTPH-DX	Soil	DS051007-2	0705077 -04 to 05	TPH-Oil Range	ND(<50)	MG/KG
EPA-8082	Soil	PS051707-2	0705077 -04 to 05	PCB-1016	ND(<0.1)	MG/KG
EPA-8082	Soil	PS051707-2	0705077 -04 to 05	PCB-1221	ND(<0.1)	MG/KG
EPA-8082	Soil	PS051707-2	0705077 -04 to 05	PCB-1232	ND(<0.1)	MG/KG
EPA-8082	Soil	PS051707-2	0705077 -04 to 05	PCB-1242	ND(<0.1)	MG/KG
EPA-8082	Soil	PS051707-2	0705077 -04 to 05	PCB-1248	ND(<0.1)	MG/KG
EPA-8082	Soil	PS051707-2	0705077 -04 to 05	PCB-1254	ND(<0.1)	MG/KG
EPA-8082	Soil	PS051707-2	0705077 -04 to 05	PCB-1260	ND(<0.1)	MG/KG
EPA-7471	Soil	HGS051607-1	0705077 -04 to 05	Mercury	ND(<0.02)	MG/KG
EPA-6010	Soil	ICPMET-S-051107-2	0705077 -04 to 05	Arsenic	ND(<5.0)	MG/KG
EPA-6010	Soil	ICPMET-S-051107-2	0705077 -04 to 05	Cadmium	ND(<1.0)	MG/KG
EPA-6010	Soil	ICPMET-S-051107-2	0705077 -04 to 05	Chromium	ND(<1.0)	MG/KG
EPA-6010	Soil	ICPMET-S-051107-2	0705077 -04 to 05	Lead	ND(<5.0)	MG/KG



CCI
ANALYTICAL
LABORATORIES

CERTIFICATE OF ANALYSIS

CLIENT: HWA GEOSCIENCES
19730 64TH AVE. W. SUITE 200
LYNNWOOD, WA 98036

DATE: 5/30/2007
CCIL JOB #: 0705077
DATE RECEIVED: 5/15/2007
WDOE ACCREDITATION #: C142

CLIENT CONTACT: VANCE ATKINS
CLIENT PROJECT ID: YUTC

QUALITY CONTROL RESULTS

SPIKE/SPIKE DUPLICATE RESULTS

METHOD	MATRIX	QC BATCH ID	ASSOCIATED SAMPLES	ANALYTE	SPIKE RECOVERY	SPIKE DUP RECOVERY	RPD
EPA-600/4-81-045	Other	PS051707-1	0705077 -01 to 02	PCB-1016	100 %	82 %	20
EPA-600/4-81-045	Other	PS051707-1	0705077 -01 to 02	PCB-1260	100 %	82 %	20
NWTPH-DX	Soil	DS051007-2	0705077 -04 to 05	TPH-Diesel Range	89 %	98 %	10
EPA-8082	Soil	PS051707-2	0705077 -04 to 05	PCB-1016	115 %	99 %	15
EPA-8082	Soil	PS051707-2	0705077 -04 to 05	PCB-1260	115 %	99 %	15
EPA-7471	Soil	HGS051607-1	0705077 -04 to 05	Mercury	102 %	107 %	5
EPA-6010	Soil	ICPMET-S-051107-2	0705077 -04 to 05	Arsenic	99 %	98 %	1
EPA-6010	Soil	ICPMET-S-051107-2	0705077 -04 to 05	Cadmium	100 %	99 %	1
EPA-6010	Soil	ICPMET-S-051107-2	0705077 -04 to 05	Chromium	101 %	100 %	1
EPA-6010	Soil	ICPMET-S-051107-2	0705077 -04 to 05	Lead	100 %	99 %	1

APPROVED BY:



19730 64th Ave. W., Suite 200, Lynnwood, WA 98036 (425) 774-0106
4500 Kruse Way, Suite 300, Lake Oswego, OR 97035 (503) 675-2424

Chain of Custody and Laboratory Analysis Request

DATE: 5/12/07
PAGE: of

PROJECT NAME: WTC #: 2006-11

SITE CODE:

