

SITE MANAGEMENT PLAN

YAKIMA VALLEY TRANSPORTATION CO. TROLLEY BARN SITE
404 SOUTH 3rd AVENUE
YAKIMA, WASHINGTON



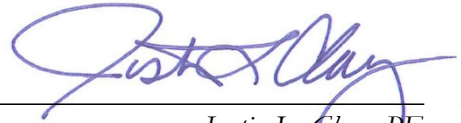
Prepared for
CITY OF YAKIMA
YAKIMA, WA
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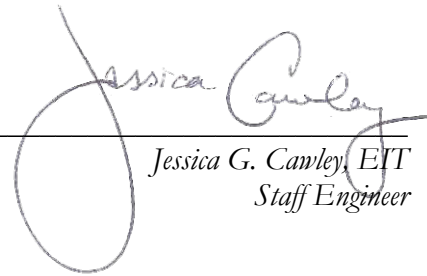
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*The material and data in this plan were prepared
under the supervision and direction of the undersigned.*

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ACRONYMS AND ABBREVIATIONS

bgs	below ground surface
the City	City of Yakima, Washington
CUL	cleanup level
CWCMH	Central Washington Comprehensive Mental Health agency located at 402 S 4th Avenue, Yakima, WA
Ecology	Washington State Department of Ecology
ESA	environmental site assessment
HAZWOPER	Hazardous Waste Operations and Emergency Response
IHS	indicator hazardous substance
MFA	Maul Foster & Alongi, Inc.
MTCA	Model Toxics Control Act
NWTPH	Northwest Total Petroleum Hydrocarbons
OSHA	Occupational Safety and Health Act
the Site	404 S 3rd Avenue, Yakima, WA, Ecology Facility Site No. 9688850, Cleanup Site No. 2190
SMP	site management plan
USEPA	U.S. Environmental Protection Agency
USPCI	U.S. Pollution Control, Inc.
UST	underground storage tank
WAC	Washington Administrative Code
VOC	volatile organic compound
YVT	Yakima Valley Transportation Company

1 INTRODUCTION

On behalf of the City of Yakima, Washington (the City), Maul Foster & Alongi, Inc. (MFA) has prepared this Site Management Plan (SMP) for the Yakima Valley Transportation Co. Trolley Barn site, which is a confirmed contaminated site, Washington State Department of Ecology (Ecology) Facility Site No. 9688850, Cleanup Site No. 2190 (the Site). The Site includes property upon which the Yakima Valley Trolleys houses and maintains trolleys and operates the Yakima Electric Railway Museum, which is located at 404 South 3rd Avenue (the Property), as well as the adjacent parking lot to the west, which is currently operated by the Central Washington Comprehensive Mental Health agency (CWCMH) located at 402 South 4th Avenue. The City recently completed an interim action at the Property that was funded through an interagency agreement executed with Ecology. The remedial action included construction of a protective cap. The portion of the Site extending onto the CWCMH property has previously been capped with asphalt that also serves as the CWCMH's parking lot.

This SMP has been prepared in accordance with the requirement of Washington Administrative Code (WAC) 173-340-440 and related provisions of the Washington State Model Toxics Control Act (MTCA). This document provides soil management procedures to be followed in the event of future development or for any condition in which the protective cap is breached. This document also addresses monitoring and maintenance procedures associated with the Site's protective cap. An environmental covenant executed by the City and Ecology is anticipated to be recorded with the Property in the near future; a draft of the covenant is included as Appendix A.

1.1 Purpose of Site Management Plan

The purpose of the SMP is to provide guidance for all future site activities during which a breach of the protective cap could occur and also to provide guidance for monitoring and maintenance associated with the protective cap. This SMP also provides guidelines for assessing potential environmental impacts associated with contaminated soils and groundwater that may be incurred during future construction at the Site, and outlines precautions and procedures necessary for the protection of human health and the environment. This SMP identifies indicator hazardous substances (IHSs); excavation protocols; soil handling procedures; waste characterization and disposal requirements; erosion control, dust control, and stormwater protection measures; and groundwater management requirements.

The guidelines and procedures outlined in this SMP are to be implemented during site management if groundwater is generated, the protective cap is breached, and underlying impacted soil is disturbed, or if further site development takes place.

1.2 Site Description

The physical address for the Site is 404 South 3rd Avenue, but also includes the CWCMMH property located at 402 South 4th Avenue in Yakima, Washington, as shown in Figure 1. The Property, a 1.58-acre parcel (tax assessor parcel number 181324-44465), is on the southwest corner of the intersection of West Pine Street and South 3rd Avenue, with the CWCMMH property located immediately to the west on a 1.53-acre parcel (tax assessor parcel number 181324-44471). Both properties are located in section 24 of township 13 north and range 18 east of the Willamette Meridian and shown in Figure 2.

1.3 Site History

The Yakima Valley Transportation Company (YVT) constructed, owned, and operated electric trains on the Property from 1907 until 1909, when YVT was purchased by the Union Pacific Railroad. The Union Pacific Railroad expanded the rail system as a feeder of freight operations until 1985. Soon after that, the City purchased the Property (Yakima Valley Trolleys, 2015). Volunteers of a non-profit, Yakima Valley Trolleys, maintain and continue operations of the electric trains on behalf of the City.

The Property is primarily used to house and maintain trolleys supporting Yakima Valley Trolleys' operation of the Yakima Electric Railway Museum, which is also located inside the Substation Building on the Property. There are currently three buildings on the Property, the Trolley Barn, the Substation Building, and a small stone shed. Formerly, another trolley barn, a coal bin, an above ground storage tank and stock shed existed along the boundary between the two properties of the Site (see Figure 2). There were, at one time, at least three underground storage tanks (USTs) on the Site; U.S. Pollution Control, Inc. (USPCI) reported closure (via removal) of the USTs in 1990, and indicated evidence of leaking from two of the tanks (USPCI, 1990). The "Former UST Basin" shown in Figure 2 refers to the area surrounding what is referred to in the Trolley Barn UST Closure Site Assessment Report as Tank No. 6 (USPCI, 1990).

Site investigations began in 1991 during property transfer evaluation, and were conducted in 1993 during geotechnical investigations, and in 1996 during a Phase I environmental site assessment (ESA) at the CWCMMH property (Shannon & Wilson, 1996). Two Phase II ESAs have since been conducted, the first in 1996 for the CWCMMH property, and the second in 2007 at the Property. Since 2014, quarterly groundwater monitoring has been conducted by GeoEngineers (2015). See Appendix B for previous Investigation Results.

Ecology led soil and groundwater investigations conducted by GeoEngineers under the Eastern Washington Clean Sites Initiative. Soil sampling and monitoring well installation occurred in August 2014 (GeoEngineers, 2015b). Ecology, with assistance of GeoEngineers, analyzed shallow soil samples collected from throughout the Property in March 2015 for heavy metals, primarily lead and arsenic.

The City entered into an interagency agreement with Ecology in April 2015 to conduct an interim remedial action in June 2015. The interim remedial action was implemented to address IHS exceedances in soil, as well as potential groundwater contamination sources in the vicinity of the

Former UST Basin, and is documented in the Interim Remedial Action Completion Report (MFA, 2015).

1.4 Remedial Action Description

Prior remedial actions conducted at the Site have been associated with removal of USTs, excavation of impacted soils, and construction of a protective cap. Site improvements associated with the Site were designed to integrate the necessary capping components for protection of human health and the environment. The protective cap, which is described in greater detail in Section 4, varies across the Site, and comprises the following:

- Gravel cap (minimum of 0.1 to 0.5 foot of clean gravel)
- Pavement cap (asphalt, concrete, or similar material)¹
- Building cap (existing building foundations)

2 NATURE AND EXTENT OF RESIDUAL CONTAMINATION

2.1 Residual Contamination

The Site contains residual soil contamination beneath a protective cap. The IHSs identified for the site soils are:

- Metals: arsenic, lead, and cadmium (GeoEngineers, 2015a)
- Diesel and heavy oil-range petroleum hydrocarbons (GeoEngineers, 2015a)
- Petroleum-related volatile organic compounds (VOCs): benzene (GeoEngineers, 2015a) and toluene (Shannon & Wilson, 1996)

Groundwater contamination is attributed to contamination originating the former USTs. The IHSs identified for site groundwater are:

- Metals: lead and manganese (GeoEngineers, 2015a), and chromium (GeoEngineers, 2015b)
- Petroleum hydrocarbons: gasoline-, diesel- and lube-oil-range (GeoEngineers, 2015a)

¹ The issuance of this plan precedes the actual protective cap (pavement) construction on the Property (anticipated completion in summer 2016), but the plan has been written as though the protective cap is in place and includes the protective cap components to which Ecology has agreed.

The tables in Appendix B provide all available analytical data for soil and groundwater that potentially remains on site.

2.2 Distribution of Indicator Hazardous Substances

IHSs are assumed to be present in soils and groundwater within the site boundary at concentrations that exceed MTCA Method A cleanup levels (CULs) for soil and groundwater. Locations of CUL exceedances are shown in Figure 3.

Metals (arsenic and lead) are present in soil above CULs at the Site directly beneath the protective cap. In addition to the presence of metals in shallow soils, heavy oil-range petroleum hydrocarbons have been observed in soils directly underlying the asphalt cap on the CWCMMH property. Benzene, diesel-range petroleum hydrocarbons, VOCs, cadmium and lead are present in soil at deeper depths of approximately 9 to 12 feet below ground surface (bgs), near the former UST Basin (see Figure 2). Based on these data, there is the potential for construction workers or future occupational workers to come in contact with impacted soil on the Site.

No IHSs have been detected above MTCA CULs in groundwater during three quarterly groundwater monitoring events in 2014 and 2015. Manganese has been detected above the USEPA secondary MCL, although below the MTCA Method B CUL. Lead, and gasoline-, diesel-, and heavy oil-range petroleum hydrocarbons were identified in groundwater on the northeast corner of the Site in a reconnaissance groundwater sample collected from a soil boring (GeoEngineers, 2014), although Ecology does not consider these results representative of groundwater conditions. A small area near the northwest corner of the Former UST Basin is likely contaminated with diesel-range petroleum hydrocarbons based on the August 2014 reconnaissance groundwater sample results and the June 2015 confirmation soil sample results collected during the interim remedial action from within the seasonal high groundwater interface (MFA, 2015). Groundwater flow has been observed to be from west to east, with variation in flow direction over time (GeoEngineers, 2014). Per the environmental covenant (Appendix A), use of groundwater from beneath the Site is prohibited.

3 SOIL MANAGEMENT PROCEDURES

This section describes protocols for managing potentially contaminated soils resulting from excavations and other soil-disturbing activities. All activities that disturb soil beneath existing graveled or paved surfaces, or building foundations (i.e., soils beneath the protective cap described in Section 4) must be conducted or overseen by workers who have appropriate hazardous site operations training (see Section 6.1). For all non-emergency projects in which potentially contaminated soils will be disturbed, notify Ecology before the start of work per requirements stipulated in the environmental covenant; in emergency situations (e.g., repair of a broken water line), notify Ecology as soon as is practical to do so.

3.1 Protective Cap Soil

Depending on the type of project, construction activities may be limited to disturbance of the protective cap zone. Protective soil cap disturbances do not involve any special handling or health and safety requirements (outside the standard construction health and safety protocol). If the protective soil cap is disturbed, reconstruction will be required. Additional detail regarding cap construction requirements is provided in Section 4.

3.2 Potentially Contaminated Soil

If construction activities require excavation below the established cap (e.g., gravel cap, pavement, concrete, building) and result in the disturbance of soil that may be contaminated, then the protocol presented in this section should be followed. Soil below the cap may be breached during future site activities, including but not limited to the following: utility or storm sewer construction or repair, underground structure or building foundation construction, and general earthwork and earth-moving activities. Worker safety requirements pertaining to handling of contaminated soil are provided in Section 6.1.

The final cap configurations for the Site are shown in Figure 4. Further description of cap restoration for each type of capping material is provided in Section 4. If activities on the Site are expected to result in handling of contaminated soils by a method that is inconsistent with this plan or using a cap profile different from that previously approved, Ecology must be notified prior to the action in accordance with requirements stipulated in the environmental covenant.

3.2.1 Excavation and Handling

Soil from beneath the cap should be handled separately from clean soil backfill and the clean protective cap soil material in an effort to avoid cross-contamination and to allow for reuse of the protective cap material as part of restoration activities. Contaminated soil can be handled either by placing it back where it was originally excavated; by placing and capping at a new, on-site location, consistent with approved cap construction requirements (see Section 4); or by disposing of the contaminated soil off site. If soil is excavated from locations and depths of known petroleum-related contamination (see Figure 3), then Ecology's Guidance for Remediation of Petroleum Contaminated Sites (Ecology, 2011) shall dictate on-site placement or off-site re-use options. Placement of contaminated soil generated from construction activities on any portions of the clean soil cap should be avoided. Excavation will be completed in a manner that minimizes dust generation and incorporates appropriate erosion control procedures that prevents stormwater from migrating onto the protective cap or off site.

3.2.2 Stockpiling

Any soil excavated from beneath the protective cap and temporarily (less than 90 days) stockpiled at the Site will be managed in a manner that minimizes erosion, contact with stormwater runoff, dust generation, and worker or public contact, unless the soil is immediately loaded into trucks for off-site disposal. If it is necessary to stockpile contaminated soil, it is preferable to stockpile the soil on

surfaces other than the clean soil cap. Soil temporarily held on site will be placed in stockpiles on impervious plastic sheeting (minimum 10-mil thickness). The stockpile shall be covered with plastic sheeting or equivalent material and secured by sandbags at the end of each workday to prevent erosion, dust generation, and direct contact by humans. The sheeting that covers the stockpile must be regularly inspected to ensure that it remains functional and protective of human health and the environment. Temporary stockpiles of contaminated soil must be managed as described in Section 3.2.5 within 90 days of completion of excavation work, unless written approval is obtained from Ecology for an alternative schedule.

Stockpiles that are disposed of off-site will be characterized as described in Section 3.2.5 before removal. Following the stockpile removal, the area beneath the separation material shall be inspected and any remaining stockpile soil shall be scraped, swept, or otherwise removed and properly disposed of.

3.2.3 Replacement at Original Excavation Location

If potentially contaminated soil is to be placed in the original excavation, stockpiles of soil are to be temporarily placed on an impermeable liner. The existing grade should be cleared of debris and any objects that have the potential to puncture the liner. A berm constructed of site soil, compost socks, or equivalent material approved by the engineer is to be installed along the perimeter of the stockpile. The bottom liner must extend up and over the perimeter berm. The cover should be secured with sandbags. Contaminated soil can be stockpiled for up to 90 days without a Resource Conservation and Recovery Act permit.

3.2.4 New Placement Location

If contaminated soil cannot be placed in the original excavation, then the soil may be used as backfill at other areas of the Site below an Ecology-approved cap. If soil is excavated from locations and depths of known petroleum-related contamination (see Figure 3), then Ecology's Guidance for Remediation of Petroleum Contaminated Sites (Ecology, 2011) shall dictate on-site placement or off-site re-use options. Instances that may potentially warrant a new placement location include large excavations for subgrade, footing, or utility trenches, where replacement in the original location is not possible. Upon approval of a new placement location, the material must be capped consistent with minimum capping guidelines described in Section 4. If new capping profiles or materials are proposed (outside of those listed in Section 4), preapproval from Ecology will be required.

3.2.5 Off-site Disposal

All soil originating from beneath the Site's protective cap should be assumed to contain contaminants above acceptable risk levels until sampling and analysis, described below, demonstrate otherwise. If impacted soil cannot be reused on the Site, then it must be disposed of appropriately at a licensed landfill. Soil must be characterized and managed consistent with the protocols described in this SMP or the current state and federal regulations applicable at the time of construction, if these are more restrictive.

Management of soil identified for off-site disposal will adhere to the following procedures:

- Obtain waste acceptance and disposal agreements for the material from the licensed disposal facility.
- Minimize spillage of contaminated material during truck loading; scrape, clean up, and dispose of any spilled material.
- Remove excess material from the truck, including from the tires, before leaving the loading area.
- Ensure that there are no free liquids in the material contained in the truck.

Stockpile characterization methodology and analytical requirements are provided in Appendix C.

Excavated material will be disposed of at a licensed disposal facility, depending on the results of the waste characterization.

4 PROTECTIVE CAP

The protective cap design comprises the following:

- Gravel cap
- Pavement cap with associated minimal landscaping areas
- Building cap

The following table summarizes each cap type, and the following subsections describe each of the cap components, including minimum design standards that would be applicable should any of the protective caps be removed or altered as a result of future development activities. It is also possible to propose new capping material and/or thickness. If new capping profiles or material are proposed (outside of what is listed below), approval from Ecology will be required. To expedite review, Ecology should be notified well in advance of development of the proposed capping profile or material changes.

**Table
Capping Options**

Type of Use	Typical Section
Gravel Cap	Compacted, crushed surfacing base course (min. thickness 2 inches)
Parking/driveways	Impermeable surface (min. thickness 3 inches) with clean sub-base as necessary for construction Associated landscaping areas to be kept to a minimum with clean top soil cover as appropriate to establish and maintain vegetation growth
Sidewalk/pathway	Impermeable surface (min. thickness 2.5 inches) with clean sub-base as necessary for construction

Type of Use	Typical Section
Building/structure	• Stem wall/footing foundation with min. 1-foot-thick, clean sub-base • Slab-on-grade (min. thickness 3 inches) with sub-base as necessary for construction

4.1 Gravel Cap Description

The gravel cap consists of a clean gravel layer to ensure the appropriate degree of protectiveness for ecological and human receptors from the impacted material that remains on the Site. Import gravel to be used as clean capping material requires approval from Ecology. The owner of the proposed fill material must hire a qualified environmental professional to obtain representative samples of the proposed fill material for laboratory analysis. The engineer and/or environmental professional will work with the site owner and Ecology to develop an appropriate sampling schedule. Samples will be analyzed by a certified environmental testing laboratory.

Additional testing may be required in order to determine the physical characteristics of the soil for geotechnical engineering purposes. Environmental analytical results will be compared to the most conservative screening level from the Ecology MTCA Method A soil CULs for unrestricted land uses and ecological indicator soil concentrations for protection of terrestrial plants, soil biota, and wildlife (WAC 173-340-7493(2)(a)(i)), except for analytes for which a natural background concentration has been established. When background concentrations are available, the applicable soil quality criteria will not be lower than the background concentrations.

4.2 Pavement Cap Description

Portions of the Site on which driveways, parking lots, patios, walkways, or sidewalks are constructed consist of the pavement cap. The pavement cap profiles have been designed to ensure the appropriate degree of protectiveness for ecological and human receptors from the impacted material that remains on the Site. The following describes the separate layers of the protective pavement cap, starting with the deepest:

- Sub-base
- Pavement (asphalt or concrete)

4.2.1 Sub-Base Layer

Before placement of clean materials, the subgrade (native soil) should be prepared consistent with geotechnical requirements. Following subgrade preparation, a base rock layer should be placed and compacted in accordance with design specifications. At a minimum, base rock should be placed in accordance with the current revision of the City of Yakima's Engineering Standards for Public Works Construction. The base rock should be imported from a verified clean source.

4.2.2 Asphalt Cap Construction

Asphalt used as a capping material should comply with the current revision of the City of Yakima's Engineering Standards for Public Works Construction.

4.2.3 Concrete Cap Construction

Concrete used as a capping material should comply with the current revision of the City of Yakima's Engineering Standards for Public Works Construction.

4.2.4 Landscaping Area Construction

Landscaping areas associated with pavement caps that serve as parking lots will be kept to the minimum required under City of Yakima development regulations. Certified clean, imported topsoil and associated groundcover materials will be placed landscape areas in sufficient quantity to establish and maintain landscape vegetation.

4.3 Building Cap Description

Construction of permanent buildings on the Site will effectively eliminate the potential for exposure to underlying contaminants. The following describes the separate layers of the protective building cap, starting with the deepest:

- Structural base
- Building foundation

4.3.1 Structural Base Layer

Before placement of clean materials, the subgrade (native soil) should be prepared consistent with geotechnical requirements. Following subgrade preparation and if determined warranted by a licensed geotechnical engineer, a structural fill layer should be placed and compacted in accordance with design specifications, with the material imported from a verified clean source.

4.3.2 Building Foundation

A licensed structural engineer should design the building foundations in accordance with the current revision of the International Building Code.

4.4 Other Capping Material

If surfacing materials other than those listed above are desired as part of future redevelopment activities, Ecology approval is required.

5 GROUNDWATER

Contaminated groundwater is known to exist beneath the Site, typically at least 12 feet bgs. Because of its depth, it is unlikely that groundwater will be generated during any on-site work (e.g., dewatering of excavations); however, should groundwater be generated in the future, it should be analyzed for the following to identify applicable disposal options:

- Metals (arsenic, cadmium, chromium, lead, manganese) by U.S. Environmental Protection Agency (USEPA) Method 200 Series
- Petroleum hydrocarbons by Ecology Method NWTPH-Dx, and -Gx
- VOCs (benzene, toluene, ethylbenzene and total xylenes) by USEPA Method 8260C

6 SITE CONTROLS

The generation of contaminated material triggers the requirement to implement specific site controls. These controls are required in order to protect the adjacent environment and reduce potential exposure of the nearby public to the contaminated material that remains capped at the Site.

6.1 Worker Health and Safety

All future redevelopment activities that penetrate the cap and thereby generate contaminated soil are to be conducted according to WAC 173-340-810; the Occupational Safety and Health Act (OSHA) of 1970 (29 U.S. Code Sec. 651 et seq.); the Washington Industrial Safety and Health Act (Chapter 49.17 Revised Code of Washington); and relevant regulations. The contractor will be required, before beginning work, to prepare a health and safety plan, which is to be available for review by Ecology upon request. The health and safety plan shall, at a minimum, set forth the requirements and protections for working in areas containing soil that may be chemically impacted, and shall include the following:

- Current Hazardous Waste Operations and Emergency Response (HAZWOPER) certification for workers disturbing impacted soil
- IHSs and site background
- Personal protective equipment
- Personal hygiene and decontamination protocols
- Medical surveillance
- Hazard communication and site control

- Recordkeeping and reporting

6.1.1 Qualified Personnel

The contractor will complete construction work in compliance with OSHA regulations (29 Code of Federal Regulations § 1910.120 and § 1926.65); workers in any area of the Site that is no longer contained by the protective cap and any workers who will come in contact with potentially contaminated material must be “qualified personnel.” The qualified personnel must have received the HAZWOPER standard 40-hour training, as well as received refresher training in the past year. Managers and supervisors directly overseeing the working crew must have received additional specialized training in hazardous-waste management supervision.

6.2 Access Restriction

In the event of construction on site with the potential to generate contaminated material, fencing should be maintained in order to restrict public access to areas of the Site that are no longer contained by a cap. Signage shall be posted on the fencing separating the public from uncapped areas.

6.3 Decontamination Procedures

Soil will be removed from equipment before the equipment leaves the controlled area. Vehicle tires that travel over soil deemed contaminated must be freed of soil by brushing, wheel wash, or another method that is appropriate to the work being performed before the vehicle leaves the controlled area in order to prevent tracking of potentially contaminated soil to clean portion of the Site or off site. Decontamination will be conducted in a manner that prevents the contamination of the protective cap.

Decontamination will be managed so that washwater does not migrate from the decontamination area.

Equipment and personnel decontamination procedures will be defined in the activity-specific health and safety plan.

6.4 Groundwater Use Restrictions

Groundwater use is restricted per the environmental covenant (Appendix A). Groundwater management is discussed in Section 5.

6.5 Use of Property

WAC 173-340-420 states that at sites where a cleanup action requires an institutional control, a periodic review shall be completed no less frequently than every five years after the initiation of a cleanup action. Actual review frequency at the Site will be determined by Ecology.

7 NOTIFICATION AND REPORTING

7.1 Notification and Reporting

Ecology is to be notified in accordance with requirements stipulated in the environmental covenant in advance of substantial development activities at the Site.

The contractor shall maintain weekly reports of field activities during any active construction that disturbs soil or other cap material on the Site. The property owner, per the environmental covenant, will prepare a project completion report to document the management of impacted soil for each project in which such work is conducted. The report will document the management techniques used, approximate volumes of materials handled, placement or disposal information, disposal manifests, and analytical data generated during management of the impacted material.

7.2 Recordkeeping

The property owner must maintain records to provide to any subsequent property owner, documenting the following:

- On-site placement of excavated soil, including delineation of the disposal areas and estimated volumes
- Off-site disposal of excavated soil, including waste characterization, shipping manifests, and disposal certificates
- Cap breach reports, including where the cap was breached, methods for replacement, materials used, and any analytical results

8 PROTECTIVE CAP MONITORING AND MAINTENANCE

The protective cap requires regular and routine inspection for evaluation and maintenance of its integrity. Monitoring and, if required, maintenance should be conducted annually, at a minimum. This will provide an opportunity to correct small, localized failures before they become larger, more detrimental failures. In addition to annual inspection, an inspection is to take place after a large natural disaster occurs in close proximity to the Site, or any other large-scale disturbance occurs near or at the Site. As the cap is the primary barrier protecting human and ecological receptors from the remaining impacted soil, it is imperative that the cap maintain its intended integrity. This section outlines the monitoring and inspection procedure for each of the protective capping materials.

The person conducting the monitoring should complete the monitoring worksheet provided in Appendix D. The main purpose of the monitoring event is to document current conditions of capping materials. The documentation can be used as a reference to evaluate severity of cap degradation in comparison to the cap's condition during previous monitoring events and determine if corrective action is required.

8.1 Protective Cap Inspection

This section describes the minimum observation and monitoring requirements per inspection for each component of the overall protective cap.

8.1.1 Gravel Cap

The following defines the minimum observation and monitoring requirements per inspection for a gravel cap. All recorded observations (using the worksheet in Appendix D) should be accompanied by documenting photographs:

- Overall cap condition
- Visible rills or gullies
- Evidence of stormwater ponding or concentrated flow

8.1.2 Pavement Cap

The following defines the minimum observation and monitoring requirements per inspection for all pavement-related caps at the Site. All recorded observations should be accompanied by documenting photographs:

- Overall cap condition
- Evidence of cracking, buckling, or subgrade shifting
- Observed alligatored areas (areas with numerous intersecting cracks)

8.1.3 Building Cap

The following define the minimum observation and monitoring requirements per inspection for building caps. All recorded observations should be accompanied by documenting photographs:

- Overall cap condition
- Visible cracks in the foundation

8.2 Corrective Action

If evidence of erosion or failure is observed in any of the abovementioned caps, the person conducting the inspection and reporting should consult with the engineer. The engineer may decide that additional analysis or observation may be necessary in order to determine if the damage will

reduce the effectiveness of the protective cap. Corrective action will be evaluated on a case-by-case basis according to the type and/or severity of damage and the urgency. The following should be conducted in order to document damage and to evaluate a plan for corrective action:

1. Engineer's internal review of inspection reports and photographs
2. Site visit by the engineer to review damage
3. Additional measurement or analysis (survey, sample collection, or analysis)
4. Consultation with Ecology regarding the damage or deterioration and the engineering assessment
5. Proposal for repair prepared by the engineer (if determined necessary)
6. Contract with an appropriately certified and licensed contractor for completion of repair work (if needed)

8.3 Protective Cap Maintenance

This section describes the minimum maintenance requirements for each component of the overall protective cap.

8.3.1 Gravel Cap

Gravel cap maintenance will be conducted dependent on the findings of the annual monitoring report. If areas of the gravel cap have eroded, maintenance to replace the eroded areas with gravel will be required.

8.3.2 Pavement Cap

Pavement cap maintenance should be conducted if evidence of significant cracking or buckling (e.g., formation of pot holes) is observed. Areas that show these failures shall be maintained by the application of a corrective patch of asphalt or concrete, as appropriate.

8.3.3 Building Cap

Building foundations are not anticipated to require significant maintenance over the life of the building. Any maintenance to the building foundation should be completed in accordance with a licensed structural engineer's recommendations.

LIMITATIONS

The services undertaken in completing this plan were performed consistent with generally accepted professional consulting principles and practices. No other warranty, express or implied, is made. These services were performed consistent with our agreement with our client. This plan is solely for the use and information of our client unless otherwise noted. Any reliance on this plan by a third party is at such party's sole risk.

Opinions and recommendations contained in this plan apply to conditions existing when services were performed and are intended only for the client, purposes, locations, time frames, and project parameters indicated. 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, or the use of segregated portions of this plan.

REFERENCES

Ecology, 2011. Guidance for remediation of petroleum contaminated sites. Publication No. 10-09-057. Washington State Department of Ecology, Olympia, Washington. September.

GeoEngineers. 2015a. Soil and groundwater assessment report. Yakima, Washington. Washington State Department of Ecology.

GeoEngineers. 2015b. Quarterly groundwater monitoring—fourth quarter 2014. Yakima, Washington. Washington State Department of Ecology.

Maul Foster and Alongi. 2015. Interim remedial action completion report. Yakima, Washington. Washington State Department of Ecology.

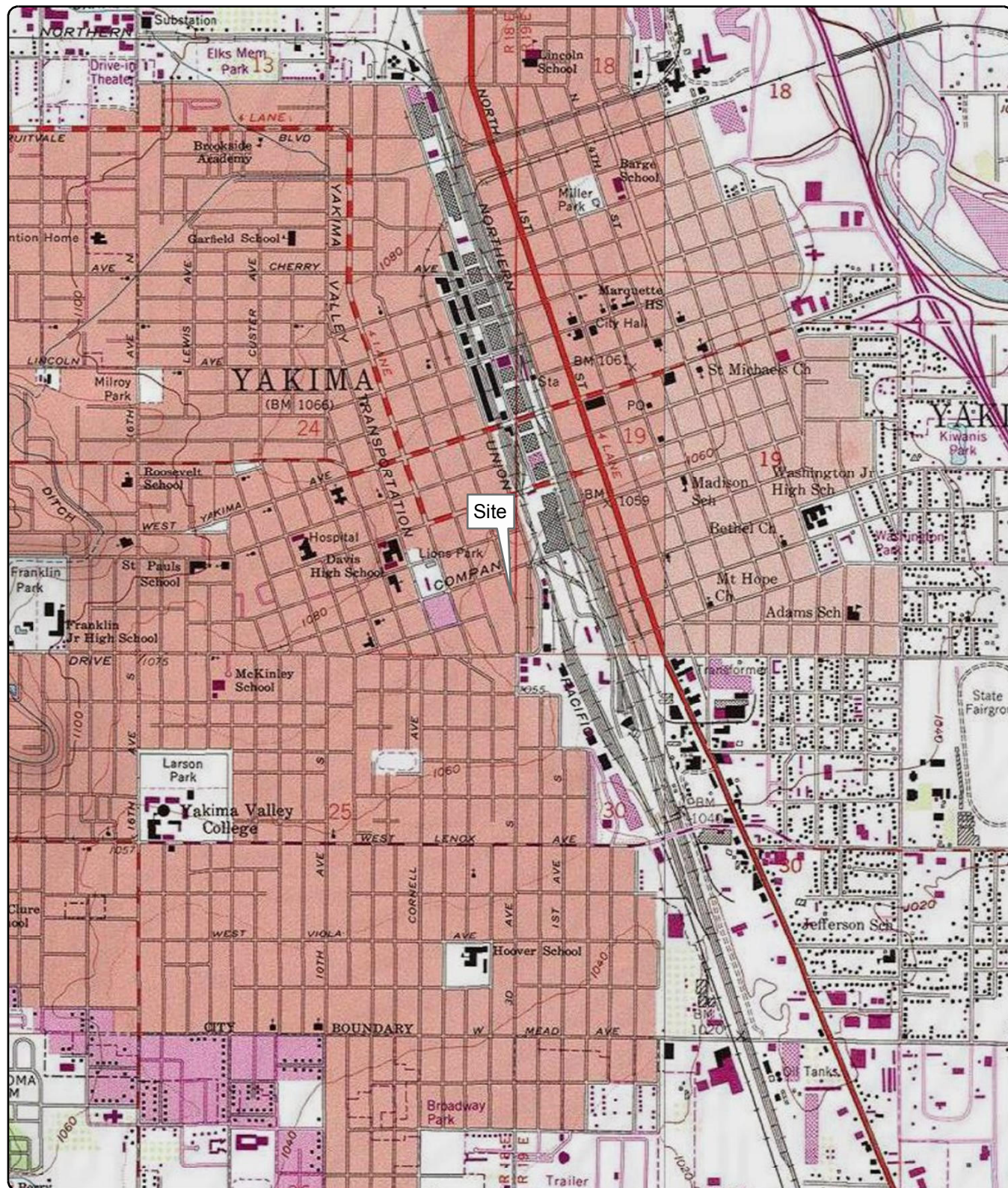
Shannon and Wilson, Inc. 1996. Level I environmental site assessment clinic property, Yakima, Washington. Washington State Department of Ecology.

USPCI. 1990. Trolley barn UST closure site assessment report. Submitted to Washington State Department of Ecology. U.S. Pollution Control, Inc.

Yakima Valley Trolleys. 2015. Yakima Valley trolleys. General history. Yakima Valley Transportation Company.

FIGURES





Site Address: 404 S 3rd Ave, Yakima, Washington
 Source: US Geological Survey (1990) 7.5-minute
 topographic quadrangle: Yakima West
 Section 24, Township 13 North, Range 18 East

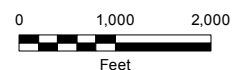
Figure 1
Site Location

Trolley Barn Site
 Yakima, Washington



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This product is for informational purposes and may not have been prepared for, or be suitable for, legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



Path: X:\0818.03 City of Yakima - Trolley Barn\Project\management\plan\Fig2_Site Features.mxd
Print Date: 6/30/2015
Approved By: Jcawley
Produced By: Jmiller
Project: 0818.03



Source: Aerial photograph obtained from Esri ArcGIS Online

Notes:
AST = aboveground storage tank
UST = underground storage tank

 MAUL FOSTER ALONGI
p. 971 544 2139 | www.maulfooster.com

This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.

Legend

-  Former UST
-  Former Structure Footprints
-  Parcel Boundaries
-  Former UST Basin

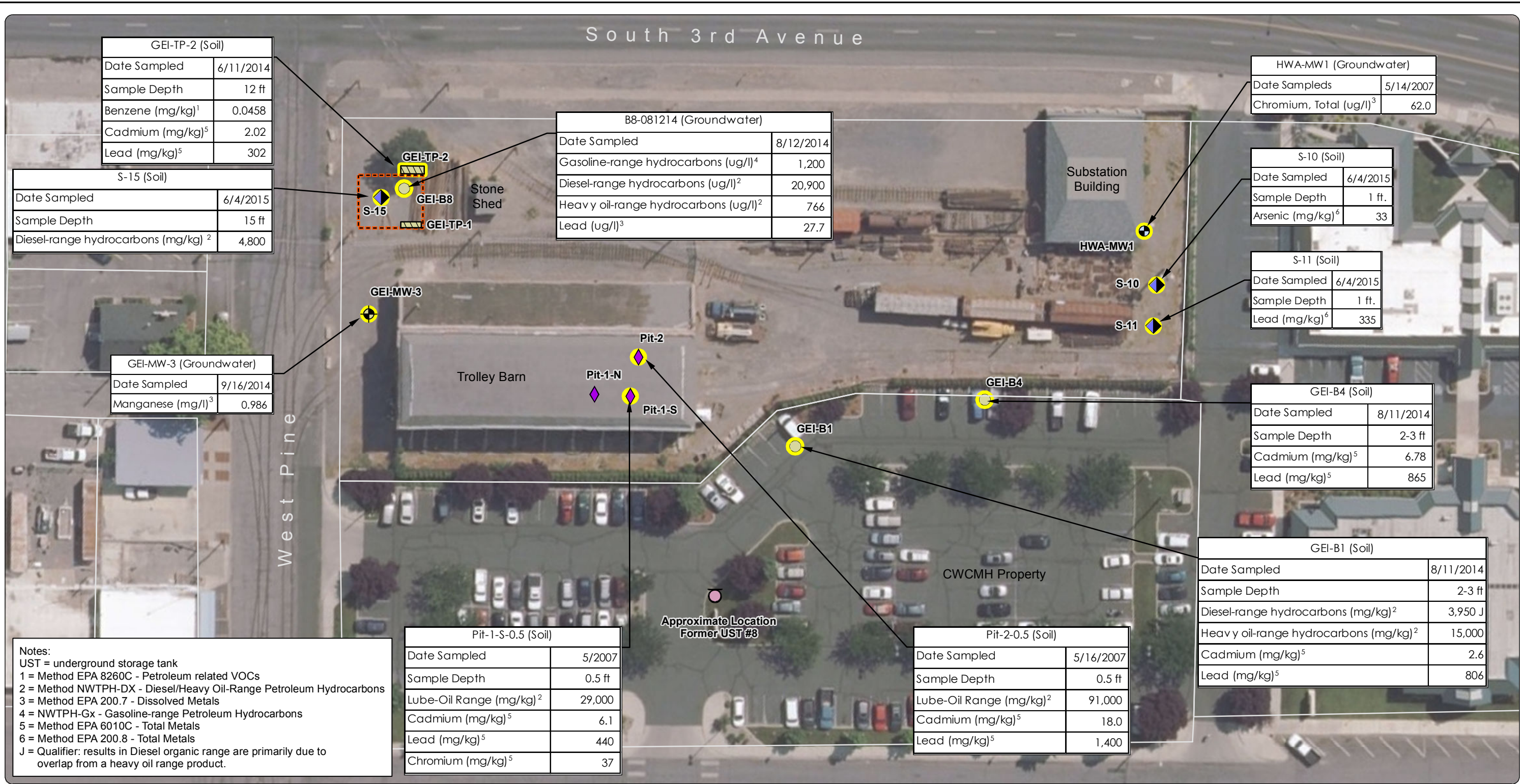
Figure 2
Site Features and
Areas of Interest

Trolley Barn Site
Yakima, Washington

0 25 50
Feet



Path: X:\0818.03 City of Yakima - Trolley Barn\Projects\soilmanagement\planFig3_Extent of Contamination2.mxd
Print Date: 7/1/2015
Approved By: jcwley
Produced By: jchane
Project: 0818.03



Source: Aerial photograph obtained from Esri ArcGIS Online

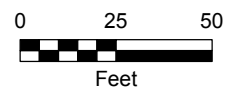
Legend

- Parcel Boundaries
- Former UST Basin
- MTCA Method A Cleanup Level Exceedance
- Soil Confirmation Sample (MFA, 2015)
- Monitoring Well (HWA GeoSciences, 2007)
- Soil Borings (GeoEngineers, 2014)
- Monitoring Wells (GeoEngineers, 2014)
- Test Pits (HWA GeoSciences, 2007)
- Former UST #8
- Test Pits (GeoEngineers, 2014)

Note:
Shallow soil below cap contaminated with heavy metals throughout the site

Figure 3
Extent of Contamination

Trolley Barn Site
Yakima, Washington





Source: Aerial photograph obtained from Esri ArcGIS Online

Figure 4
Protective Cap Layout

Trolley Barn Site
Yakima, Washington

Legend

	Building Cap		2"-4"
	Pavement Cap		4"
	Gravel Cap Depth		4"-6"
	1"-2"		6"



APPENDIX A

ENVIRONMENTAL COVENANT



After Recording Return
Original Signed Covenant to:
Mary Monahan
Toxics Cleanup Program
Department of Ecology
1250 W. Alder Street
Union Gap, Washington 98903-0009

Environmental Covenant
(5/7/14 version)

Grantor: City of Yakima, Washington
Grantee: State of Washington, Department of Ecology
Brief Legal Description: See Exhibit A
Tax Parcel Nos.: Yakima County parcel no. 181324-44465

NOTE: *This Covenant should not be recorded without Ecology's approval and signature.*
Grantors must have a title search conducted within the last 6 months to identify all recorded interests in the Property including title holders, holders of other interests (such as easements, right of ways, water & mineral rights), and encumbrances (such as lien and mortgage holders). The results of this search, typically called a title report or plat certificate, must be included with any request asking Ecology to sign a Covenant. A update to the title search should be provided to Ecology along with the request to sign the final covenant.

RECITALS

- a.** This document is an environmental (restrictive) covenant (hereafter "Covenant") executed pursuant to the Model Toxics Control Act ("MTCA"), chapter 70.105D RCW and Uniform Environmental Covenants Act ("UECA"), chapter 64.70 RCW.
- b.** The Property that is the subject of this Covenant is part or all of a site commonly known as Yakima Valley Transportation Co. Trolley Barn Site, Facility Site No. 9688850, Cleanup Site No. 2190. The Property is legally described in Exhibit A, and illustrated in Exhibit B, both of which are attached (hereafter "Property"). If there are differences between these two Exhibits, the legal description in Exhibit A shall prevail.
- c.** The Property is the subject of remedial action under MTCA. This Covenant is required because residual contamination remains on the Property after completion of remedial actions. Specifically, the following principle contaminants remain on the Property:

Medium	Principle Contaminants Present
Soil	lead, arsenic, mercury, cadmium, chromium, benzene, diesel-range petroleum hydrocarbons, and heavy oil-range petroleum hydrocarbons
Groundwater	carcinogenic polycyclic aromatic hydrocarbons, diesel-, gasoline- and heavy oil-range petroleum hydrocarbons, lead, and manganese
Surface Water/Sediment	Not applicable

d. It is the purpose of this Covenant to restrict certain activities and uses of the Property to protect human health and the environment and the integrity of remedial actions conducted at the site. Records describing the extent of residual contamination and remedial actions conducted are available through the Washington State Department of Ecology. This includes the interim remedial action completion report prepared by Maul Foster & Alongi, Inc. dated June 2015.

e. This Covenant grants the Washington State Department of Ecology, as holder of this Covenant, certain rights specified in this Covenant. The right of the Washington State Department of Ecology as a holder is not an ownership interest under MTCA, Chapter 70.105D RCW or the Comprehensive Environmental Response, Compensation, and Liability Act ("CERCLA") 42 USC Chapter 103.

COVENANT

City of Yakima, as Grantor and fee simple owner of the Property hereby grants to the Washington State Department of Ecology, and its successors and assignees, (hereafter "Ecology") the following covenants. Furthermore, it is the intent of the Grantor that such covenants shall run with the land and be binding on all current and future owners of any portion of, or interest in, the Property.

Section 1. General Restrictions and Requirements.

The following general restrictions and requirements shall apply to the Property:

a. Interference with Remedial Action. The Grantor shall not engage in any activity on the Property that may impact or interfere with the remedial action and any operation, maintenance, inspection or monitoring of that remedial action without prior written approval from Ecology.

b. Protection of Human Health and the Environment. The Grantor shall not engage in any activity on the Property that may threaten continued protection of human health or the environment without prior written approval from Ecology. This includes, but is not limited to, any activity that results in the release of residual contamination that was contained as a part of the remedial action or that exacerbates or creates a new exposure to residual contamination remaining on the Property.

c. Continued Compliance Required. Grantor shall not convey any interest in any portion of the Property without providing for the continued adequate and complete operation, maintenance and monitoring of remedial actions and continued compliance with this Covenant.

d. Leases. Grantor shall restrict any lease for any portion of the Property to uses and activities consistent with this Covenant and notify all lessees of the restrictions on the use of the Property.

e. Amendment to the Covenant. Grantor must notify and obtain approval from Ecology at least sixty (60) days in advance of any proposed activity or use of the Property in a manner that is inconsistent with this Covenant. Before approving any proposal, Ecology must issue a public notice and provide an opportunity for the public to comment on the proposal. If Ecology approves the proposal, the Covenant will be amended to reflect the change.

Section 2. Specific Prohibitions and Requirements.

In addition to the general restrictions in Section 1 of this Covenant, the following additional specific restrictions and requirements shall apply to the Property.

a. Land use.

The remedial action for the Property is based on a cleanup designed for commercial property. As such, the Property shall be used in perpetuity only for commercial land uses as that term is defined in the rules promulgated under Chapter 70.105D RCW. Prohibited uses on the Property include but are not limited to residential uses, childcare facilities, K-12 public or private schools, parks, grazing of animals, and growing of food crops.

b. Containment of soil/waste materials.

The remedial action for the Property is based on containing contaminated soil [and waste materials] under a cap consisting of 0.2 to 0.5 foot thick layer of clean soil and located as illustrated in Exhibit B. The primary purpose of this cap is to minimize the potential for contact with the contaminated soil. As such, the following restrictions shall apply within the area illustrated in Exhibit B:

Any activity on the Property that will compromise the integrity of the cap including: drilling; digging; piercing the cap with sampling device, post, stake or similar device; grading; excavation; installation of underground utilities; removal of the cap; or, application of loads in excess of the cap load bearing capacity, is prohibited without prior written approval by Ecology. The Grantor shall report to Ecology within forty-eight (48) hours of the discovery of any damage to the cap. Unless an alternative plan has been approved by Ecology in writing, the Grantor shall promptly repair the damage and submit a report documenting this work to Ecology within thirty (30) days of completing the repairs.

c. Stormwater facilities.

To minimize the potential for mobilization of contaminants remaining in the soil and/or groundwater on the Property, no stormwater infiltration facilities or ponds shall be constructed on the Property. All stormwater catch basins, conveyance systems, and other appurtenances located within this area shall be of water-tight construction.

d. Groundwater use.

The groundwater beneath the Property remains contaminated and shall not be extracted for any purpose other than temporary construction dewatering, investigation, monitoring or remediation. Drilling of a well for any water supply purpose is strictly prohibited. Groundwater extracted from the Property for any purpose shall be considered potentially contaminated and any discharge of this water shall be done in accordance with state and federal law.

e. Monitoring

Several groundwater monitoring wells are located on the Property to monitor the performance of the remedial action. The Grantor shall maintain clear access to these devices and protect them from damage. The Grantor shall report to Ecology within forty-eight (48) hours of the discovery of any damage to any monitoring device. Unless Ecology approves of an alternative plan in writing, the Grantor shall promptly repair the damage and submit a report documenting this work to Ecology within thirty (30) days of completing the repairs.

Section 3. Access.