SAMPLERS NAME: Lance Atkins PHONE: _____

SAMPLERS SIGNATURE: La [Signature]

HVWA CONTACT: _____ PHONE: _____

[illegible]

REMARKS

[illegible]

PRINT NAME

SIGNATURE

COMPANY

DATE _____

TIME

REMARKS

Relinquished by: THINTON

T. Horton

Earth Sciences

515

1.20

1

Received by: Kickham

[Signature]

CCIA

5/15/00

21

Relinquished by:

Received by:

DISTRIBUTION: WHITE - Return to HWA;

LOW - Retain by Lab; PINK - Retain by Sampler



CERTIFICATE OF ANALYSIS

CLIENT: HWA GEOSCIENCES
19730 64TH AVE. W. SUITE 200
LYNNWOOD, WA 98036

DATE: 5/25/2007
CCIL JOB #: 0705089
DATE RECEIVED: 5/18/2007
WDOE ACCREDITATION #: C142

CLIENT CONTACT: VANCE ATKINS
CLIENT PROJECT ID: YVTC #2006-116
CLIENT SAMPLE ID: 5/16/2007 10:45 HWA-MW-1-15
CCIL SAMPLE #: -02

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	ND(<25)	MG/KG	5/21/2007	EBS
TPH-Oil Range	NWTPH-DX	ND(<50)	MG/KG	5/21/2007	EBS

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.

** UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY:

A handwritten signature in cursive script, appearing to read 'Paul Bayan'.

CERTIFICATE OF ANALYSIS

CLIENT: HWA GEOSCIENCES
19730 64TH AVE. W. SUITE 200
LYNNWOOD, WA 98036

DATE: 5/25/2007
CCIL JOB #: 0705089
DATE RECEIVED: 5/18/2007
WDOE ACCREDITATION #: C142

CLIENT CONTACT: VANCE ATKINS
CLIENT PROJECT ID: YVTC #2006-116
CLIENT SAMPLE ID: 5/16/2007 13:45 HWA-B1-5
CCIL SAMPLE #: -04

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	ND(<25)	MG/KG	5/21/2007	EBS
TPH-Oil Range	NWTPH-DX	ND(<50)	MG/KG	5/21/2007	EBS

* "ND" INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.

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APPROVED BY:





CERTIFICATE OF ANALYSIS

CLIENT: HWA GEOSCIENCES
19730 64TH AVE. W. SUITE 200
LYNNWOOD, WA 98036

DATE: 5/25/2007
CCIL JOB #: 0705089
DATE RECEIVED: 5/18/2007
WDOE ACCREDITATION #: C142

CLIENT CONTACT: VANCE ATKINS
CLIENT PROJECT ID: YVTC #2006-116
CLIENT SAMPLE ID: 5/16/2007 14:15 HWA-B1-15
CCIL SAMPLE #: -06

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	ND(<25)	MG/KG	5/21/2007	EBS
TPH-Oil Range	NWTPH-DX	ND(<50)	MG/KG	5/21/2007	EBS

*ND INDICATES ANALYTE ANALYZED FOR BUT NOT DETECTED AT LEVEL ABOVE REPORTING LIMIT. REPORTING LIMIT IS GIVEN IN PARENTHESES.

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APPROVED BY:

A handwritten signature in cursive script, appearing to read 'Paul Bagon'.

CERTIFICATE OF ANALYSIS

CLIENT: HWA GEOSCIENCES
19730 64TH AVE. W. SUITE 200
LYNNWOOD, WA 98036

DATE: 5/25/2007
CCIL JOB #: 0705089
DATE RECEIVED: 5/18/2007
WDOE ACCREDITATION #: C142

CLIENT CONTACT: VANCE ATKINS
CLIENT PROJECT ID: YVTC #2006-116
CLIENT SAMPLE ID: 5/17/2007 9:00 HWA-MW1
CCIL SAMPLE #: -08