- a. The Grantor shall maintain clear access to all remedial action components necessary to construct, operate, inspect, monitor and maintain the remedial action.
- b. The Grantor freely and voluntarily grants Ecology and its authorized representatives, upon reasonable notice, the right to enter the Property at reasonable times to evaluate the effectiveness of this Covenant and associated remedial actions, and enforce compliance with this Covenant and those actions, including the right to take samples, inspect any remedial actions conducted on the Property, and to inspect related records.
- c. No right of access or use by a third party to any portion of the Property is conveyed by this instrument.

Section 4. Notice Requirements.

a. **Conveyance of Any Interest.** The Grantor, when conveying any interest in any part of the Property, including but not limited to title, easement, leases, and security or other interests, must:

- i. Notify Ecology at least thirty (30) days in advance of the conveyance.
- ii. Include in the conveying document a notice in substantially the following form, as well as a complete copy of this Covenant:

NOTICE: THIS PROPERTY IS SUBJECT TO AN ENVIRONMENTAL COVENANT GRANTED TO THE WASHINGTON STATE DEPARTMENT OF ECOLOGY ON [DATE] AND RECORDED WITH THE YAKIMA COUNTY AUDITOR UNDER RECORDING NUMBER [RECORDING NUMBER]. USES AND ACTIVITIES ON THIS PROPERTY MUST COMPLY WITH THAT COVENANT, A COMPLETE COPY OF WHICH IS ATTACHED TO THIS DOCUMENT.

- iii. Unless otherwise agreed to in writing by Ecology, provide Ecology with a complete copy of the executed document within thirty (30) days of the date of execution of such document.
- b. **Reporting Violations.** Should the Grantor become aware of any violation of this Covenant, Grantor shall promptly report such violation to Ecology.
- c. **Emergencies.** For any emergency or significant change in site conditions due to Acts of Nature (for example, flood, fire) resulting in a violation of this Covenant, the Grantor is authorized to respond to such an event in accordance with state and federal law. The Grantor must notify Ecology of the event and response actions planned or taken as soon as practical but no later than within 24 hours of the discovery of the event.
- d. Any required written notice, approval, or communication shall be personally delivered or sent by first class mail to the following persons. Any change in this contact information shall be submitted in writing to all parties to this Covenant.

City of Yakima City Manager	Environmental Covenants Coordinator Washington State Department of Ecology
--------------------------------	---

129 N. 2 nd Street Yakima, WA 98901 (509) 575-6000	Toxics Cleanup Program P.O. Box 47600 Olympia, WA 98504 – 7600 (360) 407-6000
---	--

As an alternative to providing written notice and change in contact information by mail, these documents may be provided electronically in an agreed upon format at the time of submittal.

Section 5. Modification or Termination.

- a. If the conditions at the site requiring a Covenant have changed or no longer exist, then the Grantor may submit a request to Ecology that this Covenant be amended or terminated. Any amendment or termination of this Covenant must follow the procedures in Chapter 64.70 RCW and Chapter 70.105D RCW and any rules promulgated under these chapters.
- b. By signing this agreement, per RCW 64.70.100, the original signatories to this agreement, other than Ecology, agree to waive all rights to sign amendments to and termination of this Covenant.

Section 6. Enforcement and Construction.

- a. This Covenant is being freely and voluntarily granted by the Grantor.
- b. Grantor shall provide Ecology with an original signed Covenant and proof of recording within ten (10) days of execution of this Covenant.
- c. Ecology shall be entitled to enforce the terms of this Covenant by resort to specific performance or legal process. All remedies available in this Covenant shall be in addition to any and all remedies at law or in equity, including Chapter 70.105D RCW and Chapter 64.70 RCW. Enforcement of the terms of this Covenant shall be at the discretion of Ecology, and any forbearance, delay or omission to exercise its rights under this Covenant in the event of a breach of any term of this Covenant is not a waiver by Ecology of that term or of any subsequent breach of that term, or any other term in this Covenant, or of any rights of Ecology under this Covenant.
- d. The Grantor, upon request by Ecology, shall be obligated to pay for Ecology's costs to process a request for any modification or termination of this Covenant and any approval required by this Covenant.
- e. This Covenant shall be liberally construed to meet the intent of the Model Toxics Control Act, chapter 70.105D RCW and Uniform Environmental Covenants Act, chapter 64.70 RCW.
- f. The provisions of this Covenant shall be severable. If any provision in this Covenant or its application to any person or circumstance is held invalid, the remainder of this Covenant or its application to any person or circumstance is not affected and shall continue in full force and effect as though such void provision had not been contained herein.
- g. A heading used at the beginning of any section or paragraph or exhibit of this Covenant may be used to aid in the interpretation of that section or paragraph or exhibit but does not override the specific requirements in that section or paragraph.

The undersigned Grantor warrants he/she holds the title to the Property and has authority to execute this Covenant.

EXECUTED this _____ day of _____, 2015.

CITY OF YAKIMA, WASHINGTON

Tony O'Rourke
City Manager

Dated: _____

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Valerie Bound
Central Region Section Manager
Toxics Cleanup Program

Dated: _____

GRANTOR CORPORATE ACKNOWLEDGMENT

STATE OF WASHINGTON
COUNTY OF YAKIMA

On this _____ day of _____, 20__, I certify that _____ personally appeared before me, acknowledged that **he/she** is the _____ of the corporation that executed the within and foregoing instrument, and signed said instrument by free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that **he/she** was authorized to execute said instrument for said corporation.

Notary Public in and for the State of
Washington, residing at _____.
My appointment expires_____.

Exhibit A

LEGAL DESCRIPTION

(Required)

Exhibit B

PROPERTY MAP

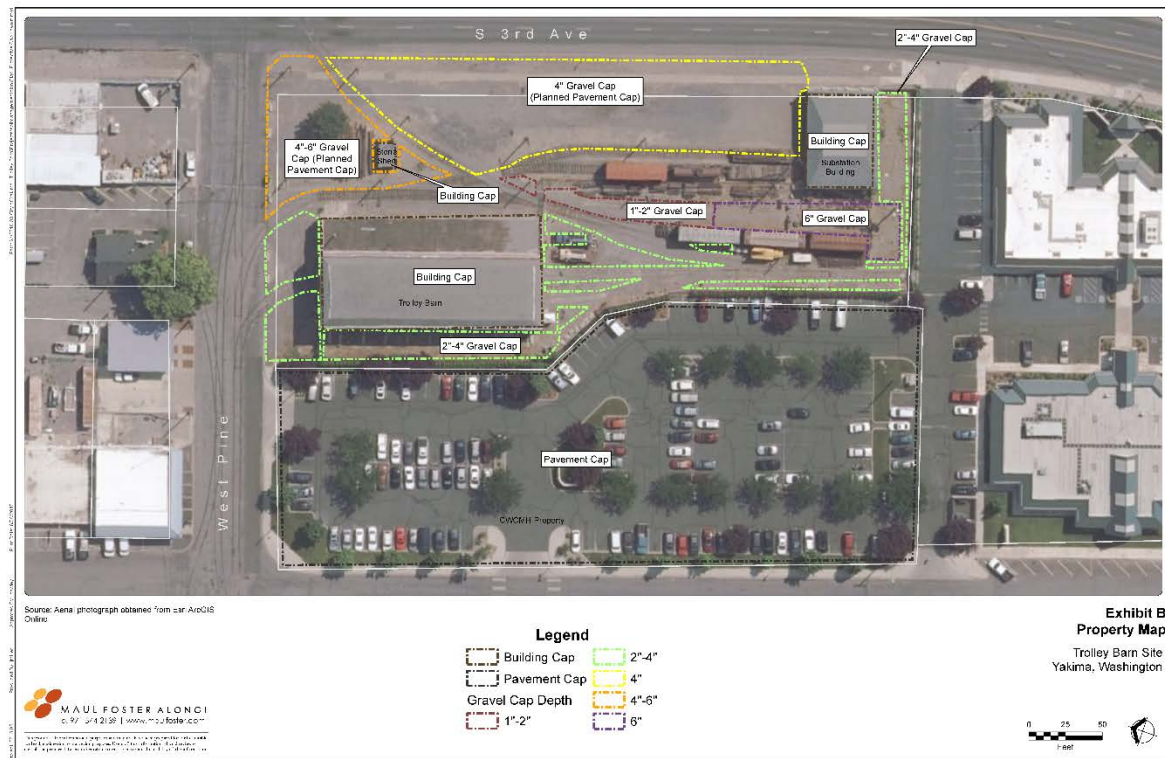


Exhibit C

SUBORDINATION AGREEMENT

KNOW ALL PERSONS, That _____, the owner and holder of that certain _____ (Instrument) bearing the date the _____ day of _____, 20____, executed by _____, _____, and recorded in the office of the County Auditor of _____ County, State of Washington, on the _____, 20____, under Auditor's File Number _____, does hereby agree that said Instrument shall be subordinate to the interest of the State of Washington, Department of Ecology, under the environmental (restrictive) covenant dated _____, 20____, executed by _____, and recorded in _____ County, Washington under Auditor's File Number _____.

Dated _____, 20____.

NAME

STATE OF WASHINGTON
COUNTY OF YAKIMA

On this _____ day of _____, 20____, I certify that _____ personally appeared before me, and acknowledged that **he/she** is the individual described herein and who executed the within and foregoing instrument and signed the same at **his/her** free and voluntary act and deed for the uses and purposes therein mentioned.

Notary Public in and for the State of
Washington, residing at _____.
My appointment expires_____.

APPENDIX B

PREVIOUS INVESTIGATION RESULTS



008037 CRO

SITE ASSESSMENT REPORT
UNDERGROUND STORAGE TANK CLOSURE
AT
UNION PACIFIC RAILROAD
Yakima branch
Tanks 6, 7, and 8

LUST

November 1990

DEPARTMENT OF ECOLOGY
UNDERGROUND STORAGE TANKS
RECEIVED
NOV 13 1990

By
U.S. Pollution Control, Inc. (USPCI)
5665 Flatiron Parkway
Boulder, CO 80301



USPCI, INC.

Remedial Services

November 8, 1990

Susan Bergdorf
Underground Storage Tank Notification
Hazardous and Solid Waste Program
Department of Ecology, M/S PV-11
Olympia, WA 98504-8711

RE: Underground storage tank (UST) removal at Union Pacific's
Yakima Branch

Dear Ms. Bergdorf:

U.S. Pollution Control, Inc. (USPCI) has recently completed a closure of eight USTs in the Union Pacific Railroad system. Enclosed is the closure report for three of these tanks located at Yakima Branch in Yakima County, Washington. We are pleased to report that no evidence of leakage was discovered for tanks 6, 7, and 8. A clean closure report was prepared in January of 1990 for tanks 2, 3, and 5. It was determined that tanks 1 and 4 were leaking and a site investigative report has been prepared separately.

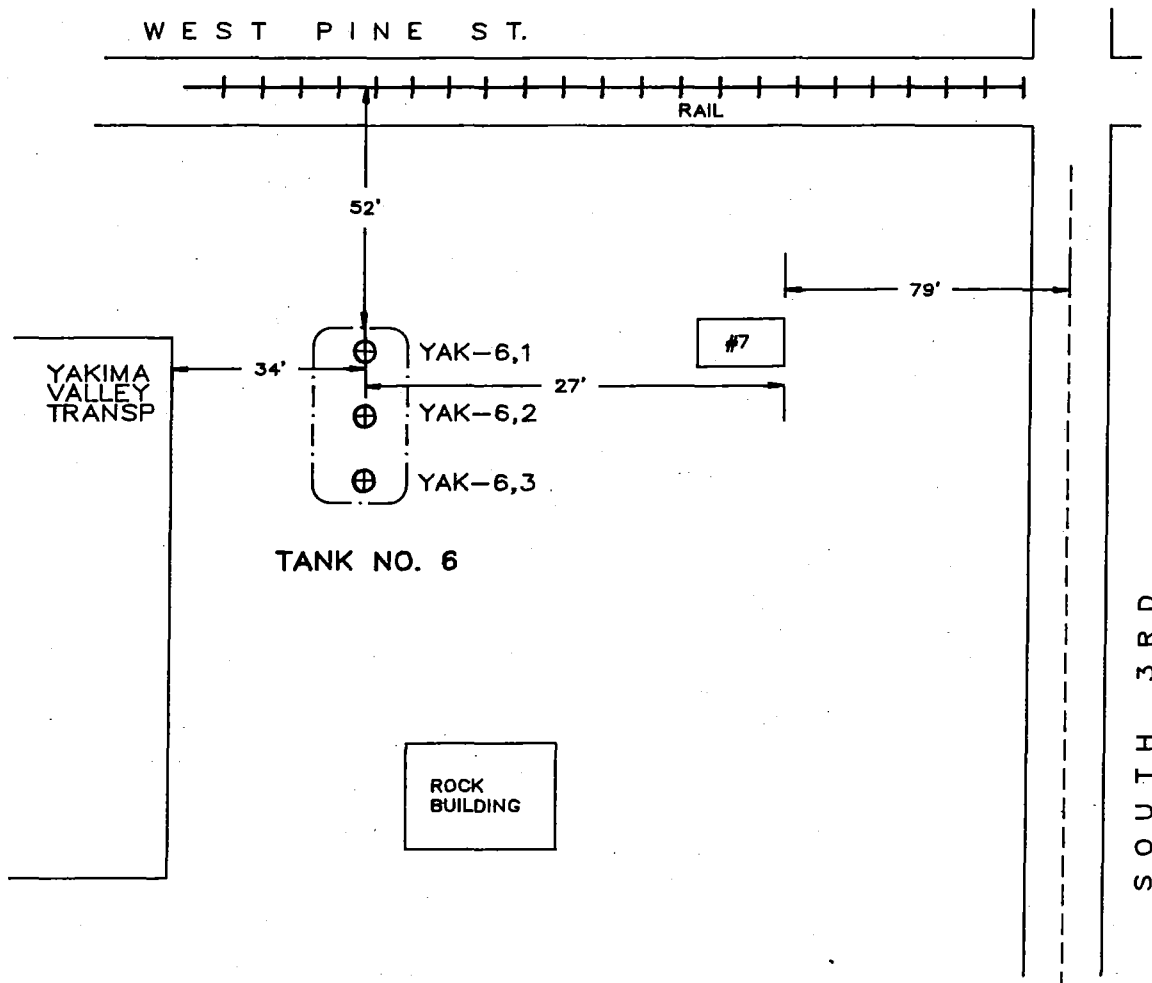
If you have any questions, please do not hesitate to call.

Sincerely,

Curt Hull
Program Manager
Environmental Assessments

Enclosure

cc: Alan Jensen, UPRR
Roger Fitch, UPRR
John Yellich, USPCI
Steve Beck, USPCI



LEGEND

- ⊕ SAMPLE LOCATION
- - - - EXCAVATION BOUNDARY

USPCI

A Subsidiary of
Union Pacific Corporation

UNION PACIFIC RAILROAD

SITE PLAN
YAKIMA, WASHINGTON

SCALE

NONE

APPROVED/DATE



WEST PINE ST.

RAIL

YAKIMA
VALLEY
TRANSP

ROCK
BUILDING

YAK-7,3
YAK-7,2
YAK-7,1

57'

79'

TANK NO. 7

SOUTH 3RD

LEGEND



SAMPLE LOCATION



EXCAVATION BOUNDARY

USPCI

A Subsidiary of
Union Pacific Corporation

UNION PACIFIC RAILROAD

SITE PLAN
YAKIMA, WASHINGTON

SCALE

NONE

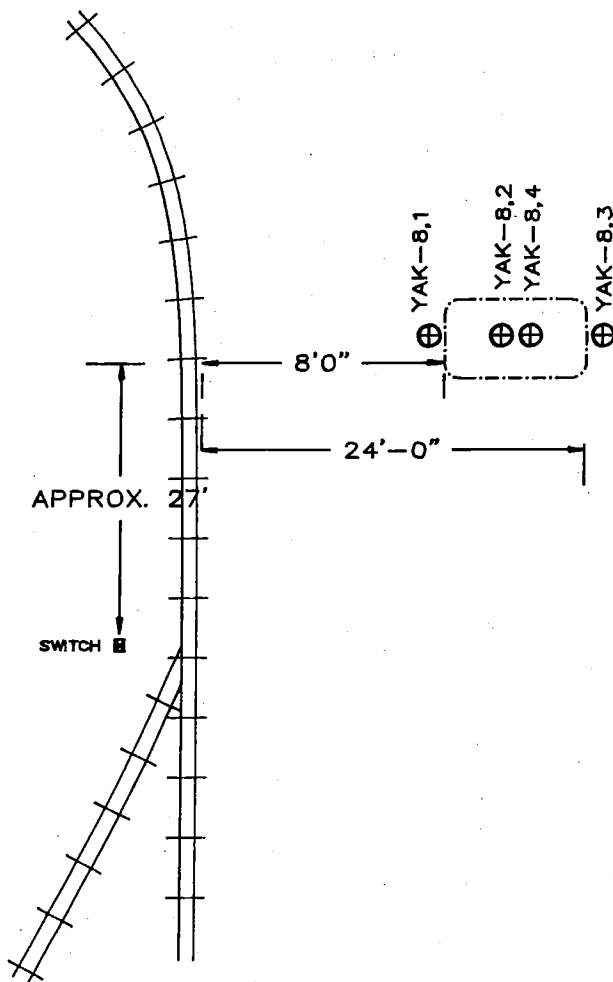
APPROVED/DATE



WEST PINE STREET

YAKIMA
VALLEY
CAR BARN

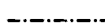
SOUTH 4TH



LEGEND



SAMPLE LOCATION



EXCAVATION BOUNDARY

USPCI

A Subsidiary of
Union Pacific Corporation

UNION PACIFIC RAILROAD

SITE PLAN
YAKIMA, WASHINGTON

SCALE: NONE

APPROVED/DATE



Industrial LABORATORIES

THE INDUSTRIAL LABORATORIES COMPANY

Complete Consulting Chemistry Service
Bacteriological & Analytical Testing

1450 East 62nd Avenue
P.O. Box 16207
Denver, Colorado 80216
(303) 287-9691 FAX (303) 287-0964

Analysis Report

USPCI, INC.
5665 FLATIRON PARKWAY
BOULDER, CO 80301
CURT G. HULL

Page: 1
Date Received: 08/22/90
Date Reported: 08/29/90
Lab Number: 5684
Customer P.O.: 93409

Sample Marked: SOIL, UST, UPRR, PROJECT 93409

SAMPLE NO	TOTAL PET- ROLEUM HY- DROCARBONS PPM	BENZENE PPM	TOLUENE PPM	XYLENE PPM	ETHYL- BENZENE PPM
BENTON CITY 1-1-N. 6/15/90	100	ND<0.2	ND<0.2	ND<0.2	ND<0.2
BENTON CITY. 1-2-C. 6/15/90	30	0.7	1.6	ND<0.2	ND<0.2
BENTON CITY. 1-3-S. 6/15/90	70	0.6	1.0	ND<0.2	ND<0.2
KENNEWICK 1-1-N. 6/15/90	10	ND<0.2	0.3	ND<0.2	ND<0.2
KENNEWICK 1-2-C. 6/15/90	20	0.6	0.9	ND<0.2	ND<0.2
KENNEWICK 1-3-S. 6/15/90	110	3.0	5.1	ND<0.2	ND<0.2
WALLULA 1-1-C. 6/15/90	15	1.1	1.7	ND<0.2	ND<0.2
WALLULA 1-2-E. 6/15/90	12	1.0	1.8	ND<0.2	ND<0.2
WALLULA 1-3-W. 6/15/90	55	ND<0.2	0.5	ND<0.2	ND<0.2
YAKIMA 8-4-C. 6/13/90	35	0.4	0.7	ND<0.2	ND<0.2
KALEN 1-1-N. 6/12/90	25	0.6	1.1	ND<0.2	ND<0.2
KALEN 1-2-C. 6/12/90	45	1.0	1.7	ND<0.2	ND<0.2

CONTINUED ON NEXT PAGE

CONTINUED ON NEXT PAGE

Receipt of analysis services acknowledges the terms and conditions on the reverse side and acknowledges that they are part of this order.



industrial LABORATORIES

THE INDUSTRIAL LABORATORIES COMPANY

Complete Consulting Chemistry Service
Bacteriological & Analytical Testing

1450 East 62nd Avenue
P.O. Box 16207
Denver, Colorado 80216
(303) 287-9691 FAX (303) 287-0964

Analysis Report

USPCI, INC.
5665 FLATIRON PARKWAY
BOULDER, CO 80301
CURT G. HULL

Page: 2
Date Received: 06/22/90
Date Reported: 08/29/90
Lab Number: 5684
Customer P.O.: 93409

Sample Marked: SOIL, UST, UPRR, PROJECT 93409

SAMPLE NO	TOTAL PET- ROLEUM HY- DROCARBONS PPM	BENZENE PPM	TOLUENE PPM	XYLENE PPM	ETHYL- BENZENE PPM
KALEN 1-3-S. 6/12/90	20	0.7	1.8	ND<0.2	ND<0.2
YAKIMA 7-1-E. 6/13/90	40	12.9	29.1	0.5	1.3
YAKIMA 7-2-C. 6/13/90	45	2.4	4.0	ND<0.2	ND<0.2
YAKIMA 7-3-W. 6/123/90	10				
YAKIMA 7-3-W. 6/13/90		1.9	3.1	ND<0.2	ND<0.2
YAKIMA 8-1-E. 6/13/90	20	0.5	1.0	ND<0.2	ND<0.2
YAKIMA 8-2-C. 6/13/90	20	ND<0.2	0.5	ND<0.2	ND<0.2
YAKIMA 8-3-W. 6/13/90	70	ND<0.2	ND<0.2	ND<0.2	ND<0.2
YAKIMA 8-1-N. 6/14/90	60	3.3	5.5	ND<0.2	ND<0.2
YAKIMA 8-2-C. 6/15/90	85	0.5	1.1	ND<0.2	ND<0.2
YAKIMA 8-3-S. 6/14/90	25	0.9	1.7	ND<0.2	ND<0.2
GRANDVIEW 6-1-N. 6/15/90	50	0.3	1.4	ND<0.2	ND<0.2

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CONTINUED ON NEXT PAGE

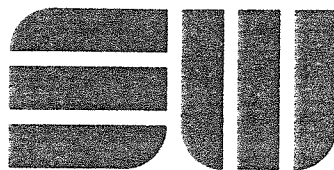
Receipt of analysis services acknowledges the terms and conditions on the reverse side and acknowledges that they are part of this order.

***Central Washington
Comprehensive Mental Health
Phase II Environmental Site
Assessment
Yakima, Washington***

October 1996

Central Washington Comprehensive Mental Health

*321 East Yakima Avenue
Yakima, Washington 98901*



SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

1354 N. Grandridge Boulevard
Kennewick, Washington 99336-1037
509-735-1280

TABLE 1
PID SCREENING RESULTS

Sample Location	Sample Depth (feet)	PID Reading (ppm)	Sample Disposition
Test Pit No. 2	2.5	4.9	Held pending lab results.
	4.5	12.8	Sent to analytical lab.
	7.5	6.7	Held pending lab results.
	10	6.7	Held pending lab results.
Test Pit No. 3	2.5	2.1	Held pending lab results.
	5	1.5	Held pending lab results.
	7.5	2.9	Sent to analytical lab.
	10	1.8	Held pending lab results.
Test Pit No. 4	1.5	1.5	Combined and sent to analytical lab.
	2.5	1.6	
	5	1.2	Held pending lab results.
Test Pit No. 5	2.5	2.5	Held pending lab results.
	5	2.5	Sent to analytical lab.
	7.5	1.3	Held pending lab results.
Oil Tank Soil Sample		2.4	Sent to analytical lab.