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
TPH-Diesel Range	NWTPH-DX	ND(<130)	UG/L	5/22/2007	EBS
TPH-Oil Range	NWTPH-DX	ND(<250)	UG/L	5/22/2007	EBS
Dichlorodifluoromethane	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Chloromethane	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Vinyl Chloride	EPA-8260	ND(<0.2)	UG/L	5/18/2007	GAP
Bromomethane	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Chloroethane	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Trichlorofluoromethane	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Acetone	EPA-8260	ND(<25)	UG/L	5/18/2007	GAP
1,1-Dichloroethene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Methylene Chloride	EPA-8260	ND(<5)	UG/L	5/18/2007	GAP
Acrylonitrile	EPA-8260	ND(<10)	UG/L	5/18/2007	GAP
Methyl T-Butyl Ether	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Trans-1,2-Dichloroethene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
1,1-Dichloroethane	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
2-Butanone	EPA-8260	ND(<10)	UG/L	5/18/2007	GAP
Cis-1,2-Dichloroethene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
2,2-Dichloropropane	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Bromochloromethane	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Chloroform	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
1,1,1-Trichloroethane	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
1,1-Dichloropropene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Carbon Tetrachloride	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
1,2-Dichloroethane	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Benzene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Trichloroethene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
1,2-Dichloropropane	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Dibromomethane	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Bromodichloromethane	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Trans-1,3-Dichloropropene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
4-Methyl-2-Pentanone	EPA-8260	ND(<10)	UG/L	5/18/2007	GAP
Toluene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Cis-1,3-Dichloropropene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
1,1,2-Trichloroethane	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP

CERTIFICATE OF ANALYSIS

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LYNNWOOD, WA 98036

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CCIL JOB #: 0705089
DATE RECEIVED: 5/18/2007
WDOE ACCREDITATION #: C142

CLIENT CONTACT: VANCE ATKINS
CLIENT PROJECT ID: YVTC #2006-116
CLIENT SAMPLE ID: 5/17/2007 9:00 HWA-MW1
CCIL SAMPLE #: -08

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
2-Hexanone	EPA-8260	ND(<10)	UG/L	5/18/2007	GAP
1,3-Dichloropropane	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Tetrachloroethylene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Dibromochloromethane	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
1,2-Dibromoethane	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Chlorobenzene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
1,1,1,2-Tetrachloroethane	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Ethylbenzene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
M+P Xylene	EPA-8260	ND(<4)	UG/L	5/18/2007	GAP
Styrene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
O-Xylene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Bromoform	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Isopropylbenzene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
1,1,2,2-Tetrachloroethane	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
1,2,3-Trichloropropane	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Bromobenzene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
N-Propyl Benzene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
2-Chlorotoluene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
1,3,5-Trimethylbenzene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
4-Chlorotoluene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
T-Butyl Benzene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
1,2,4-Trimethylbenzene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
S-Butyl Benzene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
P-Isopropyltoluene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
1,3 Dichlorobenzene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
1,4-Dichlorobenzene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
N-Butylbenzene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
1,2-Dichlorobenzene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
1,2-Dibromo 3-Chloropropane	EPA-8260	ND(<10)	UG/L	5/18/2007	GAP
1,2,4-Trichlorobenzene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Hexachlorobutadiene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Naphthalene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
1,2,3-Trichlorobenzene	EPA-8260	ND(<2)	UG/L	5/18/2007	GAP
Benzo(a)anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	5/22/2007	RAL



CERTIFICATE OF ANALYSIS

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19730 64TH AVE. W. SUITE 200
LYNNWOOD, WA 98036

DATE: 5/25/2007
CCIL JOB #: 0705089
DATE RECEIVED: 5/18/2007
WDOE ACCREDITATION #: C142

CLIENT CONTACT: VANCE ATKINS
CLIENT PROJECT ID: YVTC #2006-116
CLIENT SAMPLE ID: 5/17/2007 9:00 HWA-MW1
CCIL SAMPLE #: -08

DATA RESULTS

ANALYTE	METHOD	RESULTS*	UNITS**	ANALYSIS DATE	ANALYSIS BY
Chrysene	EPA-8270 SIM	ND(<0.02)	UG/L	5/22/2007	RAL
Benzo(b)fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	5/22/2007	RAL
Benzo(k)fluoranthene	EPA-8270 SIM	ND(<0.02)	UG/L	5/22/2007	RAL
Benzo(a)pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	5/22/2007	RAL
Indeno(1,2,3-cd)pyrene	EPA-8270 SIM	ND(<0.02)	UG/L	5/22/2007	RAL
Dibenz(a,h)anthracene	EPA-8270 SIM	ND(<0.02)	UG/L	5/22/2007	RAL
Arsenic (Dissolved)	EPA-7060	ND(<4)	UG/L	5/23/2007	ICP
Arsenic (Total)	EPA-7060	ND(<4)	UG/L	5/23/2007	ICP
Cadmium (Dissolved)	EPA-200.7	ND(<5)	UG/L	5/21/2007	ICP
Cadmium (Total)	EPA-200.7	ND(<5)	UG/L	5/21/2007	ICP
Chromium (Dissolved)	EPA-200.7	62	UG/L	5/21/2007	ICP
Chromium (Total)	EPA-200.7	62	UG/L	5/21/2007	ICP
Lead (Dissolved)	EPA-7421	ND(<3)	UG/L	5/23/2007	ICP
Lead (Total)	EPA-7421	ND(<3)	UG/L	5/23/2007	ICP
Mercury (Dissolved)	EPA-7470	ND(<0.2)	UG/L	5/21/2007	ICP
Mercury (Total)	EPA-7470	ND(<0.2)	UG/L	5/21/2007	ICP

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**UNITS FOR ALL NON LIQUID SAMPLES ARE REPORTED ON A DRY WEIGHT BASIS

APPROVED BY:

CERTIFICATE OF ANALYSIS

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19730 64TH AVE. W. SUITE 200
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CLIENT CONTACT: VANCE ATKINS
CLIENT PROJECT ID: YVTC #2006-116

QUALITY CONTROL RESULTS

SURROGATE RECOVERY

CCIL SAMPLE ID	METHOD	SUR ID	% RECV
0705089-02	NWTPH-DX	C25	93
0705089-04	NWTPH-DX	C25	112
0705089-06	NWTPH-DX	C25	77
0705089-08	NWTPH-DX	C25	108
0705089-08	EPA-8260	1,2-Dichloroethane-d4	105
0705089-08	EPA-8260	Toluene-d8	100
0705089-08	EPA-8260	4-Bromofluorobenzene	104
0705089-08	EPA-8270 SIM	Terphenyl-d14	106

CERTIFICATE OF ANALYSIS

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CLIENT CONTACT: VANCE ATKINS
CLIENT PROJECT ID: YVTC #2006-116

QUALITY CONTROL RESULTS

BLANK RESULTS

METHOD	MATRIX	QC BATCH ID	ASSOCIATED SAMPLES	ANALYTE	RESULT	UNITS
NWTPH-DX	Soil	DS052107	0705089 -02,04,06	TPH-Diesel Range	ND(<25)	MG/KG
NWTPH-DX	Soil	DS052107	0705089 -02,04,06	TPH-Oil Range	ND(<50)	MG/KG
NWTPH-DX	Water	DW052207	0705089 -08	TPH-Diesel Range	ND(<130)	UG/L
NWTPH-DX	Water	DW052207	0705089 -08	TPH-Oil Range	ND(<250)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Dichlorodifluoromethane	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Chloromethane	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Vinyl Chloride	ND(<0.2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Bromomethane	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Chloroethane	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Trichlorofluoromethane	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Acetone	ND(<25)	UG/L
EPA-8260	Water	VW051807	0705089 -08	1,1-Dichloroethene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Methylene Chloride	ND(<5)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Acrylonitrile	ND(<10)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Methyl T-Butyl Ether	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Trans-1,2-Dichloroethene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	1,1-Dichloroethane	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	2-Butanone	ND(<10)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Cis-1,2-Dichloroethene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	2,2-Dichloropropane	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Bromochloromethane	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Chloroform	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	1,1,1-Trichloroethane	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	1,1-Dichloropropene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Carbon Tetrachloride	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	1,2-Dichloroethane	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Benzene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Trichloroethene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	1,2-Dichloropropane	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Dibromomethane	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Bromodichloromethane	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Trans-1,3-Dichloropropene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	4-Methyl-2-Pentanone	ND(<10)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Toluene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Cis-1,3-Dichloropropene	ND(<2)	UG/L