PID = photoionization detector
ppm = parts per million

TABLE 2
SUMMARY OF ANALYTICAL RESULTS

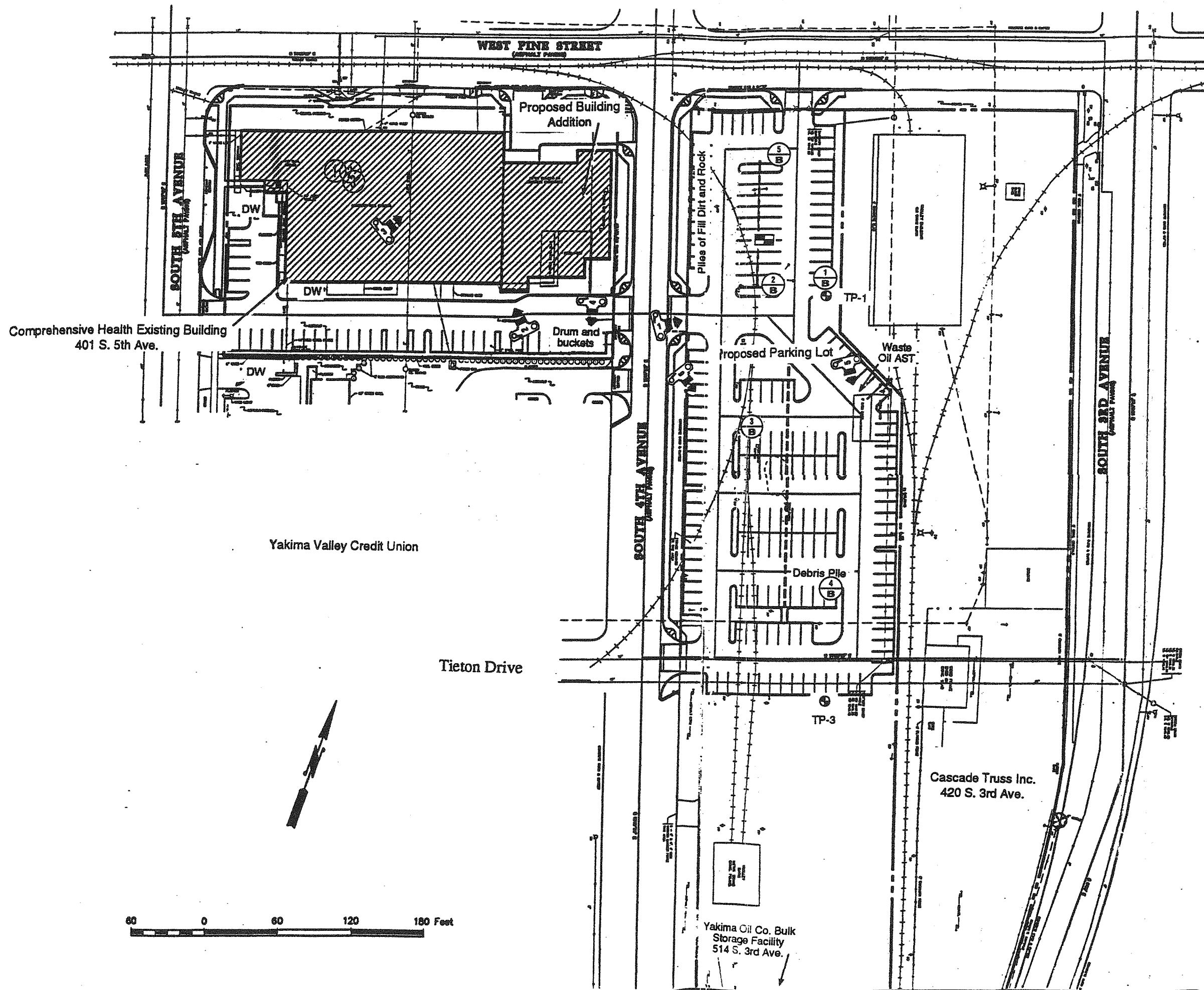
Analytical Test Parameters	TP-2	TP-3	TP-4	TP-5	Oil Tank Soil Sample	MTCA Screening Levels
METALS:						
Antimony	5 U		5 U	6 U	5 U	
Arsenic	6		6	6 U	5 U	20.0
Beryllium	0.4		0.6	0.5	0.3	
Cadmium	0.3		0.2 U	0.3	5.0	2.0
Chromium	18.4		16.6	16.8	13.3	100.0
Copper	21.6		35.6	25.1	266	
Lead	6		94	11	544	250.0
Mercury	0.05 U		0.05 U	0.06 U	0.05 U	1.0
Nickel	12		17	14	42	
Selenium	13		15	10	8	
Silver	0.7		0.7	0.8	1.9	
Thallium	5 U		5 U	6 U	5 U	
Zinc	55.8		57.9	66.4	1370	
PAH:						1000.0
Naphthalene		71 U	72 U			
2-Methylnaphthalene		71 U	72 U			
Acenaphthylene		71 U	72 U			
Acenaphthene		71 U	72 U			
Fluorene		71 U	72 U			
Phenanthrene		71 U	72 U			
Anthracene		71 U	72 U			
Fluoranthene		71 U	72 U			
Pyrene		71 U	72 U			
Benzo(a)anthracene		71 U	72 U			
Chrysene		71 U	72 U			
Benzo(b)fluoranthene		71 U	72 U			
Benzo(k)fluoranthene		71 U	72 U			
Benzo(a)pyrene		71 U	72 U			
Indeno(1,2,3-cd)pyrene		71 U	72 U			
Dibenz(a,h)anthracene		71 U	72 U			
Benzo(g,h,i)perylene		71 U	72 U			
Dibenzofuran		71 U	72 U			
WTPH:						
Diesel		5.2 U				200.0
Other	29			18	34,000	200.0
PCB:						1,000.0
Aroclor 1016		850 U		1,200 U	840 U	
Aroclor 1242		850 U		1,200 U	840 U	
Aroclor 1248		850 U		1,200 U	840 U	
Aroclor 1254		850 U		1,200 U	840 U	
Aroclor 1260		850 U		1,200 U	840 U	
Aroclor 1221		1,700 U		1,200 U	1,700 U	
Aroclor 1232		850 U		1,200 U	840 U	

U = Compound not detected at the given detection limit.

MTCA = The Model Toxics Control Act, Method A Screening Levels for Soils

TABLE 3
SUMMARY OF TEST PIT DATA

Test Pit No.	Total Depth (feet)	Soil Depths (feet)	Soil Type(s)
1	3.0	0 - 3.0 3.0	Poorly graded gravel with concrete rubble and wood. Weathered asphalt layer.
2	10.0	0 - 2.5 2.5 - 4.5 4.5 - 10.0	Poorly graded gravel with sand and concrete rubble. Poorly graded gravel with coarse sand, wood, and metal debris. Undisturbed well-graded gravel with cobbles and coarse sand.
3	10.0	0 - 2.5 2.5 - 5.0 4.5 - 10.0	Poorly graded gravel with brick and wood debris. Poorly graded gravel with coarse sand, concrete rubble, and wire. Undisturbed well-graded gravel with cobbles and coarse sand.
4	5.0	0 - 0.5 0.5 - 0.75 0.75 - 1.5 1.5 - 1.75 1.75 - 4.0 4.0 - 5.0	Silty sand with gravel. Wood chips. Silty sand with gravel. Wood chips. Silty sand with gravel. Undisturbed well-graded gravel with coarse sand.
5	7.5	0 - 5.0 5.0 - 7.5	Poorly graded gravel with brick debris. Undisturbed well-graded gravel with coarse sand.



Basic map from PLSA Cover Sheet for
Proposed Central Washington Comprehensive
Mental Health Improvement Project

LEGEND

- ① Approximate location and identification number of sample for asbestos testing.
- Ⓟ Approximate location and identification number of photographs.
- DW Drywell
- ⊕ TP-1 Test pit location and number (PLSA Investigation)
- Ⓟ Test Pits
- Former UST No. 8

Phase II ESA - Central Washington
Comprehensive Mental Health
Yakima, Washington

SITE LAYOUT

October 1996

V-1043-02

SHANNON & WILSON, INC.
Geotechnical & Environmental Consultants

FIG. 2

APPENDIX A
ANALYTICAL RESULTS



Analytical Resources, Incorporated
Analytical Chemists and Consultants

October 7, 1996

Donna Parkes
Shannon & Wilson, Inc.
303 Wellsian Way
Richland, WA 99352

**RE: Project: V-1043-02, Comprehensive Health
ARI Job No. Q251**

Dear Donna:

Please find enclosed the original chain-of-custody record and final results for the project referenced above. Analytical Resources, Inc. accepted thirteen water samples and one trip blank in good condition on September 25, 1996. All samples were received intact. The trip blank was not required for any of these analyses. The samples were analyzed for PAHs, PCBs, WTPH-D, WTPH-418.1 and Priority Pollutant Metals as requested.

No analytical complications were noted. It was noted during the extraction and preparation of Samples SS-1-01 and SS-1-03 that these samples consisted primarily of oily rocks. The respective analyses of these samples did not appear to be affected by the matrices.

As always, copies of these reports and all associated raw data will remain on file with ARI. Should you have any questions or problems, please feel free to contact me at your convenience.

Sincerely,

ANALYTICAL RESOURCES, INC.

Mark D. Harris
Project Manager
206/340-2866, ext. 113

Enclosures
cc: File Q251
MDH/mdh

RECEIVED

OCT 8 1996

SHANNON & WILSON, INC.
KENNEWICK

96-16125/16138-7
50°C Q251



SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

400 N. 34th Street, Suite 100
Seattle, WA 98103
(206) 632-8020

11500 Olive Blvd., Suite 276
St. Louis, MO 63141
(314) 872-8170

5430 Fairbanks Street, Suite 3
Anchorage, AK 99518
(907) 561-2120

1354 N. Grandview Blvd.
Kennewick, WA 99336
(509) 735-1280

2412 N. 30th St., Suite 201
Tacoma, WA 98407
(206) 759-0156

CHAIN OF CUSTODY RECORD

Page 1 of 1
Laboratory ART
Attn: M. Harris

Analysis Parameters/Sample Container Description
(include preservative if used)

Comp.	Grab	H18.1	TPH	PP Metals	Pb's	PAH	WTPH-D	Total Number of Containers
-------	------	-------	-----	-----------	------	-----	--------	----------------------------

303 Wellston Way (509) 946-6309
Richland WA 99352 Fax 946-6580

Sample Identity	Lab No.	Time	Date Sampled	Remarks/Matrix
TP-2-01		10:30	9/24/96	Soil
TP-2-02				
TP-2-03				
TP-3-01		1130		
TP-3-02		"		
TP-4-01		1200		
TP-4-02		"		
TP-5-01		1330		
TP-5-02				
TP-5-03				

Project Information		Sample Receipt	
Project Number: <u>V-1043-02</u>		Total Number of Containers	
Project Name: <u>Comprehensive Hwy</u>		QC Seals/Intact? <u>Y/N/A</u>	
Contact: <u>Donna Parks</u>		Received Good Cond./Cold	
Ongoing Project? Yes ☐ No ☒		Delivery Method:	
Sampler: <u>George Gardner</u>		(attach shipping bill, if any)	

Instructions	
Requested Turn Around Time:	
Special Instructions:	

Relinquished By: 1.		Relinquished By: 2.		Relinquished By: 3.	
Signature: <u>[Signature]</u>	Time: <u>1615</u>	Signature: _____	Time: _____	Signature: _____	Time: _____
Printed Name: <u>GEORGE R. GARDNER</u>	Date: <u>9/24/96</u>	Printed Name: _____	Date: _____	Printed Name: _____	Date: _____
Company: <u>SHANNON & WILSON, INC.</u>		Company: _____		Company: _____	
Received By: 1.		Received By: 2.		Received By: 3.	
Signature: <u>[Signature]</u>	Time: <u>1400</u>	Signature: _____	Time: _____	Signature: _____	Time: _____
Printed Name: <u>JASON BOUZA</u>	Date: <u>9/25/96</u>	Printed Name: _____	Date: _____	Printed Name: _____	Date: _____
Company: <u>ART</u>		Company: _____		Company: _____	

Distribution: White - w/shipment - returned to Shannon & Wilson w/ Laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File



1354 N. Grandridge Blvd.
Kennewick, WA 98536
(509) 765-1280

2412 N. 30th St., Suite 201
Tacoma, WA 98407
(206) 759-0156

Page 2 of 2
Laboratory ARI
Attn: M. Harris

Analysis Parameters/Sample Container Description (include preservative if used)
--

[illegible]

Distribution: White - w/shipment - returned to Shannon & Wilson w/ Laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - Job File



**ANALYTICAL
RESOURCES
INCORPORATED**

Analytical
Chemists &
Consultants

333 Ninth Ave. North
Seattle, WA 98109-5187
(206) 621-6490
(206) 621-7523 (FAX)

ORGANIC COMPOUND DATA REPORTING QUALIFIERS

- U Indicates the compound was analyzed for, but not detected at the given detection limit.
- J Indicates an estimated value when the result is less than the calculated detection limit.
- D Indicates the surrogate/spike(s) was not detected, due to dilution of extract.
- NR Indicates the surrogate recovery cannot be reported due to matrix interference.
- E Indicates a value above the linear range of the detector. Sample dilution required.
- S Indicates no value reported due to saturation of the detector. Dilution required.
- Y Indicates a raised detection limit due to matrix interferences.
- NA Indicates compound was not analyzed.
- M Indicates an estimated value of analyte found and confirmed by analyst but with low spectral match.
- B Indicates compound was found in the associated method blank.



ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by GC/MS

Sample No: Method Blank

Lab Sample ID: 093096MB

QC Report No: Q251-Shannon & Wilson

LIMS ID: 96-16129

Project: Yakima

Matrix: Soil

V-1043-02

Data Release Authorized: *BWB*

Date Sampled: NA

Reported: 10/01/96

Date Received: NA

Date extracted: 09/27/96 12:00

Sample Amount: 7.50 g-dry-wt

Date analyzed: 09/30/96

Final Extract Volume: 0.5 mL

Instrument: FINN2

Conc/Dilution Factor: 1:1

GPC Cleanup: NO

Moisture: NA

pH: NA

CAS Number	Analyte	ug/kg
91-20-3	Naphthalene	67 U
91-57-6	2-Methylnaphthalene	67 U
208-96-8	Acenaphthylene	67 U
83-32-9	Acenaphthene	67 U
86-73-7	Fluorene	67 U
85-01-8	Phenanthrene	67 U
120-12-7	Anthracene	67 U
206-44-0	Fluoranthene	67 U
129-00-0	Pyrene	67 U
56-55-3	Benzo(a)anthracene	67 U
218-01-9	Chrysene	67 U
205-99-2	Benzo(b)fluoranthene	67 U
207-08-9	Benzo(k)fluoranthene	67 U
50-32-8	Benzo(a)pyrene	67 U
193-39-5	Indeno(1,2,3-cd)pyrene	67 U
53-70-3	Dibenz(a,h)anthracene	67 U
191-24-2	Benzo(g,h,i)perylene	67 U
132-64-9	Dibenzofuran	67 U

Base/Neutral Surrogate Recovery

d14-p-Terphenyl	72.3%
d10-Diphenyl	58.2%



ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNAs by GC/MS

Sample No: TP-3-02

Lab Sample ID: Q251E

QC Report No: Q251-Shannon & Wilson

LIMS ID: 96-16129

Project: Yakima

Matrix: Soil

V-1043-02

Data Release Authorized: *AMP*

Date Sampled: 09/24/96

Reported: 10/01/96

Date Received: 09/25/96

Date extracted: 09/27/96 12:00

Sample Amount: 7.08 g-dry-wt

Date analyzed: 09/30/96

Final Extract Volume: 0.5 mL

Instrument: FINN2

Conc/Dilution Factor: 1:1

GPC Cleanup: NO

Moisture: 6.0%

pH: 5.8

CAS Number	Analyte	ug/kg
91-20-3	Naphthalene	71 U
91-57-6	2-Methylnaphthalene	71 U
208-96-8	Acenaphthylene	71 U
83-32-9	Acenaphthene	71 U
86-73-7	Fluorene	71 U
85-01-8	Phenanthrene	71 U
120-12-7	Anthracene	71 U
206-44-0	Fluoranthene	71 U
129-00-0	Pyrene	71 U
56-55-3	Benzo(a)anthracene	71 U
218-01-9	Chrysene	71 U
205-99-2	Benzo(b)fluoranthene	71 U
207-08-9	Benzo(k)fluoranthene	71 U
50-32-8	Benzo(a)pyrene	71 U
193-39-5	Indeno(1,2,3-cd)pyrene	71 U
53-70-3	Dibenz(a,h)anthracene	71 U
191-24-2	Benzo(g,h,i)perylene	71 U
132-64-9	Dibenzofuran	71 U

Base/Neutral Surrogate Recovery

d14-p-Terphenyl 62.7%

d10-Diphenyl 74.1%



ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PNA's by GC/MS

Sample No: TP-4-01

Lab Sample ID: Q251F

QC Report No: Q251-Shannon & Wilson

LIMS ID: 96-16130

Project: Yakima

Matrix: Soil

V-1043-02

Data Release Authorized: *MP*

Date Sampled: 09/24/96

Reported: 10/01/96

Date Received: 09/25/96

Date extracted: 09/27/96 12:00

Sample Amount: 6.94 g-dry-wt

Date analyzed: 09/30/96

Final Extract Volume: 0.5 mL

Instrument: FINN2

Conc/Dilution Factor: 1:1

GPC Cleanup: NO

Moisture: 7.4%

pH: 5.4

CAS Number	Analyte	ug/kg
91-20-3	Naphthalene	72 U
91-57-6	2-Methylnaphthalene	72 U
208-96-8	Acenaphthylene	72 U
83-32-9	Acenaphthene	72 U
86-73-7	Fluorene	72 U
85-01-8	Phenanthrene	72 U
120-12-7	Anthracene	72 U
206-44-0	Fluoranthene	72 U
129-00-0	Pyrene	72 U
56-55-3	Benzo(a)anthracene	72 U
218-01-9	Chrysene	72 U
205-99-2	Benzo(b)fluoranthene	72 U
207-08-9	Benzo(k)fluoranthene	72 U
50-32-8	Benzo(a)pyrene	72 U
193-39-5	Indeno(1,2,3-cd)pyrene	72 U
53-70-3	Dibenz(a,h)anthracene	72 U
191-24-2	Benzo(g,h,i)perylene	72 U
132-64-9	Dibenzofuran	72 U

Base/Neutral Surrogate Recovery

d14-p-Terphenyl	64.0%
d10-Diphenyl	58.4%



ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
SVOA by METHOD 625/8270

Lab Sample ID: Q251SB
LIMS ID: 96-16129
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02

Data Release Authorized: *AWB*
Reported: 10/01/96

LABORATORY CONTROL SAMPLE CONSTITUENT	SPIKE VALUE	SPIKE ADDED	% RECOVERY
Naphthalene	1030	1670	61.7%
Acenaphthene	825	1670	49.4%
Fluoranthene	959	1670	57.4%
Benzo(a)anthracene	933	1670	55.9%

Spike Blank Surrogate Recovery

d14-p-Terphenyl	53.2%
d10-Diphenyl	45.2%

Values reported in ppb (ug/kg) dry weight



ANALYTICAL
RESOURCES
INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS
WA TPHd Range C12 to C24 by GC/FID

Matrix: Soil

QC Report No: Q251-Shannon & Wilson

Project: Yakima

V-1043-02

Data Release Authorized: *[Signature]*

Date Received: 09/25/96

Reported: 10/02/96

Lab ID	Client Sample ID	Date Extracted	Date Analyzed	Dilution Factor	Diesel Range Hydrocarbons	*Diesel ID	Surr Recovery
Q251-0927MB	Method Blank	09/27/96	09/27/96	1:1	5.0 U	--	114%
96-16128-Q251D	TP-3-01	09/27/96	09/27/96	1:1	5.2 U	--	115%

Values reported in ppm (mg/kg) on a dry weight basis.

Surrogate is Methyl-Arachidate.

* ID indicates, in the opinion of the analyst, the petroleum product with the best pattern match. 'NO' indicates that there was not a good match for any of the requested products. Diesel quantitation on total peaks in the range from C12 to C24.

Data Qualifiers

U Compound not detected at the given detection limit.
E Value detected above linear range of instrument. Dilution required.
J Indicates an estimated value below the calculated detection limit.
S No value reported due to saturation of the detector. Dilution required.
D Indicates the surrogate was not detected because of dilution of the extract.
E Indicates a value above the linear range of the detector. Dilution required.
NR Indicates no recovery due to matrix interference.

FORM-1 WA TPHD



ANALYTICAL
RESOURCES
INCORPORATED

TOTAL DIESEL RANGE HYDROCARBONS
WA TPHd Range C12 to C24 by GC/FID

Lab Sample ID: Q251SB QC Report No: Q251-Shannon & Wilson
LIMS ID: 96-16128 Project: Yakima
Matrix: Soil V-1043-02

Data Release Authorized: *[Signature]*
Reported: 10/02/96

LABORATORY CONTROL SAMPLE RECOVERY REPORT

Date extracted: 09/27/96
Date analyzed: 09/27/96

CONSTITUENT	SPIKE FOUND	SPIKE ADDED	% RECOVERY
Diesel Range Hydrocarbons	111	100	111%

TPHd Surrogate Recovery

Methylarachidate 104%

Values reported in ppm (mg/kg) on a dry weight basis.



ANALYTICAL
RESOURCES
INCORPORATED

TOTAL PETROLEUM HYDROCARBONS
Modified EPA Method 418.1 - IR Scan

Matrix: Soil
Batch ID: IR0819B-02
Data Release Authorized: *WR*
Reported: 10/02/96

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Received: 09/25/96

Lab ID	Client Sample ID	Date Analyzed	Dilution Factor	Total Petroleum Hydrocarbons (mg/kg)
Q251-1002MB	Method Blank	10/02/96	1:1	10 U
96-16125	TP-2-01	10/02/96	1:1	29
96-16132	TP-5-01	10/02/96	1:1	18
96-16135	SS-1-01	10/02/96	1:100	34,000

Values reported in ppm (mg/kg) on a dry weight basis.

Data Qualifiers

U Compound not detected at the given detection limit.



ANALYTICAL
RESOURCES
INCORPORATED

TOTAL PETROLEUM HYDROCARBONS
Modified EPA Method 418.1 - IR Scan

Lab Sample ID: Q251-SB
LIMS ID: 96-16125
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02

Data Release Authorized: *R*
Reported: 10/02/96

LABORATORY CONTROL SAMPLE RECOVERY REPORT

Date Analyzed: 10/02/96

CONSTITUENT	SPIKE VALUE	SPIKE AMT	% RECOVERY
LABORATORY CONTROL SAMPLE			
Total Petroleum Hydrocarbons	106	100	106%

Values reported in parts per million (mg/kg)



ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Sample No: Method Blank

Lab Sample ID: Q251MB
LIMS ID: 96-16127
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02

Date Sampled: NA
Date Received: NA

Data Release Authorized: *Phyllis*
Reported: 10/02/96

Date extracted: 09/27/96
Date analyzed: 09/30/96

GPC Cleanup: No
Florisil Cleanup: No
Acid Cleanup: Yes
Sulfur Cleanup: No
Conc/Dilution Factor: 1:1
Percent Moisture: NA

Sample Amount: 5.00 g-dry-wt
Final Ext Vol: 40 mL
pH: NA

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	800 U
53469-21-9	Aroclor 1242	800 U
12672-29-6	Aroclor 1248	800 U
11097-69-1	Aroclor 1254	800 U
11096-82-5	Aroclor 1260	800 U
11104-28-2	Aroclor 1221	1,600 U
11141-16-5	Aroclor 1232	800 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 80.0%
Tetrachlorometaxylene 72.5%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector.
Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Sample No: TP-2-03

Lab Sample ID: Q251C
LIMS ID: 96-16127
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Sampled: 09/24/96
Date Received: 09/25/96

Data Release Authorized: *Agell*
Reported: 10/02/96

Date extracted: 09/27/96
Date analyzed: 09/30/96

Sample Amount: 4.72 g-dry-wt
Final Ext Vol: 40 mL
pH: 6.0

GPC Cleanup: No
Florisil Cleanup: No
Acid Cleanup: Yes
Sulfur Cleanup: No
Conc/Dilution Factor: 1:1
Percent Moisture: 5.8 %

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	850 U
53469-21-9	Aroclor 1242	850 U
12672-29-6	Aroclor 1248	850 U
11097-69-1	Aroclor 1254	850 U
11096-82-5	Aroclor 1260	850 U
11104-28-2	Aroclor 1221	1,700 U
11141-16-5	Aroclor 1232	850 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 79.5%
Tetrachlorometaxylene 74.5%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector.
Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Sample No: TP-5-03

Lab Sample ID: Q251J
LIMS ID: 96-16134
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Sampled: 09/24/96
Date Received: 09/25/96

Data Release Authorized: *[Signature]*
Reported: 10/02/96

Date extracted: 09/27/96
Date analyzed: 09/30/96

GPC Cleanup: No
Florisil Cleanup: No
Acid Cleanup: Yes
Sulfur Cleanup: No
Conc/Dilution Factor: 1:1
Percent Moisture: 32.3%

Sample Amount: 3.38 g-dry-wt
Final Ext Vol: 40 mL
pH: 5.4

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	1,200 U
53469-21-9	Aroclor 1242	1,200 U
12672-29-6	Aroclor 1248	1,200 U
11097-69-1	Aroclor 1254	1,200 U
11096-82-5	Aroclor 1260	1,200 U
11104-28-2	Aroclor 1221	2,400 U
11141-16-5	Aroclor 1232	1,200 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 72.5%
Tetrachlorometaxylene 65.0%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector.
Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



ORGANICS ANALYSIS DATA SHEET
PCB by GC/ECD

Sample No: SS-1-03

Lab Sample ID: Q251M
LIMS ID: 96-16137
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Sampled: 09/24/96
Date Received: 09/25/96

Data Release Authorized: *High*
Reported: 10/02/96

Date extracted: 09/27/96
Date analyzed: 09/30/96

GPC Cleanup: No
Florisil Cleanup: No
Acid Cleanup: Yes
Sulfur Cleanup: No
Conc/Dilution Factor: 1:1
Percent Moisture: 5.0 %

Sample Amount: 4.77 g-dry-wt
Final Ext Vol: 40 mL
pH: 5.6

Reported in Total ug/kg Dry Weight

CAS Number	Analyte	Value
12674-11-2	Aroclor 1016	840 U
53469-21-9	Aroclor 1242	840 U
12672-29-6	Aroclor 1248	840 U
11097-69-1	Aroclor 1254	840 U
11096-82-5	Aroclor 1260	840 U
11104-28-2	Aroclor 1221	1,700 U
11141-16-5	Aroclor 1232	840 U

PCB-Aroclor Surrogate Recovery

Decachlorobiphenyl 75.5%
Tetrachlorometaxylene 58.0%

Data Qualifiers

- J Indicates an estimated value when that result is less than the calculated detection limit.
E Indicates a value above the linear range of the detector.
Dilution Required
S Indicates no value reported due to saturation of the detector.
D Indicates the surrogate was diluted out.
U Indicates compound was analyzed for, but not detected at the given detection limit.
B Found in associated method blank
NA Indicates compound was not analyzed.
NR Indicates no recovery due to interferences.
Y Indicates a raised reporting limit due to matrix interferences. The analyte may be present at or below the listed concentration, but in the opinion of the analyst, confirmation was inadequate.



ANALYTICAL
RESOURCES
INCORPORATED

ORGANICS ANALYSIS DATA SHEET
PCB by METHOD 8080

Lab Sample ID: Q251
LIMS ID: 96-16127
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02

Data Release Authorized: *Hepler*
Reported: 10/02/96

LABORATORY CONTROL SAMPLE SPIKE RECOVERY
Date extracted: 09/27/96

CONSTITUENT	SPIKE FOUND	SPIKE ADDED	% RECOVERY
LABORATORY CONTROL SAMPLE			
Aroclor 1242	6310	8000	78.9%

Aroclor Surrogate Recoveries

Decachlorobiphenyl	84.5%
Tetrachlorometaxylene	74.5%

Values Reported in Total ug/kg Dry Weight



ANALYTICAL
RESOURCES
INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: Method Blank

Lab Sample ID: Q251MB
LIMS ID: 96-16126
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Sampled: NA
Date Received: NA

Data Release Authorized:
Reported: 10/07/96

Percent Total Solids: NA

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry
3050	09/26/96	6010	10/05/96	7440-36-0	Antimony	5	5 U
3050	09/26/96	6010	10/05/96	7440-38-2	Arsenic	5	5 U
3050	09/26/96	6010	10/05/96	7440-41-7	Beryllium	0.1	0.1 U
3050	09/26/96	6010	10/05/96	7440-43-9	Cadmium	0.2	0.2 U
3050	09/26/96	6010	10/05/96	7440-47-3	Chromium	0.5	0.5 U
3050	09/26/96	6010	10/05/96	7440-50-8	Copper	0.2	0.2 U
3050	09/26/96	6010	10/05/96	7439-92-1	Lead	2	2 U
CLP	09/26/96	7470	09/27/96	7439-97-6	Mercury	0.05	0.05 U
3050	09/26/96	6010	10/05/96	7440-02-0	Nickel	1	1 U
3050	09/26/96	6010	10/05/96	7782-49-2	Selenium	5	5 U
3050	09/26/96	6010	10/05/96	7440-22-4	Silver	0.3	0.3 U
3050	09/26/96	6010	10/05/96	7440-28-0	Thallium	5	5 U
3050	09/26/96	6010	10/05/96	7440-66-6	Zinc	0.4	0.4 U

U Analyte undetected at given RL

RL Reporting Limit

FORM-I



ANALYTICAL
RESOURCES
INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Sample No: TP-2-02

Lab Sample ID: Q251B
LIMS ID: 96-16126
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Sampled: 09/24/96
Date Received: 09/25/96

Data Release Authorized: 
Reported: 10/07/96

Percent Total Solids: 93.7%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry
3050	09/26/96	6010	10/05/96	7440-36-0	Antimony	5	5 U
3050	09/26/96	6010	10/05/96	7440-38-2	Arsenic	5	6
3050	09/26/96	6010	10/05/96	7440-41-7	Beryllium	0.1	0.4
3050	09/26/96	6010	10/05/96	7440-43-9	Cadmium	0.2	0.2
3050	09/26/96	6010	10/05/96	7440-47-3	Chromium	0.5	18.4
3050	09/26/96	6010	10/05/96	7440-50-8	Copper	0.2	21.6
3050	09/26/96	6010	10/05/96	7439-92-1	Lead	2	6
CLP	09/26/96	7471	09/27/96	7439-97-6	Mercury	0.05	0.05 U
3050	09/26/96	6010	10/05/96	7440-02-0	Nickel	1	12
3050	09/26/96	6010	10/05/96	7782-49-2	Selenium	5	13
3050	09/26/96	6010	10/05/96	7440-22-4	Silver	0.3	0.7
3050	09/26/96	6010	10/05/96	7440-28-0	Thallium	5	5 U
3050	09/26/96	6010	10/05/96	7440-66-6	Zinc	0.4	55.8

U Analyte undetected at given RL

RL Reporting Limit

FORM-I



**ANALYTICAL
RESOURCES
INCORPORATED**

**INORGANICS ANALYSIS DATA SHEET
TOTAL METALS**

Sample No: TP-4-02

Lab Sample ID: Q251G
LIMS ID: 96-16131
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Sampled: 09/24/96
Date Received: 09/25/96

Data Release Authorized
Reported: 10/07/96

Percent Total Solids: 91.4%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry
3050	09/26/96	6010	10/05/96	7440-36-0	Antimony	5	5 U
3050	09/26/96	6010	10/05/96	7440-38-2	Arsenic	5	6
3050	09/26/96	6010	10/05/96	7440-41-7	Beryllium	0.1	0.6
3050	09/26/96	6010	10/05/96	7440-43-9	Cadmium	0.2	0.2 U
3050	09/26/96	6010	10/05/96	7440-47-3	Chromium	0.5	16.6
3050	09/26/96	6010	10/05/96	7440-50-8	Copper	0.2	35.6
3050	09/26/96	6010	10/05/96	7439-92-1	Lead	2	94
CLP	09/26/96	7471	09/27/96	7439-97-6	Mercury	0.05	0.05 U
3050	09/26/96	6010	10/05/96	7440-02-0	Nickel	1	17
3050	09/26/96	6010	10/05/96	7782-49-2	Selenium	5	15
3050	09/26/96	6010	10/05/96	7440-22-4	Silver	0.3	0.7
3050	09/26/96	6010	10/05/96	7440-28-0	Thallium	5	5 U
3050	09/26/96	6010	10/05/96	7440-66-6	Zinc	0.4	57.9

U Analyte undetected at given RL

RL Reporting Limit

FORM-I

APPENDIX

IMPORTANT INFORMATION ABOUT YOUR ENVIRONMENTAL SITE ASSESSMENT/EVALUATION



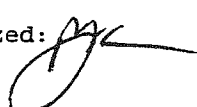
**ANALYTICAL
RESOURCES
INCORPORATED**

**INORGANICS ANALYSIS DATA SHEET
TOTAL METALS**

Sample No: TP-5-02

Lab Sample ID: Q251I
LIMS ID: 96-16133
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Sampled: 09/24/96
Date Received: 09/25/96

Data Release Authorized: 
Reported: 10/07/96

Percent Total Solids: 85.4%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry
3050	09/26/96	6010	10/05/96	7440-36-0	Antimony	6	6 U
3050	09/26/96	6010	10/05/96	7440-38-2	Arsenic	6	6 U
3050	09/26/96	6010	10/05/96	7440-41-7	Beryllium	0.1	0.5
3050	09/26/96	6010	10/05/96	7440-43-9	Cadmium	0.2	0.3
3050	09/26/96	6010	10/05/96	7440-47-3	Chromium	0.6	16.8
3050	09/26/96	6010	10/05/96	7440-50-8	Copper	0.2	25.1
3050	09/26/96	6010	10/05/96	7439-92-1	Lead	2	11
CLP	09/26/96	7471	09/27/96	7439-97-6	Mercury	0.06	0.06 U
3050	09/26/96	6010	10/05/96	7440-02-0	Nickel	1	14
3050	09/26/96	6010	10/05/96	7782-49-2	Selenium	6	10
3050	09/26/96	6010	10/05/96	7440-22-4	Silver	0.3	0.8
3050	09/26/96	6010	10/05/96	7440-28-0	Thallium	6	6 U
3050	09/26/96	6010	10/05/96	7440-66-6	Zinc	0.5	66.4

U Analyte undetected at given RL

RL Reporting Limit

FORM-I



**ANALYTICAL
RESOURCES
INCORPORATED**

**INORGANICS ANALYSIS DATA SHEET
TOTAL METALS**

Sample No: SS-1-02

Lab Sample ID: Q251L
LIMS ID: 96-16136
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02
Date Sampled: 09/24/96
Date Received: 09/25/96

Data Release Authorized: 
Reported: 10/07/96

Percent Total Solids: 93.3%

Prep Meth	Prep Date	Analysis Method	Analysis Date	CAS Number	Analyte	RL	mg/kg-dry
3050	09/26/96	6010	10/05/96	7440-36-0	Antimony	5	5 U
3050	09/26/96	6010	10/05/96	7440-38-2	Arsenic	5	5 U
3050	09/26/96	6010	10/05/96	7440-41-7	Beryllium	0.1	0.3
3050	09/26/96	6010	10/05/96	7440-43-9	Cadmium	0.2	5.0
3050	09/26/96	6010	10/05/96	7440-47-3	Chromium	0.5	13.3
3050	09/26/96	6010	10/05/96	7440-50-8	Copper	0.2	266
3050	09/26/96	6010	10/05/96	7439-92-1	Lead	2	544
CLP	09/26/96	7471	09/27/96	7439-97-6	Mercury	0.05	0.05 U
3050	09/26/96	6010	10/05/96	7440-02-0	Nickel	1	42
3050	09/26/96	6010	10/05/96	7782-49-2	Selenium	5	8
3050	09/26/96	6010	10/05/96	7440-22-4	Silver	0.3	1.9
3050	09/26/96	6010	10/05/96	7440-28-0	Thallium	5	5 U
3050	09/26/96	6010	10/05/96	7440-66-6	Zinc	0.4	1,370

U Analyte undetected at given RL

RL Reporting Limit

FORM-I



ANALYTICAL
RESOURCES
INCORPORATED

INORGANICS ANALYSIS DATA SHEET
TOTAL METALS

Lab Sample ID: Q251LCS
LIMS ID: 96-16126
Matrix: Soil

QC Report No: Q251-Shannon & Wilson
Project: Yakima
V-1043-02

Data Release Authorized: 
Reported: 10/07/96

BLANK SPIKE QUALITY CONTROL REPORT

Analyte	Analysis Method	Spike mg/kg-dry	Spike Added	% Recovery	Q
Antimony	6010	246	250	98.4%	
Arsenic	6010	247	250	98.8%	
Beryllium	6010	4.8	5.0	96.0%	
Cadmium	6010	9.5	10.0	95.0%	
Chromium	6010	24.8	25.0	99.2%	
Copper	6010	10.2	10.0	102.0%	
Lead	6010	97	100	97.0%	
Mercury	7471	0.42	0.50	84.0%	
Nickel	6010	49	50	98.0%	
Selenium	6010	252	250	100.8%	
Silver	6010	23.9	25.0	95.6%	
Thallium	6010	243	250	97.2%	
Zinc	6010	47.9	50.0	95.8%	

'Q' codes: N = control limit not met

Control Limits: 75-125%

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

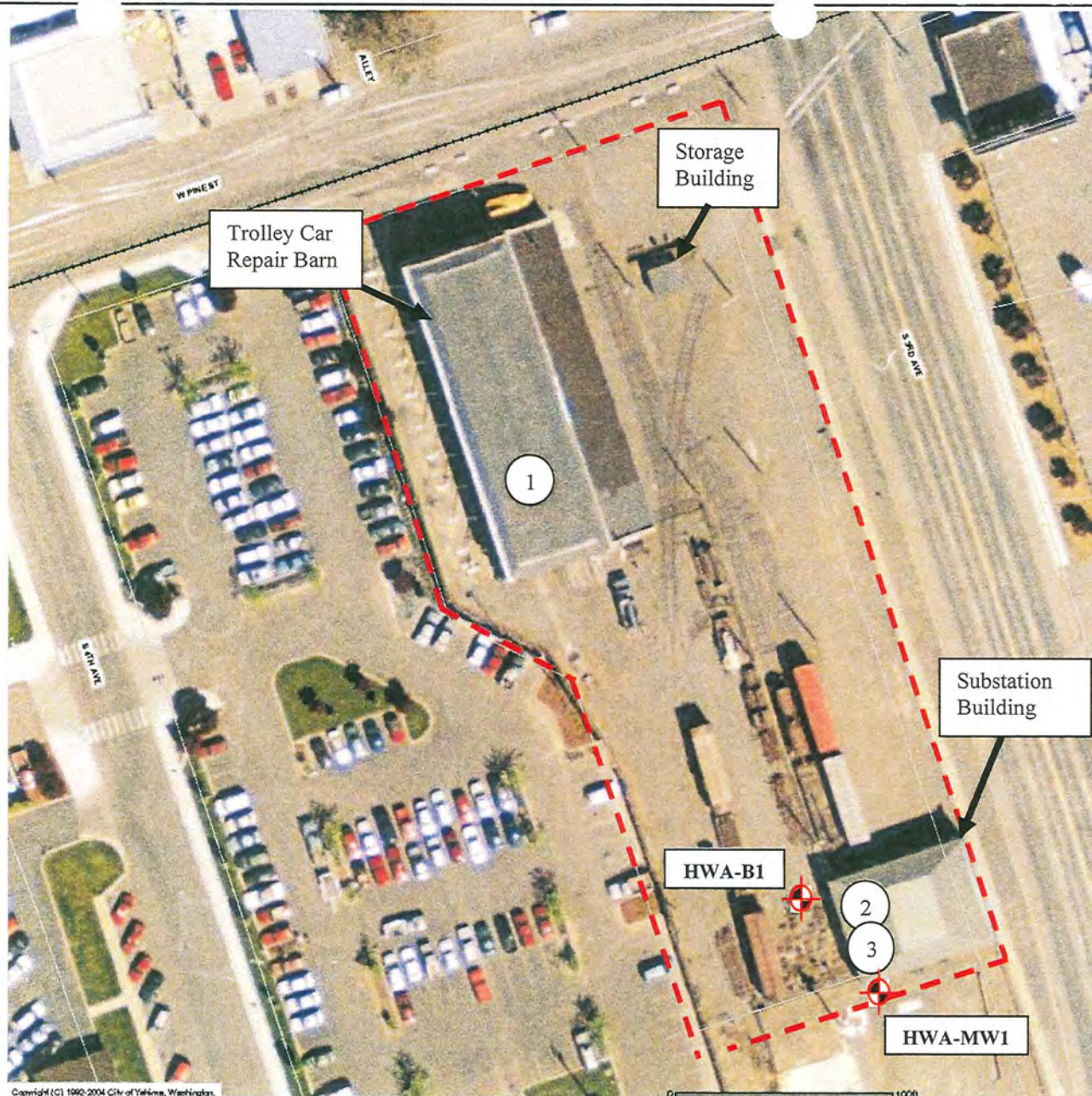
Menke Jackson Beyer Eloffson Ehlis & Harper LLP

August 16, 2007

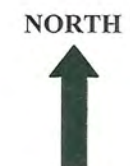


HWA GEOSCIENCES INC.

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



- - - Property line, approximate
- ⊕ HWA boring/monitoring well location
- ① Trolley maintenance pits
- ② Unused electrical equipment
- ③ UST location



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



HWA GEOSCIENCES INC.

SITE MAP

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

FIGURE NO.

2

PROJECT NO.

2006-116-22

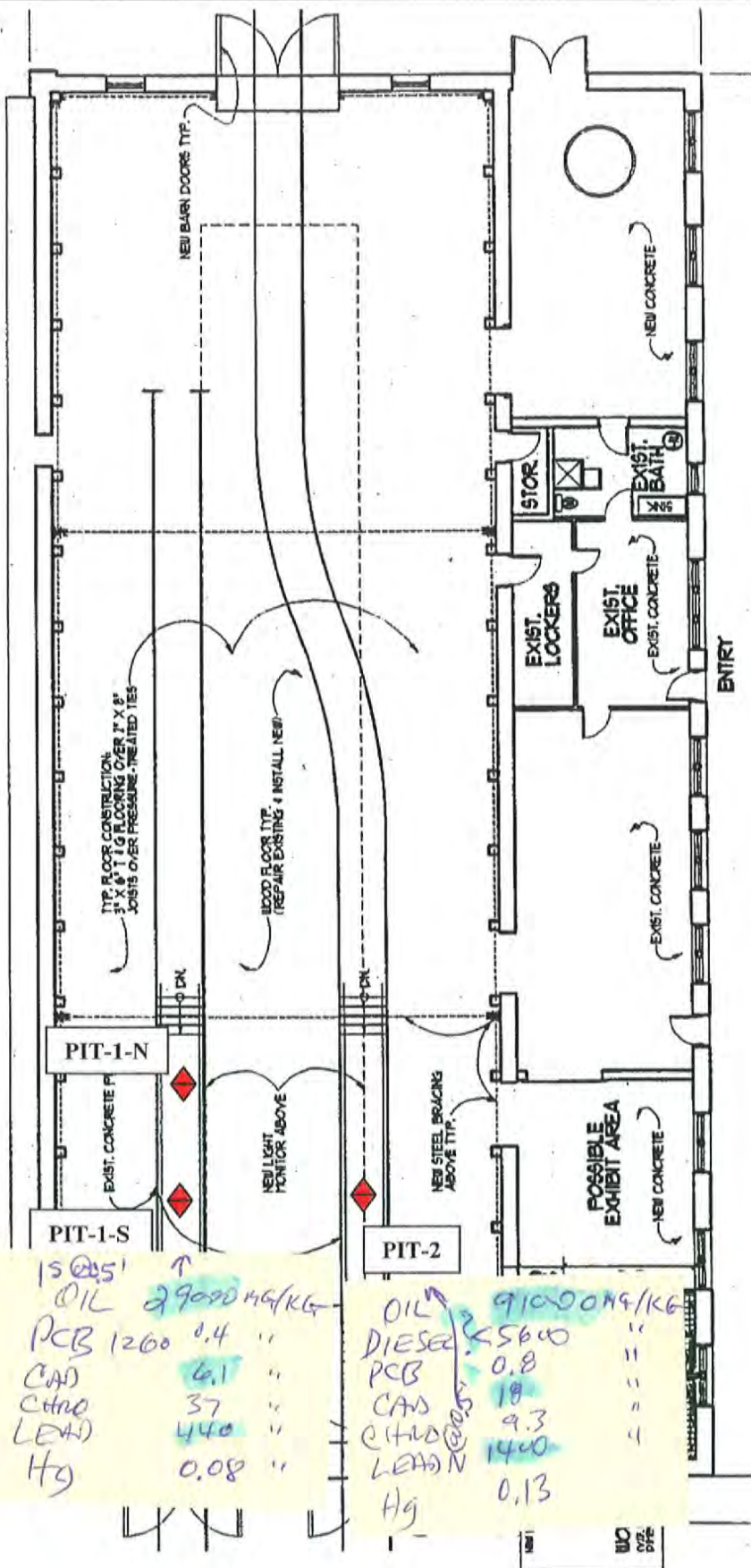


Figure not to scale
Source: Tonkin/Hoyne Architects
and Planners (1994)

TROLLEY BARN SAMPLING LOCATIONS

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

FIGURE NO.