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CLIENT CONTACT: VANCE ATKINS
CLIENT PROJECT ID: YVTC #2006-116

QUALITY CONTROL RESULTS

BLANK RESULTS

METHOD	MATRIX	QC BATCH ID	ASSOCIATED SAMPLES	ANALYTE	RESULT	UNITS
EPA-8260	Water	VW051807	0705089 -08	1,1,2-Trichloroethane	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	2-Hexanone	ND(<10)	UG/L
EPA-8260	Water	VW051807	0705089 -08	1,3-Dichloropropane	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Tetrachloroethylene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Dibromochloromethane	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	1,2-Dibromoethane	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Chlorobenzene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	1,1,1,2-Tetrachloroethane	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Ethylbenzene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	M+P Xylene	ND(<4)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Styrene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	O-Xylene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Bromoform	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Isopropylbenzene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	1,1,2,2-Tetrachloroethane	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	1,2,3-Trichloropropane	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Bromobenzene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	N-Propyl Benzene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	2-Chlorotoluene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	1,3,5-Trimethylbenzene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	4-Chlorotoluene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	T-Butyl Benzene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	1,2,4-Trimethylbenzene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	S-Butyl Benzene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	P-Isopropyltoluene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	1,3 Dichlorobenzene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	1,4-Dichlorobenzene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	N-Butylbenzene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	1,2-Dichlorobenzene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	1,2-Dibromo 3-Chloropropane	ND(<10)	UG/L
EPA-8260	Water	VW051807	0705089 -08	1,2,4-Trichlorobenzene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Hexachlorobutadiene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	Naphthalene	ND(<2)	UG/L
EPA-8260	Water	VW051807	0705089 -08	1,2,3-Trichlorobenzene	ND(<2)	UG/L
EPA-8270 SIM	Water	PAHW040507-2	0705089 -08	Benzo(a)anthracene	ND(<0.02)	UG/L

CERTIFICATE OF ANALYSIS

CLIENT: HWA GEOSCIENCES
19730 64TH AVE. W. SUITE 200
LYNNWOOD, WA 98036

DATE: 5/25/2007
CCIL JOB #: 0705089
DATE RECEIVED: 5/18/2007
WDOE ACCREDITATION #: C142

CLIENT CONTACT: VANCE ATKINS
CLIENT PROJECT ID: YVTC #2006-116

QUALITY CONTROL RESULTS

BLANK RESULTS

METHOD	MATRIX	QC BATCH ID	ASSOCIATED SAMPLES	ANALYTE	RESULT	UNITS
EPA-8270 SIM	Water	PAHW040507-2	0705089 -08	Chrysene	ND(<0.02)	UG/L
EPA-8270 SIM	Water	PAHW040507-2	0705089 -08	Benzo(b)fluoranthene	ND(<0.02)	UG/L
EPA-8270 SIM	Water	PAHW040507-2	0705089 -08	Benzo(k)fluoranthene	ND(<0.02)	UG/L
EPA-8270 SIM	Water	PAHW040507-2	0705089 -08	Benzo(a)pyrene	ND(<0.02)	UG/L
EPA-8270 SIM	Water	PAHW040507-2	0705089 -08	Indeno(1,2,3-cd)pyrene	ND(<0.02)	UG/L
EPA-8270 SIM	Water	PAHW040507-2	0705089 -08	Dibenz(a,h)anthracene	ND(<0.02)	UG/L
EPA-7060	Water	AS052307	0705089 -08	Arsenic (Dissolved)	ND(<4)	UG/L
EPA-7060	Water	AS052307	0705089 -08	Arsenic (Total)	ND(<4)	UG/L
EPA-7470	Water	HGW052107-1	0705089 -08	Mercury (Dissolved)	ND(<0.2)	UG/L
EPA-7470	Water	HGW052107-1	0705089 -08	Mercury (Total)	ND(<0.2)	UG/L
EPA-200.7	Water	ICPMET-W-052107-1	0705089 -08	Cadmium (Dissolved)	ND(<5)	UG/L
EPA-200.7	Water	ICPMET-W-052107-1	0705089 -08	Cadmium (Total)	ND(<5)	UG/L
EPA-200.7	Water	ICPMET-W-052107-1	0705089 -08	Chromium (Dissolved)	ND(<7)	UG/L
EPA-200.7	Water	ICPMET-W-052107-1	0705089 -08	Chromium (Total)	ND(<7)	UG/L
EPA-7421	Water	PB052307	0705089 -08	Lead (Dissolved)	ND(<3)	UG/L
EPA-7421	Water	PB052307	0705089 -08	Lead (Total)	ND(<3)	UG/L