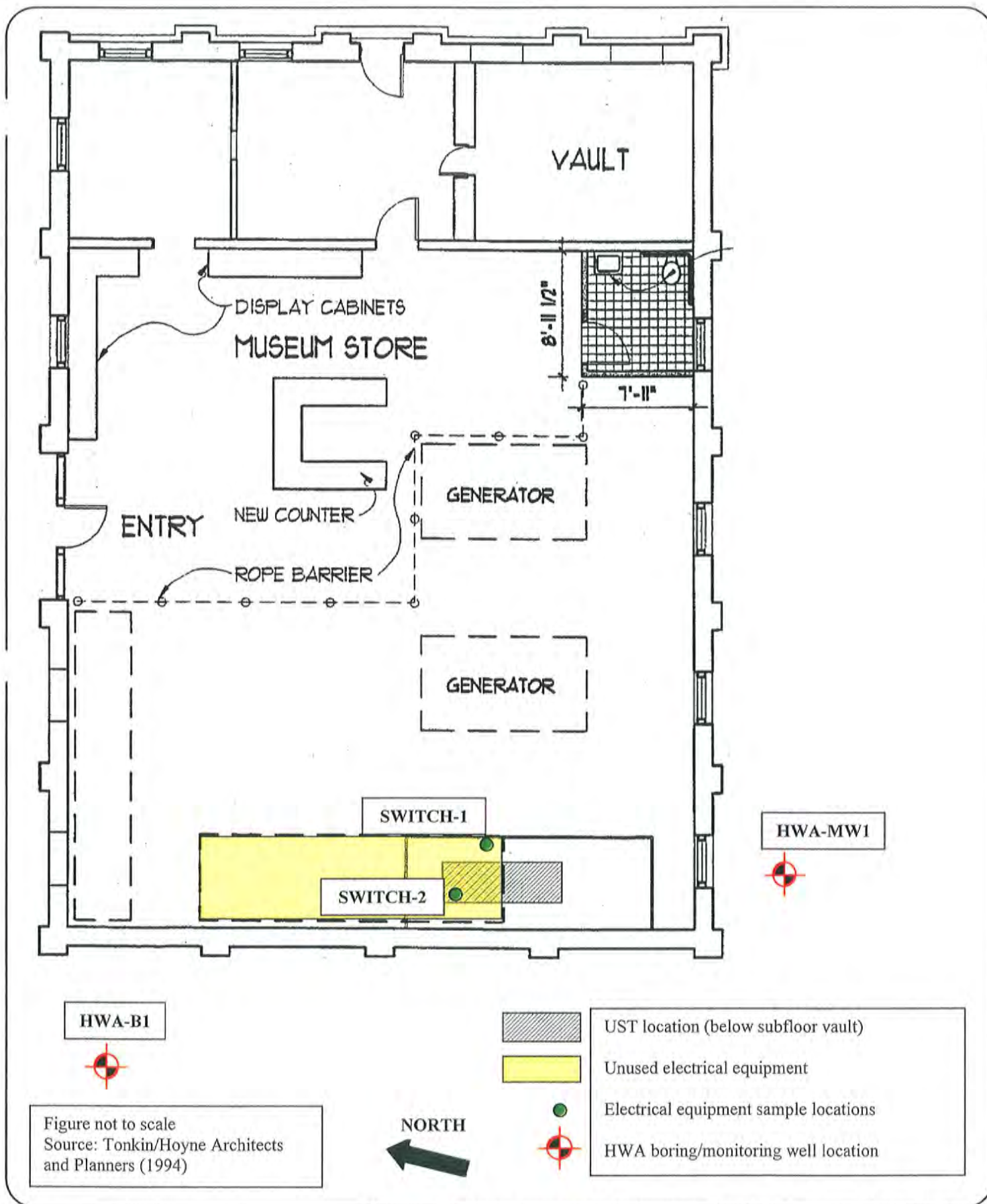
3

PROJECT NO.

2006-116



HWA GEOSCIENCES INC.



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.



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.

* "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:





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

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.

CERTIFICATE OF ANALYSIS

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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



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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

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Chain of Custody and Laboratory Analysis Request

DATE: 5/12/07
PAGE: of

SITE CODE:

SAMPLERS SIGNATURE: La [Signature]

HWA CONTACT: PHONE:

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REMARKS

PRINT NAME _____

SIGNATURE

COMPANY

DATE _____

TIME

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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

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APPROVED BY:



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: 5/16/2007 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

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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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DATE: 5/25/2007
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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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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



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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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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

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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

CERTIFICATE OF ANALYSIS

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

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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-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

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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



CCI
ANALYTICAL
LABORATORIES

CERTIFICATE OF ANALYSIS

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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:



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

705084

**Chain of Custody
and Laboratory Analysis Request**

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

PROJECT NAME: YITC # 2006-116

SITE CODE:

SAMPLERS NAME: Waves Areas PHONE: _____

SAMPLERS SIGNATURE: La G PHONE: _____

HWA CONTACT: _____ PHONE: _____

HWA SAMPLE ID DATE TIME MATRIX LAB ID # OF BOTTLE

HWA-1-10	5/16/07	1030	Soil	1	
HWA-MW-1-15		1045		2	
HWA-MW-1-20		1100		3	
HWA-1-1		1245		4	
HWA-1-10		1400		5	
HWA-1-15		1415		6	
HWA-1-20		1430		7	
HWA-MW-1	5/16/07	0900	h2s	8	

ANALYSIS REQUESTED									
MTHP DL									
MTHA Metals - Total									
C PAHs									
PCBs -									
VOCS - 8200									

REMARKS

2 COPIES
STP TAP

PRINT NAME SIGNATURE COMPANY DATE TIME REMARKS

Relinquished by: Waves Areas La G HWA 5/16/07 9:50

Received by: La G La G CCLM 5/16/07 9:50

Relinquished by: _____ _____ _____ _____ _____

Received by: _____ _____ _____ _____ _____

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

Soil and Groundwater Assessment Report

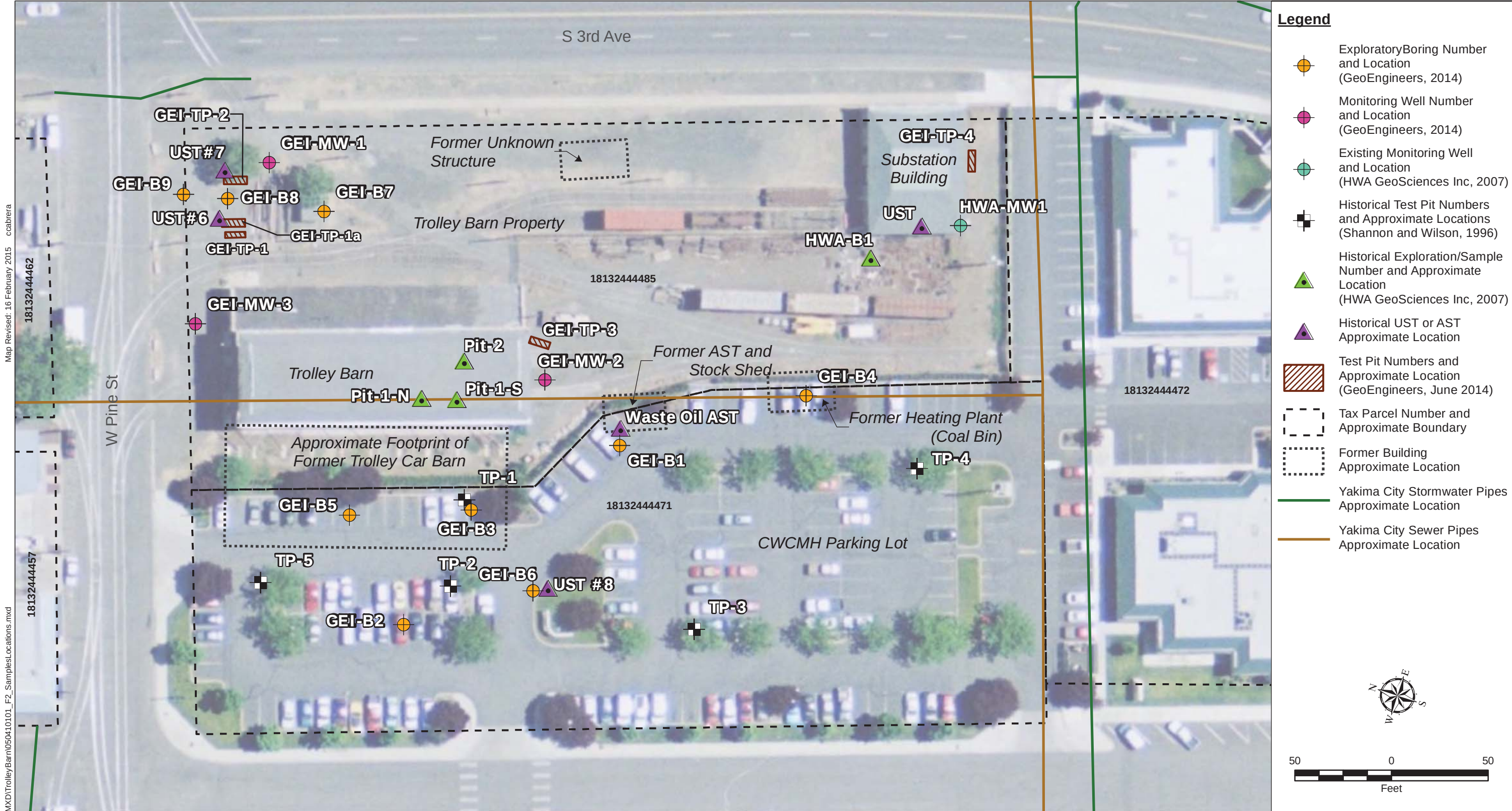
Trolley Barn
Yakima, Washington

for
Washington State Department of Ecology

February 16, 2015



523 East Second Avenue
Spokane, Washington 99202
509.363.3125



Data Source: Aerial base from ArcGIS Online.
Tax lot boundary and former building locations from Department of Ecology figure titled "Yakima Valley Trolley Barn Cleanup Site". City of Yakima Sewer and Stormwater Pipes digitized from City online map, <http://gis.yakimawa.gov/cityflex/>
Projection: NAD 1983 StatePlane Washington South FIPS 4602 Feet
Notes:
1. The locations of features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document.
GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Exploration Locations	
Trolley Barn Yakima, Washington	
	Figure 2

Table 4
Summary of Chemical Analytical Results - Groundwater¹
Trolley Barn
Yakima, Washington

Boring/Test Pit	MTCA Method	B8-081214	HWA-MW-1	GEI-MW-1	GEI-MW-2	GEI-MW-3	MW-Dup
Date Sampled	Levels ²	08/12/14	09/16/14	09/16/14	09/16/14	09/16/14	09/16/14
Method EPA 8260C - NWTPH-Gx and Volatile Organic Compounds (µg/L)							
Gasoline-range hydrocarbons	800/1,000 ³	1.200	<100	<100	<100	128	<100
Methyl tert-butyl ether	20	<0.500	<1.00	<1.00	<1.00	<1.00	<1.00
Benzene	5	0.350	<0.200	<0.200	<0.200	<0.200	<0.200
Ethylbenzene	700	<0.500	<1.00	<1.00	<1.00	<1.00	<1.00
Toluene	1,000	0.570	<1.00	<1.00	<1.00	<1.00	<1.00
o-Xylene	1,000 ⁴	<0.500	<1.00	<1.00	<1.00	<1.00	<1.00
m,p-Xylene		<0.500	<2.00	<2.00	<2.00	<2.00	<2.00
Xylenes (total)	1,000	<1.50	--	--	--	--	--
1,2-Dichloroethane (EDC)	5	<0.500	<1.00	<1.00	<1.00	<1.00	<1.00
1,2-Dibromoethane (EDB)	0.01	--	<1.00 ⁵	<1.00 ⁵	<1.00 ⁵	<1.00 ⁵	<1.00 ⁵
1,2-Dibromo-3-chloropropane	NE	--	<5.00	<5.00	<5.00	<5.00	<5.00
VOCs	Varies ⁶	--	Chloroform - 1.10	--	Chloroform - 1.21	--	Chloroform - 1.16
Method EPA 8270 mod. - Polynuclear Aromatic Compounds (PAH) by GC/MS with Selected Ion Monitoring (µg/L)							
Naphthalene	160 ⁷	14.5	<0.0904	<0.0930	0.0961	<0.0901	<0.0898
2-Methylnaphthalene		0.350	<0.0904	<0.0930	<0.0897	<0.0901	<0.0898
1-Methylnaphthalene		29.1	<0.0904	<0.0930	<0.0897	<0.0901	<0.0898
Acenaphthylene	NE	0.778	<0.0904	<0.0930	<0.0897	<0.0901	<0.0898
Acenaphthene	NE	0.642	<0.0904	<0.0930	<0.0897	<0.0901	<0.0898
Fluorene	NE	0.447	<0.0904	<0.0930	<0.0897	<0.0901	<0.0898
Phenanthrene	NE	<0.195	<0.0904	<0.0930	<0.0897	<0.0901	<0.0898
Anthracene	NE	<0.195	<0.0904	<0.0930	<0.0897	<0.0901	<0.0898
Fluoranthene	NE	<0.195	<0.0904	<0.0930	<0.0897	<0.0901	<0.0898
Pyrene	NE	<0.195	<0.0904	<0.0930	<0.0897	<0.0901	<0.0898
Benzo (ghi) perylene	NE	<0.195	<0.0904	<0.0930	<0.0897	<0.0901	<0.0898

Boring/Test Pit	MTCA Method	B8-081214	HWA-MW-1	GEI-MW-1	GEI-MW-2	GEI-MW-3	MW-Dup
Date Sampled	Levels ²	08/12/14	09/16/14	09/16/14	09/16/14	09/16/14	09/16/14
Benzo (a) anthracene	0.1 ⁸	<0.195 ⁵	<0.0904	<0.0930	<0.0897	<0.0901	<0.0898
Chrysene		<0.195 ⁵	<0.0904	<0.0930	<0.0897	<0.0901	<0.0898
Benzo (b) fluoranthene		<0.195 ⁵	<0.0904	<0.0930	<0.0897	<0.0901	<0.0898
Benzo (k) fluoranthene		<0.195 ⁵	<0.0904	<0.0930	<0.0897	<0.0901	<0.0898
Benzo (a) pyrene		<0.195 ⁵	<0.0904	<0.0930	<0.0897	<0.0901	<0.0898
Indeno (1,2,3-cd) pyrene		<0.195 ⁵	<0.0904	<0.0930	<0.0897	<0.0901	<0.0898
Dibenzo (a,h) anthracene		<0.195 ⁵	<0.0904	<0.0930	<0.0897	<0.0901	<0.0898
Carcinogenic PAH TEQ ⁹	0.1	0.147	0.0683	0.0702	0.0677	0.0680	0.0678
Method NWTPH-DX - Semivolatile Petroleum Products (µg/L)							
Diesel-range hydrocarbons	500	20,900	<310	<230	<232	266	<228
Heavy oil-range hydrocarbons	500	766	<517 ⁵	<383	<386	<386	<381
Method NWTPH-HCID - Hydrocarbon Identification (µg/L)							
Gasoline-range hydrocarbons	800/1,000 ³	<620	--	--	--	--	--
Diesel-range hydrocarbons	500	18,000	--	--	--	--	--
Heavy oil-range hydrocarbons	500	1,000	--	--	--	--	--
Method 8082A - Polychlorinated Biphenyls (µg/L)							
PCB-1016	0.1	<0.195 ⁵	<0.0962	<0.0964	<0.0983	<0.0967	<0.0964
PCB-1221		<0.195 ⁵	<0.0962	<0.0964	<0.0983	<0.0967	<0.0964
PCB-1232		<0.195 ⁵	<0.0962	<0.0964	<0.0983	<0.0967	<0.0964
PCB-1242		<0.195 ⁵	<0.0962	<0.0964	<0.0983	<0.0967	<0.0964
PCB-1248		<0.195 ⁵	<0.0962	<0.0964	<0.0983	<0.0967	<0.0964
PCB-1254		<0.195 ⁵	<0.0962	<0.0964	<0.0983	<0.0967	<0.0964
PCB-1260		<0.195 ⁵	<0.0962	<0.0964	<0.0983	<0.0967	<0.0964
PCB-1268		<0.195 ⁵	<0.0962	<0.0964	<0.0983	<0.0967	<0.0964
Method EPA 200 Series - Total Metals (µg/L)							
Arsenic	5	<20.0 ⁵	<2.00	<2.00	<2.00	<2.00	<2.00
Cadmium	5	<4.00	<1.00	<1.00	<1.00	<1.00	<1.00
Chromium (total)	50	36.8	<2.00	<2.00	<2.00	<2.00	<2.00
Lead	15	27.7	<2.00	<2.00	<2.00	<2.00	<2.00
Method EPA 245.1 - Total Metals (µg/L)							
Mercury	2	<0.200	<0.200	<0.200	<0.200	<0.200	<0.200

Boring/Test Pit	MTCA Method	B8-081214	HWA-MW-1	GEI-MW-1	GEI-MW-2	GEI-MW-3	MW-Dup
Date Sampled	Levels ²	08/12/14	09/16/14	09/16/14	09/16/14	09/16/14	09/16/14
Method EPA 200.7 - Dissolved Metals (mg/L)							
Manganese	0.05 ¹⁰	–	0.0337	0.0422 J	<0.0100	0.986	<0.0100
Method RSK-175 - Dissolved Gases (mg/L)							
Methane	NE	–	<0.00500	<0.00500	<0.00500	0.00508	<0.00500
Method EPA 300.0 - Anions (mg/L)							
Nitrate-Nitrogen	10 ¹¹	–	3.12	3.58	3.34	1.05	3.26
Sulfate	250 ¹⁰	–	10.6	13.6	10.8	10.7	10.8
Method SM 2320B - Conventional Chemistry Parameters (mg/L)							
Total Alkalinity	NE	–	90.0	80.0	85.0	125	85.0

Notes:

¹Chemical analyses conducted by TestAmerica Laboratories, Inc. of Spokane, Washington.

²Washington State Model Toxics Control Act (MTCA) Method A Unrestricted Land Use cleanup levels. **Bold** font indicates analyte concentrations in excess of respective cleanup levels.

³Gasoline-range petroleum hydrocarbon cleanup levels in groundwater are 800 µg/L when benzene is detected and 1,000 µg/L when benzene is not detected.

⁴Cleanup level for total xylenes (m,p-xylene and o-xylene).

⁵Detection limit for analyte is greater than established cleanup level.

⁶Cleanup levels for VOCs vary based on analyte. Chloroform does not have an established cleanup level. Full list of analyzed VOCs is contained in the laboratory analytical report.

⁷Cleanup level refers to sum of naphthalenes (naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene).

⁸Cleanup level referenced to benzo (a) pyrene. If other carcinogenic PAHs are present, the cleanup level represents the total equivalent carcinogenic PAH concentration.

⁹Carcinogenic PAH toxic equivalency (TEQ) calculated using the factors found in MTCA Table 708-2. The TEQ was calculated using one half the laboratory reporting limit for non-detect.

¹⁰Secondary maximum contaminant level recommended by the Environmental Protection Agency.

¹¹Maximum contaminant level established by Title 40, Volume 19 of the Code of Federal Regulations.

NT = not tested; NE = not established; EPA = Washington State Environmental Protection Agency

J qualifier indicates the data has been qualified as estimated due to the reasons stated in Appendix B.

µg/L = micrograms per liter; mg/L = milligrams per liter

Table 5
Summary of Chemical Analytical Results - Soil¹
Trolley Barn
Yakima, Washington