CERTIFICATE OF ANALYSIS

CLIENT: HWA GEOSCIENCES
19730 64TH AVE. W. SUITE 200
LYNNWOOD, WA 98036

DATE: 5/25/2007
CCIL JOB #: 0705089
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WDOE ACCREDITATION #: C142

CLIENT CONTACT: VANCE ATKINS
CLIENT PROJECT ID: YVTC #2006-116

QUALITY CONTROL RESULTS

SPIKE/SPIKE DUPLICATE RESULTS

METHOD	MATRIX	QC BATCH ID	ASSOCIATED SAMPLES	ANALYTE	SPIKE RECOVERY	SPIKE DUP RECOVERY	RPD
NWTPH-DX	Soil	DS052107	0705089 -02,04,06	TPH-Diesel Range	100 %	92 %	8
NWTPH-DX	Water	DW052207	0705089 -08	TPH-Diesel Range	77 %	81 %	5
EPA-8260	Water	VW051807	0705089 -08	1,1-Dichloroethene	91 %	93 %	2
EPA-8260	Water	VW051807	0705089 -08	Benzene	91 %	101 %	10
EPA-8260	Water	VW051807	0705089 -08	Trichloroethene	92 %	101 %	10
EPA-8260	Water	VW051807	0705089 -08	Toluene	91 %	99 %	9
EPA-8260	Water	VW051807	0705089 -08	Chlorobenzene	91 %	98 %	7
EPA-8270 SIM	Water	PAHW040507-2	0705089 -08	Naphthalene	74 %	70 %	5
EPA-8270 SIM	Water	PAHW040507-2	0705089 -08	Acenaphthene	74 %	73 %	1
EPA-8270 SIM	Water	PAHW040507-2	0705089 -08	Pyrene	109 %	118 %	8
EPA-8270 SIM	Water	PAHW040507-2	0705089 -08	Benzo(ghi)perylene	68 %	70 %	2
EPA-7060	Water	AS052307	0705089 -08	Arsenic (Total)	109 %	114 %	4
EPA-7470	Water	HGW052107-1	0705089 -08	Mercury (Total)	105 %	91 %	14
EPA-200.7	Water	ICPMET-W-052107-1	0705089 -08	Cadmium (Total)	101 %	109 %	8
EPA-200.7	Water	ICPMET-W-052107-1	0705089 -08	Chromium (Total)	102 %	110 %	8
EPA-7421	Water	PB052307	0705089 -08	Lead (Total)	90 %	102 %	12

APPROVED BY:





705084

DATE: 5/16-17/07
PAGE: 1 of 1

PAGE: 1 of 1

SITE CODE:

SAMPLERS NAME:

Vaccines & Atrial

PHONE:

SAMPLERS SIGNATURE:

0.6

HWMA CONTACT:

PHONE:

[illegible]

REMARKS

[illegible]

PRINT NAME

SIGNATURE

COMPANY

DATE _____

TIME

REMARKS

Relinquished by:

1/Anu ATEN

9

HWA

5/15/07 900

Received by:

John A. B. ...

1846

CTA

5/18/02	9.5
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Relinquished by:

1

[illegible]

Received by:

1

[illegible]

DISTRIBUTION: WHITE - Return to HWA; _OW - Retain by Lab; PINK - Retain by Sampler