Boring/Test Pit	MTCA Method	GEI-TP-1 (9.5)	GEI-TP-1a (9)	GEI-TP-1a (12)	GEI-TP-2 (12)	GEI-TP-3 (9)	GEI-TP-4 (9)	GEI-MW-1 (12.5-13.5)	GEI-MW-2 (12-13)	GEI-MW-3 (12-13)	GEI-B1 (2-3)	GEI-B1 (12-13)	GEI-B2 (13-14)	GEI-B3 (7-8)	GEI-B4 (2-3)
Sample Depth (feet)	A Cleanup	9.5	9	12	12	9	9	12.5-13.5	12-13	12-13	2-3	12-13	13-14	7-8	2-3
Date Sampled	Levels ²	06/11/14	06/11/14	06/11/14	06/11/14	06/11/14	06/11/14	08/12/14	08/13/14	08/12/14	08/11/14	08/11/14	08/11/14	08/11/14	08/11/14
Method EPA 8260C - NWTPH-Gx and Volatile Organic Compounds (mg/kg)															
Gasoline-range hydrocarbons	30/100 ³	14.6	NA	NA	23.6	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	0.10	<0.0302	NA	NA	<0.0331	NA	NA	<0.0627	<0.0528	<0.0641	<0.0866	NA	<0.0522	<0.0586	NA
Hexane	NA	NA	NA	NA	NA	NA	NA	<0.125	<0.106	<0.128	<0.173	NA	<0.104	<0.117	NA
Tetrachloroethene (PCE)	0.05	NA	NA	NA	NA	NA	NA	<0.0501	<0.0422	<0.0513	<0.0693	NA	<0.0261	<0.0469	NA
Trichloroethene (TCE)	0.03	NA	NA	NA	NA	NA	NA	<0.0313	<0.0264	<0.0320	<0.0433	NA	<0.0417	<0.0293	NA
Benzene	0.03	0.0237	<0.0140	<0.0149	0.0458	NA	NA	<0.0188	<0.0158	<0.0192	<0.0260	NA	<0.0156	<0.0176	NA
Ethylbenzene	6	<0.101	<0.0933	<0.0995	<0.110	NA	NA	<0.125	<0.106	<0.128	<0.173	NA	<0.104	<0.117	NA
Toluene	7	0.124	<0.0933	<0.0995	0.279	NA	NA	<0.125	<0.106	<0.128	<0.173	NA	<0.104	<0.117	NA
o-Xylene	9 ⁴	<0.201	<0.187	<0.199	<0.221	NA	NA	<0.251	<0.211	<0.256	<0.346	NA	<0.209	<0.234	NA
m,p-Xylene		<0.403	<0.373	<0.398	<0.441	NA	NA	<0.501	<0.422	<0.513	<0.693	NA	<0.417	<0.469	NA
Xylenes (total)	9 ⁴	<0.604	<0.560	<0.597	<0.662	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane (EDC)	NE	<0.101	NA	NA	<0.110	NA	NA	<0.125	<0.106	<0.128	<0.173	NA	<0.104	<0.117	NA
Method EPA 8011 - EDB (µg/kg)															
1,2-Dibromoethane (EDB)	5	<1.02	NA	NA	<0.792	NA	NA	<0.842	<0.934	<0.867	<5.86	NA	<0.945	<0.853	NA
1,2-Dibromo-3-chloropropane	NE	NA	NA	NA	NA	NA	NA	<0.842	<0.934	<0.867	<5.86	NA	<0.945	<0.853	NA
Method EPA 8270 mod. - Polynuclear Aromatic Compounds (PAH) by GC/MS with Selected Ion Monitoring (mg/kg)															
Naphthalene	5 ⁵	<0.373	NA	NA	0.0436	NA	NA	<0.0195	<0.0195	<0.0196	<1.46	NA	<0.0202	<0.0184	NA
2-Methylnaphthalene		<0.373	NA	NA	0.106	NA	NA	<0.0195	<0.0195	<0.0196	<1.46	NA	<0.0202	<0.0184	NA
1-Methylnaphthalene		<0.373	NA	NA	0.0608	NA	NA	<0.0195	<0.0195	<0.0196	<1.46	NA	<0.0202	<0.0184	NA
Acenaphthylene	NE	<0.373	NA	NA	<0.0198	NA	NA	<0.0195	<0.0195	<0.0196	<1.46	NA	<0.0202	<0.0184	NA
Acenaphthene	NE	<0.373	NA	NA	<0.0198	NA	NA	<0.0195	<0.0195	<0.0196	<1.46	NA	<0.0202	<0.0184	NA
Fluorene	NE	<0.373	NA	NA	<0.0198	NA	NA	<0.0195	<0.0195	<0.0196	<1.46	NA	<0.0202	<0.0184	NA
Phenanthrene	NE	<0.373	NA	NA	0.0423	NA	NA	<0.0195	<0.0195	<0.0196	<1.46	NA	<0.0202	<0.0184	NA
Anthracene	NE	<0.373	NA	NA	<0.0198	NA	NA	<0.0195	<0.0195	<0.0196	<1.46	NA	<0.0202	<0.0184	NA
Fluoranthene	NE	<0.373	NA	NA	0.0330	NA	NA	<0.0195	<0.0195	<0.0196	<1.46	NA	<0.0202	<0.0184	NA
Pyrene	NE	<0.373	NA	NA	0.0277	NA	NA	<0.0195	<0.0195	<0.0196	<1.46	NA	<0.0202	<0.0184	NA
Benzo (ghi) perylene	NE	<0.373	NA	NA	0.0251	NA	NA	<0.0195	<0.0195	<0.0196	<1.46	NA	<0.0202	<0.0184	NA
Benzo (a) anthracene	0.1 ⁶	<0.373 ⁸	NA	NA	<0.0198	NA	NA	<0.0195	<0.0195	<0.0196	<1.46 ⁸	NA	<0.0202	<0.0184	NA
Chrysene		<0.373 ⁸	NA	NA	0.0330	NA	NA	<0.0195	<0.0195	<0.0196	<1.46 ⁸	NA	<0.0202	<0.0184	NA
Benzo (b) fluoranthene		<0.373 ⁸	NA	NA	0.0409	NA	NA	<0.0195	<0.0195	<0.0196	<1.46 ⁸	NA	<0.0202	<0.0184	NA
Benzo (k) fluoranthene		<0.373 ⁸	NA	NA	<0.0198	NA	NA	<0.0195	<0.0195	<0.0196	<1.46 ⁸	NA	<0.0202	<0.0184	NA
Benzo (a) pyrene		<0.373 ⁸	NA	NA	<0.0198	NA	NA	<0.0195	<0.0195	<0.0196	<1.46 ⁸	NA	<0.0202	<0.0184	NA
Indeno (1,2,3-cd) pyrene		<0.373 ⁸	NA	NA	0.0225	NA	NA	<0.0195	<0.0195	<0.0196	<1.46 ⁸	NA	<0.0202	<0.0184	NA
Dibenzo (a,h) anthracene		<0.224 ⁸	NA	NA	0.0119	NA	NA	<0.0117	<0.0117	<0.0118	<0.873 ⁸	NA	<0.0121	<0.0111	NA
Carcinogenic PAH TEQ ⁷	0.1	0.274	NA	NA	0.0197	NA	NA	0.0143	0.0143	0.0144	1.073	NA	0.0148	0.0135	NA
Method NWTPH-DX - Semivolatile Petroleum Products (mg/kg)															
Diesel-range hydrocarbons	2,000	115	NA	NA	63.8	NA	86	NA	NA	NA	3,950 J	<10.7	NA	NA	NA
Heavy oil-range hydrocarbons	2,000	244	NA	NA	182	NA	86	NA	NA	NA	15,000	<26.8	NA	NA	NA

Boring/Test Pit	MTCA Method	GEI-TP-1 (9.5)	GEI-TP-1a (9)	GEI-TP-1a (12)	GEI-TP-2 (12)	GEI-TP-3 (9)	GEI-TP-4 (9)	GEI-MW-1 (12.5-13.5')	GEI-MW-2 (12-13')	GEI-MW-3 (12-13')	GEI-B1 (2-3')	GEI-B1 (12-13')	GEI-B2 (13-14')	GEI-B3 (7-8')	GEI-B4 (2-3')
Sample Depth (feet)	A Cleanup	9.5	9	12	12	9	9	12.5-13.5	12-13	12-13	2-3	12-13	13-14	7-8	2-3
Date Sampled	Levels ²	06/11/14	06/11/14	06/11/14	06/11/14	06/11/14	06/11/14	08/12/14	08/13/14	08/12/14	08/11/14	08/11/14	08/11/14	08/11/14	08/11/14
Method NWTPH-HCID - Hydrocarbon Identification (mg/kg)															
Gasoline-range hydrocarbons	30/100 ³	<36	<35	<37	<32	<37	<34	<41	<34	<37	<120	NA	<41	<38	NA
Diesel-range hydrocarbons	2,000	<91	<87	<93	<79	<92	<86	<100	<85	<92	3,100 J	NA	<100	<95	NA
Heavy oil-range hydrocarbons	2,000	210	170 J	110	220	<92	<86	<100	<85	<92	15,000	NA	<100	<95	NA
Method 8082A - Polychlorinated Biphenyls (µg/kg)															
PCB-1016	1,000	<87.8	NA	NA	<94.4	NA	<89.7	<8.68	<10.3	<9.57	<110	NA	<9.67	<10.4	NA
PCB-1221		<87.8	NA	NA	<94.4	NA	<89.7	<8.68	<10.3	<9.57	<110	NA	<9.67	<10.4	NA
PCB-1232		<87.8	NA	NA	<94.4	NA	<89.7	<8.68	<10.3	<9.57	<110	NA	<9.67	<10.4	NA
PCB-1242		<87.8	NA	NA	<94.4	NA	<89.7	<8.68	<10.3	<9.57	<110	NA	<9.67	<10.4	NA
PCB-1248		<87.8	NA	NA	<94.4	NA	<89.7	<8.68	<10.3	<9.57	<110	NA	<9.67	<10.4	NA
PCB-1254		<87.8	NA	NA	<94.4	NA	<89.7	<8.68	<10.3	<9.57	<110	NA	<9.67	<10.4	NA
PCB-1260		<87.8	NA	NA	<94.4	NA	<89.7	<8.68	<10.3	<9.57	188	NA	<9.67	<10.4	NA
PCB-1268		<87.8	NA	NA	<94.4	NA	<89.7	<8.68	<10.3	<9.57	<110	NA	<9.67	<10.4	NA
Method EPA 6010C - Total Metals (mg/kg)															
Arsenic	20	4.74	2.91	NA	5.28	3.44	2.82	3.43	3.23	2.65	9.66	NA	3.06	2.66	14.3
Barium	NE	89.1	67.0	NA	261	56.7	40.1	NA	NA	NA	NA	NA	NA	NA	277 J
Cadmium	2	0.524	0.221	NA	2.02	<0.200	<0.207	<0.404	<0.223	<0.215	2.60	NA	<0.204	<0.197	6.78
Chromium	19/2,000	12.3 J	10.1	NA	14.3	13.0	15.8	17.1	11.5	11.3	20.2	NA	14.9	14.8	18.4 J
Lead	250	94.1	43.9	NA	302	4.71	2.27	4.16	2.96	4.51	806	NA	4.72	3.04	865
Selenium	NE	<2.64	<2.64	NA	<2.49	<2.50	<2.59	NA	NA	NA	NA	NA	NA	NA	<5.29
Silver	NE	<0.527	<0.528	NA	<0.498	<0.500	<0.518	NA	NA	NA	NA	NA	NA	NA	<1.06
Method EPA 7471B - Mercury (µg/kg)															
Mercury	2,000	72.1 J	<48.1	NA	106	43.0	<50.0	<47.2	<43.1	<37.9	512	NA	<37.3	<42.4	203 J

Boring/Test Pit	MTCA Method	GEI-B4 (7-8')	GEI-B5 (2-3')	GEI-B5 (7-8')	GEI-B6 (2-3')	GEI-B6 (13-14')	GEI-B7 (13-14')	GEI-B8 (14-15')	GEI-B9 (13-14')	Duplicate-1 ⁹	Duplicate-2 ⁹
Sample Depth (feet)	A Cleanup	7-8	2-3	7-8	2-3	13-14	13-14	14-15	13-14	NA	NA
Date Sampled	Levels ²	08/11/14	08/11/14	08/11/14	08/11/14	08/11/14	08/12/14	08/12/14	08/13/14	08/11/14	08/12/14
Method EPA 8260C - NWTPH-Gx and Volatile Organic Compounds (mg/kg)											
Gasoline-range hydrocarbons	30/100 ³	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Methyl tert-butyl ether	0.10	<0.0610	NA	<0.0623	NA	<0.0605	<0.0750	<0.0661	<0.0490	<0.0534	<0.0740
Hexane	NA	<0.122	NA	<0.125	NA	<0.121	<0.150	<0.132	<0.0980	<0.107	<0.148
Tetrachloroethene (PCE)	0.05	<0.0488	NA	<0.0498	NA	<0.0484	<0.0600	<0.0528	<0.0392	<0.0427	<0.0592
Trichloroethene (TCE)	0.03	<0.0305	NA	<0.0311	NA	<0.0303	<0.0375	<0.0330	<0.0245	<0.0267	<0.0370
Benzene	0.03	<0.0183	NA	<0.0187	NA	<0.0182	<0.0225	<0.0198	<0.0147	<0.0160	<0.0222
Ethylbenzene	6	<0.122	NA	<0.125	NA	<0.121	<0.150	<0.132	<0.0980	<0.107	<0.148
Toluene	7	<0.122	NA	<0.125	NA	<0.121	<0.150	<0.132	<0.0980	<0.107	<0.148
o-Xylene	g ⁴	<0.244	NA	<0.249	NA	<0.242	<0.300	<0.264	<0.196	<0.214	<0.296
m,p-Xylene		<0.488	NA	<0.498	NA	<0.484	<0.600	<0.528	<0.392	<0.427	<0.592
Xylenes (total)	g ⁴	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
1,2-Dichloroethane (EDC)	NE	<0.122	NA	<0.125	NA	<0.121	<0.150	<0.132	<0.0980	<0.107	<0.148
Method EPA 8011 - EDB (µg/kg)											
1,2-Dibromoethane (EDB)	5	<0.765	NA	<0.978	NA	<0.929	<1.05	<1.01	<0.922	<0.857	<1.08
1,2-Dibromo-3-chloropropane	NE	<0.765	NA	<0.978	NA	<0.929	<1.05	<1.01	<0.922	<0.857	NA
Method EPA 8270 mod. - Polynuclear Aromatic Compounds (PAH) by GC/MS with Selected Ion Monitoring (mg/kg)											
Naphthalene	5 ⁵	<0.0191	NA	<0.0215	NA	<0.0207	<0.0197	<0.0200	<0.0185	<0.0200	<0.0198
2-Methylnaphthalene		<0.0191	NA	<0.0215	NA	<0.0207	<0.0197	<0.0200	<0.0185	<0.0200	<0.0198
1-Methylnaphthalene		<0.0191	NA	<0.0215	NA	<0.0207	<0.0197	<0.0200	<0.0185	<0.0200	<0.0198
Acenaphthylene	NE	<0.0191	NA	<0.0215	NA	<0.0207	<0.0197	<0.0200	<0.0185	<0.0200	<0.0198
Acenaphthene	NE	<0.0191	NA	<0.0215	NA	<0.0207	<0.0197	<0.0200	<0.0185	<0.0200	<0.0198
Fluorene	NE	<0.0191	NA	<0.0215	NA	<0.0207	<0.0197	<0.0200	<0.0185	<0.0200	<0.0198
Phenanthrene	NE	<0.0191	NA	<0.0215	NA	<0.0207	<0.0197	<0.0200	<0.0185	<0.0200	<0.0198
Anthracene	NE	<0.0191	NA	<0.0215	NA	<0.0207	<0.0197	<0.0200	<0.0185	<0.0200	<0.0198
Fluoranthene	NE	<0.0191	NA	<0.0215	NA	<0.0207	<0.0197	<0.0200	<0.0185	<0.0200	<0.0198
Pyrene	NE	<0.0191	NA	<0.0215	NA	<0.0207	<0.0197	<0.0200	<0.0185	<0.0200	<0.0198
Benzo (ghi) perylene	NE	<0.0191	NA	<0.0215	NA	<0.0207	<0.0197	<0.0200	<0.0185	<0.0200	<0.0198
Benzo (a) anthracene	0.1 ⁶	<0.0191	NA	<0.0215	NA	<0.0207	<0.0197	<0.0200	<0.0185	<0.0200	<0.0198
Chrysene		<0.0191	NA	<0.0215	NA	<0.0207	<0.0197	<0.0200	<0.0185	<0.0200	<0.0198
Benzo (b) fluoranthene		<0.0191	NA	<0.0215	NA	<0.0207	<0.0197	<0.0200	<0.0185	<0.0200	<0.0198
Benzo (k) fluoranthene		<0.0191	NA	<0.0215	NA	<0.0207	<0.0197	<0.0200	<0.0185	<0.0200	<0.0198
Benzo (a) pyrene		<0.0191	NA	<0.0215	NA	<0.0207	<0.0197	<0.0200	<0.0185	<0.0200	<0.0198
Indeno (1,2,3-cd) pyrene		<0.0191	NA	<0.0215	NA	<0.0207	<0.0197	<0.0200	<0.0185	<0.0200	<0.0198
Dibenzo (a,h) anthracene		<0.0115	NA	<0.0129	NA	<0.0124	<0.0118	<0.0120	<0.0111	<0.0120	<0.0119
Carcinogenic PAH TEQ ⁷	0.1	0.0140	NA	0.0158	NA	0.0152	0.0145	0.0147	0.0136	0.0147	0.0146
Method NWTPH-DX - Semivolatile Petroleum Products (mg/kg)											
Diesel-range hydrocarbons	2,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Heavy oil-range hydrocarbons	2,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Boring/Test Pit	MTCA Method	GEI-B4 (7-8')	GEI-B5 (2-3')	GEI-B5 (7-8')	GEI-B6 (2-3')	GEI-B6 (13-14')	GEI-B7 (13-14')	GEI-B8 (14-15')	GEI-B9 (13-14')	Duplicate-1 ⁹	Duplicate-2 ⁹
Sample Depth (feet)	A Cleanup	7-8	2-3	7-8	2-3	13-14	13-14	14-15	13-14	NA	NA
Date Sampled	Levels ²	08/11/14	08/11/14	08/11/14	08/11/14	08/11/14	08/12/14	08/12/14	08/13/14	08/11/14	08/12/14
Method NWTPH-HCID - Hydrocarbon Identification (mg/kg)											
Gasoline-range hydrocarbons	30/100 ³	<31	NA	<37	NA	<38	<41	<36	<34	<34	<37
Diesel-range hydrocarbons	2,000	<78	NA	<93	NA	<96	<100	<90	<85	<86	<92
Heavy oil-range hydrocarbons	2,000	<78	NA	<93	NA	<96	<100	<90	<85	<86	<92
Method 8082A - Polychlorinated Biphenyls (µg/kg)											
PCB-1016	1,000	<9.64	NA	<10.1	NA	<10.3	<9.29	<9.46	<10.1	<8.96	<8.86
PCB-1221		<9.64	NA	<10.1	NA	<10.3	<9.29	<9.46	<10.1	<8.96	<8.86
PCB-1232		<9.64	NA	<10.1	NA	<10.3	<9.29	<9.46	<10.1	<8.96	<8.86
PCB-1242		<9.64	NA	<10.1	NA	<10.3	<9.29	<9.46	<10.1	<8.96	<8.86
PCB-1248		<9.64	NA	<10.1	NA	<10.3	<9.29	<9.46	<10.1	<8.96	<8.86
PCB-1254		<9.64	NA	<10.1	NA	<10.3	<9.29	<9.46	<10.1	<8.96	<8.86
PCB-1260		<9.64	NA	<10.1	NA	<10.3	<9.29	<9.46	<10.1	<8.96	<8.86
PCB-1268		<9.64	NA	<10.1	NA	<10.3	<9.29	<9.46	<10.1	<8.96	<8.86
Method EPA 6010C - Total Metals (mg/kg)											
Arsenic	20	4.40	2.46	2.77	13.4	3.39	3.41	1.86	1.92	6.50	1.40
Barium	NE	NA	60.4	NA	93.4	NA	NA	NA	NA	NA	NA
Cadmium	2	<0.194	<0.187	<0.386	1.24	<0.219	<0.217	<0.195	<0.201	<0.199	<0.220
Chromium	19/2,000	13.5	7.33	16.6	13.2	15.7	15.1	9.40	9.33	15.2	8.83
Lead	250	2.20 J	24.8	3.68	343	4.77	3.71	3.81	3.48	1.40 J	3.11
Selenium	NE	NA	<2.34	NA	<2.62	NA	NA	NA	NA	NA	NA
Silver	NE	NA	<0.468	NA	<0.524	NA	NA	NA	NA	NA	NA
Method EPA 7471B - Mercury (µg/kg)											
Mercury	2,000	<49.0	48.8	194	126	<41.0	<48.1	<36.8	<47.2	<43.9	<49.0

Notes:

¹Chemical analyses conducted by TestAmerica Laboratories, Inc. of Spokane, Washington.

²Washington State Model Toxics Control Act (MTCA) Method A Unrestricted Land Use cleanup levels. **Bold** font indicates analyte concentrations in excess of respective cleanup levels.

³Gasoline-range petroleum hydrocarbon cleanup levels in soil are 30 mg/kg when benzene is detected and 100 mg/kg when benzene is not detected.

⁴Cleanup level for total xylenes (m,p-xylene and o-xylene).

⁵Cleanup level refers to sum of naphthalenes (naphthalene, 1-methylnaphthalene, and 2-methylnaphthalene).

⁶Cleanup level referenced to benzo (a) pyrene. If other carcinogenic PAHs are present, the cleanup level represents the total equivalent carcinogenic PAH concentration.

⁷Carcinogenic PAH toxic equivalency (TEQ) calculated using the factors found in MTCA Table 708-2. The TEQ was calculated using one half the laboratory reporting limit for non-detected analytes.

⁸Detection limit for analyte is greater than established cleanup level.

⁹Duplicate samples Duplicate-1 and Duplicate-2 were collected from samples GEI-B4(7-8) and GEI-B8(14-15), respectively.

mg/kg = milligrams per kilogram; NT = not tested; NE = not established; EPA = Washington State Environmental Protection Agency

J qualifier indicates the data has been qualified as an estimate due to the reasons stated in Appendix B.

Yakima Valley Transportation Co. Trolley Barn Site

Washington Dept. of Ecology

XRF Data - March 11-12, 2015

Facility Site No. 9688850

City of Yakima

Yakima, Washington

Cleanup Site No. 2190

MTCA Method A CUL		20 mg/kg		250 mg/kg		2 mg/kg	
Sample ID - Depth (in.)	Date	As (mg/kg)	As +/-	Pb (mg/kg)	Pb +/-	Hg (mg/kg)	Hg +/-
1 - Surface	3/11/2015	<LOD	8	24	4	<LOD	12
1 - 0.5	3/11/2015	<LOD	9	<LOD	12	<LOD	16
2 - Surface	3/11/2015	<LOD	14	50	6	<LOD	16
2 - 0.5	3/11/2015	<LOD	14	64	6	<LOD	16
3 - Surface	3/11/2015	<LOD	11	20	5	<LOD	16
3 - 0.5	3/11/2015	<LOD	9	<LOD	11	<LOD	15
4 - Surface	3/11/2015	<LOD	12	38	5	<LOD	18
4 - 0.5	3/11/2015	<LOD	15	53	6	<LOD	16
5 - Surface	3/11/2015	<LOD	14	50	6	<LOD	19
5 - 0.5	3/11/2015	37	4	16	4	<LOD	15
6 - Surface	3/11/2015	208	27	3469	53	<LOD	29
6 - 0.5	3/11/2015	163	17	1135	25	<LOD	21
7 - Surface	3/11/2015	<LOD	21	154	9	<LOD	19
7 - 0.5	3/11/2015	117	14	855	19	<LOD	19
8 - Surface	3/11/2015	<LOD	17	112	7	<LOD	18
8 - 0.5	3/11/2015	43	10	447	14	<LOD	19
9 - Surface	3/11/2015	<LOD	34	540	16	<LOD	20
9 - 0.5	3/11/2015	72	20	1912	34	<LOD	21
10 - Surface	3/11/2015	44	11	524	15	<LOD	19
10 - 0.5	3/11/2015	93	11	427	14	<LOD	20
11 - Surface	3/11/2015	<LOD	21	175	9	<LOD	18
11 - 0.5	3/11/2015	<LOD	12	22	5	<LOD	16
12 - Surface	3/11/2015	18	5	89	6	<LOD	16
12 - 0.5	3/11/2015	<LOD	14	50	6	<LOD	17
13 - Surface	3/11/2015	25	7	181	9	<LOD	17
13 - 0.5	3/11/2015	<LOD	20	139	8	<LOD	17
14 - Surface	3/11/2015	201	11	387	12	<LOD	17
14 - 0.5	3/11/2015	290	12	213	10	<LOD	21
15 - Surface	3/11/2015	<LOD	31	373	13	<LOD	19
15 - 0.5	3/11/2015	135	22	2485	40	27	9
16 - Surface	3/11/2015	<LOD	13	34	6	<LOD	18
16 - 0.5	3/11/2015	57	9	361	12	<LOD	17
17 - Surface	3/11/2015	<LOD	15	67	7	<LOD	17
17 - 0.5	3/11/2015	23	6	73	7	<LOD	16
18 - Surface	3/11/2015	79	9	253	11	<LOD	20
18 - 0.5	3/11/2015	<LOD	21	212	9	<LOD	17
19 - Surface	3/11/2015	<LOD	14	85	6	<LOD	17
19 - 0.5	3/11/2015	72	16	1287	25	<LOD	20
20 - Surface	3/11/2015	<LOD	15	74	6	<LOD	16
20 - 0.5	3/11/2015	27	6	89	7	<LOD	15
21 - Surface	3/11/2015	<LOD	17	76	7	<LOD	17

Yakima Valley Transportation Co. Trolley Barn Site

Washington Dept. of Ecology

XRF Data - March 11-12, 2015

Facility Site No. 9688850

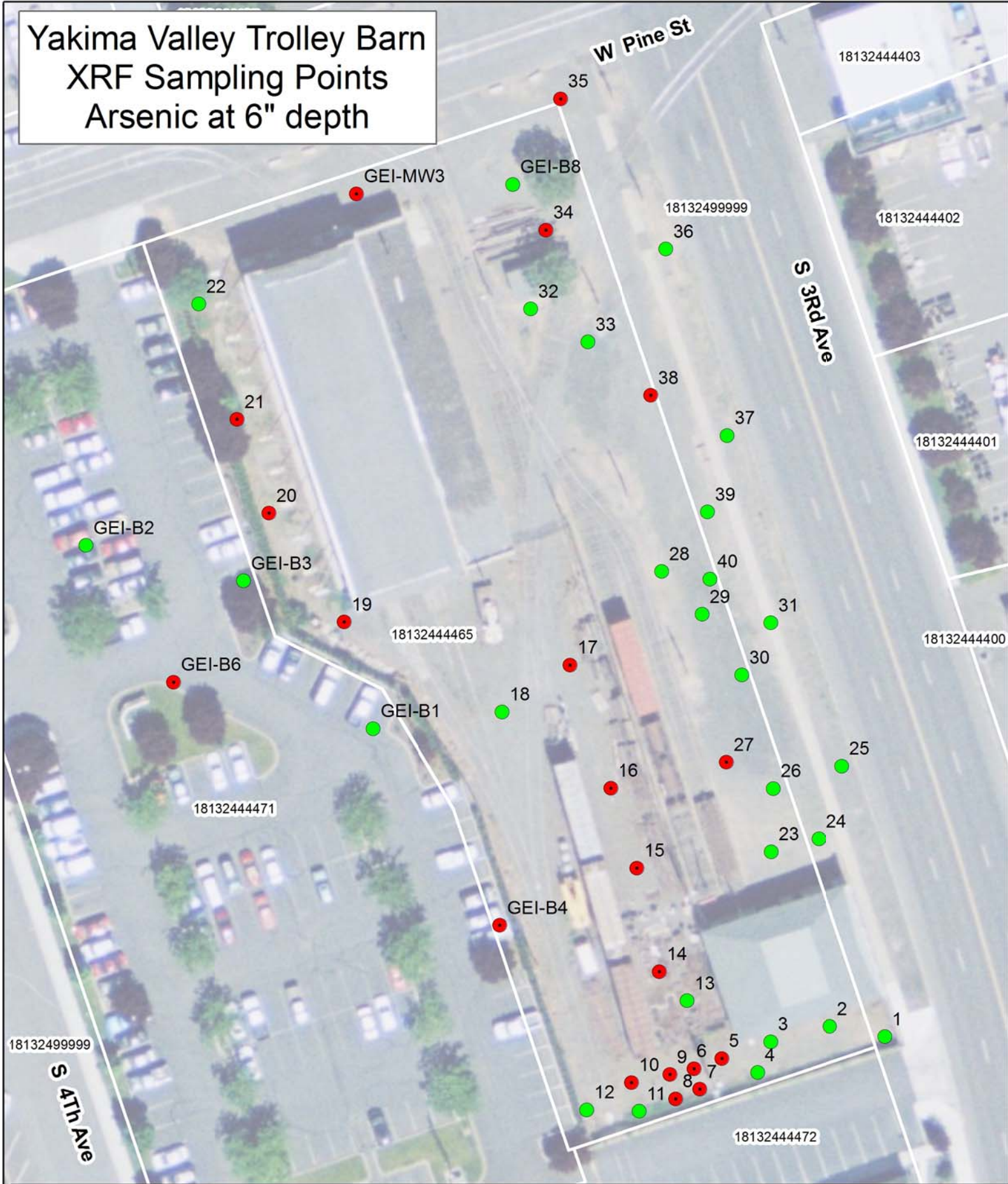
City of Yakima

Yakima, Washington

Cleanup Site No. 2190

MTCA Method A CUL		20 mg/kg		250 mg/kg		2 mg/kg	
Sample ID - Depth (in.)	Date	As (mg/kg)	As +/-	Pb (mg/kg)	Pb +/-	Hg (mg/kg)	Hg +/-
21 - 0.5	3/11/2015	24	6	134	8	<LOD	18
22 - Surface	3/11/2015	<LOD	24	235	10	24	7
22 - 0.5	3/11/2015	<LOD	17	123	7	<LOD	14
23 - Surface	3/11/2015	<LOD	21	215	9	<LOD	16
23 - 0.5	3/11/2015	<LOD	12	59	5	<LOD	12
24 - Surface	3/11/2015	<LOD	12	51	5	<LOD	16
24 - 0.5	3/11/2015	<LOD	15	70	7	<LOD	17
25 - Surface	3/11/2015	<LOD	16	88	7	<LOD	18
25 - 0.5	3/11/2015	<LOD	11	40	5	<LOD	15
26 - Surface	3/11/2015	<LOD	14	71	6	<LOD	16
26 - 0.5	3/11/2015	<LOD	11	26	4	18	6
27 - Surface	3/12/2015	<LOD	16	94	7	<LOD	18
27 - 0.5	3/12/2015	36	7	90	7	<LOD	17
28 - Surface	3/12/2015	<LOD	12	46	5	<LOD	15
28 - 0.5	3/12/2015	<LOD	11	17	4	<LOD	17
29 - Surface	3/12/2015	<LOD	21	226	9	<LOD	18
29 - 0.5	3/12/2015	<LOD	13	62	6	<LOD	15
30 - Surface	3/12/2015	<LOD	11	20	5	<LOD	16
30 - 0.5	3/12/2015	<LOD	15	84	6	<LOD	16
31 - Surface	3/12/2015	<LOD	14	84	6	<LOD	15
31 - 0.5	3/12/2015	<LOD	11	29	5	<LOD	16
32 - Surface	3/12/2015	<LOD	15	82	6	<LOD	16
32 - 0.5	3/12/2015	<LOD	14	57	6	<LOD	18
33 - Surface	3/12/2015	<LOD	17	116	7	<LOD	15
33 - 0.5	3/12/2015	<LOD	20	167	9	<LOD	18
34 - Surface	3/12/2015	<LOD	18	156	8	<LOD	16
34 - 0.5	3/12/2015	17	5	96	7	<LOD	17
35 - Surface	3/12/2015	<LOD	57	1946	33	<LOD	23
35 - 0.5	3/12/2015	34	9	290	11	<LOD	15
36 - Surface	3/12/2015	<LOD	13	70	6	<LOD	14
36 - 0.5	3/12/2015	<LOD	17	116	7	<LOD	15
37 - Surface	3/12/2015	31	8	264	10	<LOD	17
37 - 0.5	3/12/2015	<LOD	15	75	6	<LOD	18
38 - Surface	3/12/2015	<LOD	28	458	13	<LOD	17
38 - 0.5	3/12/2015	21	7	163	8	<LOD	18
39 - Surface	3/12/2015	14	4	31	5	<LOD	15
39 - 0.5	3/12/2015	<LOD	11	18	4	<LOD	17
40 - Surface	3/12/2015	<LOD	13	40	5	<LOD	16
40 - 0.5	3/12/2015	<LOD	11	44	5	<LOD	14

Yakima Valley Trolley Barn XRF Sampling Points Arsenic at 6" depth



40 20 0 40 80 120 160 Feet

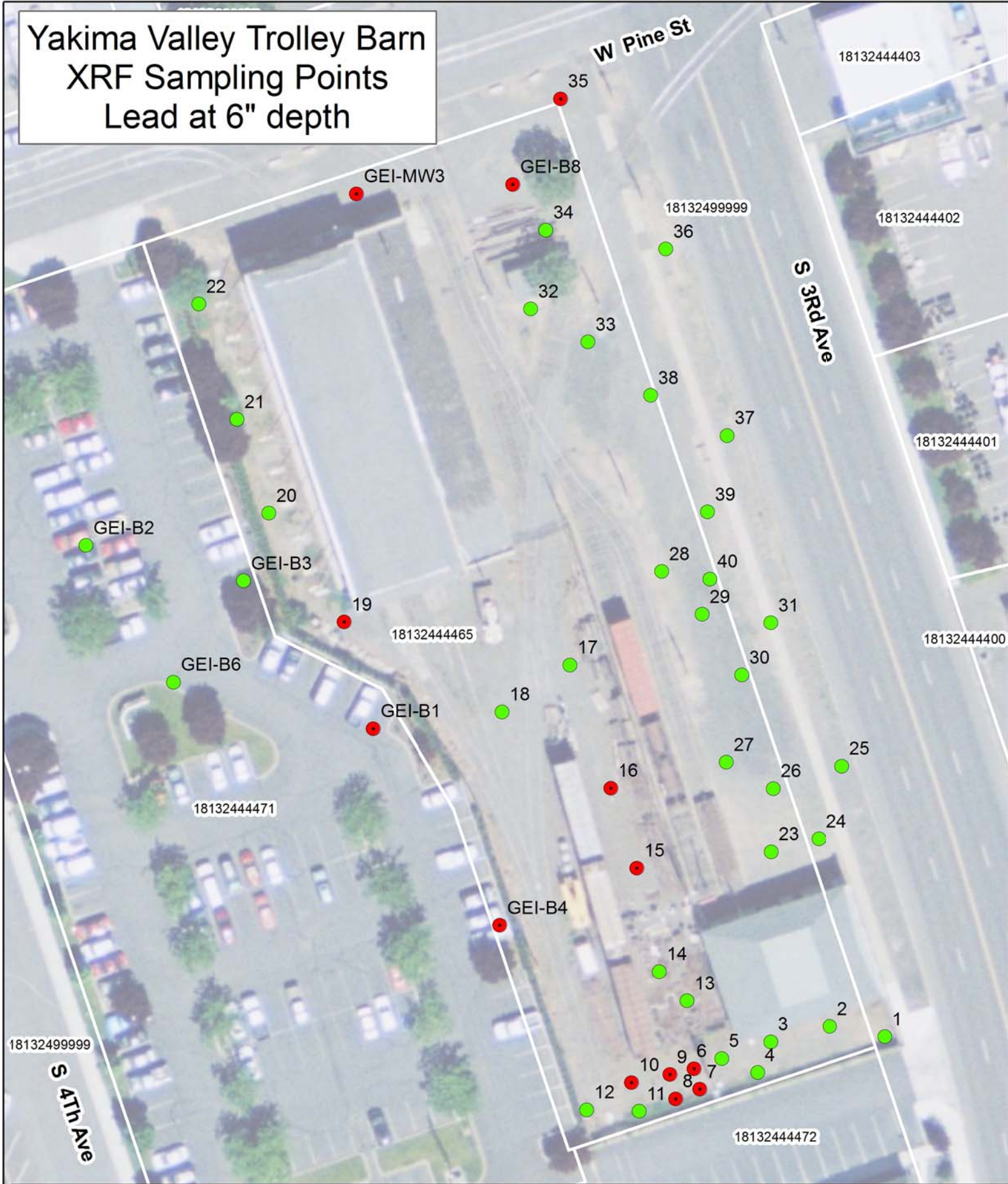
● Non-Detect/Below Cleanup Level ● Above Cleanup Level



DEPARTMENT OF
ECOLOGY
State of Washington

Matt Durkee

Yakima Valley Trolley Barn XRF Sampling Points Lead at 6" depth



40 20 0 40 80 120 160 Feet

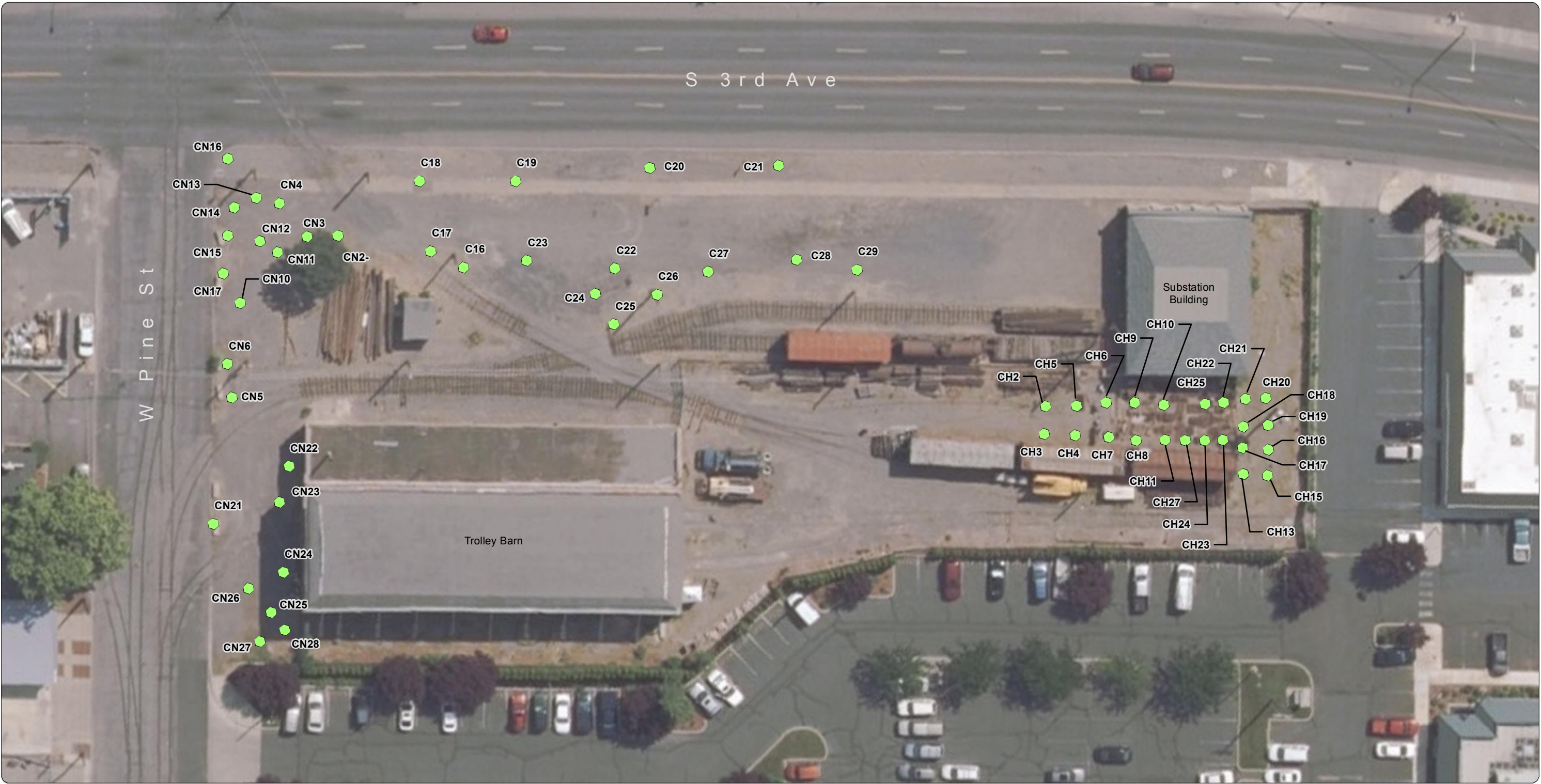
● Non-Detect/Below Cleanup Level ● Above Cleanup Level



DEPARTMENT OF
ECOLOGY
State of Washington



Matt Durkee

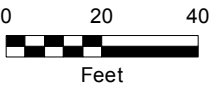


Source: Aerial photograph obtained from Esri ArcGIS Online

June 2015
XRF Analysis Locations
Trolley Barn Site
Yakima, Washington

Legend

● XRF Analysis Locations



Yakima Valley Transportation Co. Trolley Barn Site

Washington Dept. of Ecology

XRF Data - June 2015

City of Yakima

Facility Site No. 9688850

Yakima, Washington

Cleanup Site No. 2190

Sample ID - Depth (in.)	Date	As (mg/kg)	As +/-	Pb (mg/kg)	Pb +/-	Cd (mg/kg)	Cd +/-	Hg (mg/kg)	Hg +/-
C16-6	6/4/2015	<LOD	8	<LOD	11	<LOD	49	<LOD	14
C17-6	6/4/2015	12	4	22	4	<LOD	49	<LOD	16
C18-6	6/4/2015	<LOD	10	29	5	<LOD	48	<LOD	14
C19-6	6/4/2015	<LOD	9	12	4	<LOD	48	<LOD	14
C20-6	6/4/2015	<LOD	16	113	7	<LOD	48	<LOD	16
C21-6	6/4/2015	<LOD	16	106	7	<LOD	50	<LOD	16
C22-6	6/4/2015	11	3	<LOD	12	<LOD	49	<LOD	15
C23-6	6/4/2015	<LOD	15	71	6	<LOD	52	<LOD	17
C24-6	6/4/2015	<LOD	9	<LOD	12	<LOD	47	<LOD	15
C25-6	6/4/2015	14	3	15	4	<LOD	48	<LOD	15
C26-6	6/4/2015	14	4	60	5	<LOD	46	<LOD	15
C27-6	6/4/2015	<LOD	12	32	5	<LOD	49	<LOD	18
C28-6	6/4/2015	<LOD	9	15	4	<LOD	50	<LOD	15
C29-6	6/4/2015	<LOD	9	13	4	<LOD	47	<LOD	15
CH2-8	6/5/2015	22	5	111	7	<LOD	48	<LOD	14
CH3-8	6/5/2015	76	14	974	21	<LOD	49	<LOD	20
CH4-8	6/5/2015	44	11	547	15	<LOD	50	<LOD	19
CH5-8	6/5/2015	54	13	647	17	<LOD	52	<LOD	18
CH6-8	6/5/2015	36	5	62	6	<LOD	49	<LOD	17
CH7-8	6/5/2015	52	13	746	18	<LOD	50	<LOD	19
CH8-8	6/5/2015	35	5	56	6	<LOD	53	<LOD	17
CH9-8	6/5/2015	31	4	21	4	<LOD	48	<LOD	13
CH10-12	6/5/2015	44	4	28	4	<LOD	47	<LOD	15
CH11-12	6/5/2015	<LOD	19	168	8	<LOD	49	<LOD	16
CH13-12	6/5/2015	54	8	248	10	<LOD	51	<LOD	18
CH15-12	6/5/2015	53	9	332	11	<LOD	49	<LOD	18
CH16-12	6/5/2015	<LOD	8	<LOD	11	<LOD	49	<LOD	15
CH17-12	6/5/2015	46	7	170	9	<LOD	52	<LOD	16
CH18-12	6/5/2015	27	8	299	11	<LOD	49	<LOD	15
CH19-12	6/5/2015	<LOD	10	22	4	<LOD	49	<LOD	16
CH20-12	6/5/2015	45	7	159	8	<LOD	52	<LOD	17
CH21-12	6/5/2015	54	4	<LOD	11	<LOD	47	<LOD	16
CH22-12	6/5/2015	<LOD	47	1286	24	<LOD	48	<LOD	20
CH23-12	6/5/2015	<LOD	10	14	4	<LOD	51	<LOD	15
CH24-12	6/5/2015	<LOD	10	29	4	<LOD	48	<LOD	15
CH25-12	6/5/2015	<LOD	11	29	4	<LOD	46	<LOD	14
CH27-12	6/5/2015	117	17	1304	26	<LOD	50	<LOD	21
CN2-6	6/11/2015	<LOD	10	26	4	<LOD	48	<LOD	15
CN3-6	6/11/2015	<LOD	12	37	5	<LOD	50	<LOD	15
CN4-4	6/11/2015	<LOD	20	190	9	<LOD	48	<LOD	15
CN5-6	6/11/2015	<LOD	9	24	4	<LOD	48	<LOD	15

Yakima Valley Transportation Co. Trolley Barn Site

Washington Dept. of Ecology

XRF Data - June 2015

Facility Site No. 9688850

City of Yakima

Yakima, Washington

Cleanup Site No. 2190

CN6-6	6/11/2015	31	10	371	13	<LOD	50	<LOD	18
CN10-6	6/11/2015	<LOD	14	80	6	<LOD	50	<LOD	15
CN11-6	6/11/2015	<LOD	21	223	9	<LOD	48	<LOD	18
CN12-6	6/11/2015	<LOD	17	137	7	<LOD	48	<LOD	16
CN13-4	6/11/2015	<LOD	9	16	4	<LOD	48	<LOD	16
CN14-4	6/11/2015	<LOD	33	543	15	<LOD	52	<LOD	18
CN15-4	6/11/2015	<LOD	10	24	4	<LOD	49	<LOD	14
CN16-4	6/11/2015	17	6	118	7	<LOD	48	<LOD	16
CN17-6	6/11/2015	<LOD	12	44	5	<LOD	49	<LOD	16
CN21-4	6/11/2015	<LOD	24	173	11	<LOD	63	<LOD	18
CN22-4	6/11/2015	<LOD	25	328	11	<LOD	48	<LOD	18
CN23-4	6/11/2015	<LOD	17	103	7	<LOD	50	<LOD	17
CN24-4	6/11/2015	<LOD	22	205	9	<LOD	51	<LOD	18
CN25-4	6/11/2015	71	18	1172	27	<LOD	56	<LOD	23
CN26-4	6/11/2015	<LOD	39	519	18	<LOD	62	<LOD	25
CN27-4	6/11/2015	<LOD	20	119	9	<LOD	59	<LOD	18
CN28-4	6/11/2015	<LOD	21	165	9	<LOD	54	<LOD	18



Source: Aerial photograph obtained from Esri ArcGIS Online

Legend

 Post-Excavation Confirmation Sample Location

Exhibit A
MFA Soil Sample Locations

Trolley Barn Site
Yakima, Washington

Soil Confirmation Samples
Trolley Barn
City of Yakima
Yakima, Washington

Sample Name Sample Date Sample Depth (ft bgs)	MTCA Method A CUL	S-09	S-10	S-11	S-12	S-13	S-14	S-15	S-16	S-17	S-18	S-19
		6/5/2015	6/4/2015	6/4/2015	6/10/2015	6/10/2015	6/10/2015	6/10/2015	6/10/2015	6/10/2015	6/10/2015	6/10/2015
		1	1	1	15	15	11	15	10	12	12	10
Total Metals by USEPA Method 6020A & 200.8 (mg/kg)												
Arsenic	20	2.83	33	16.5	1.64	1.2	2.31	1.53	1.88	1.86	2.38	1.62
Cadmium	2	1 U	1 U	1.62	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Lead	250	25.2	85.8	335	6.46	4.57	25.9	4.41	5.42	6.73	3.72	8.12
BTEX Compounds by USEPA Method 8021B (mg/kg)												
Benzene	0.03	--	--	--	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	--	--
Ethylbenzene	6	--	--	--	0.27	0.02 U	0.02 U	0.67	0.02 U	0.02 U	--	--
Toluene	7	--	--	--	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	--	--
Total Xylenes	9	--	--	--	0.73	0.06 U	0.06 U	1.6	0.06 U	0.06 U	--	--
Total Petroleum Hydrocarbons by Methods NWTPH-Gx and NWTPH-DX (mg/kg)												
Gasoline Range Hydrocarbons	30	--	--	--	--	--	--	--	--	--	--	--
Diesel Range Hydrocarbons	2000	--	--	--	1800	450	--	4800	--	--	--	--
Motor Oil Range Hydrocarbons	2000	--	--	--	250 U	250 U	--	250 U	--	--	--	--
Total Petroleum Hydrocarbons by Method NWTPH-HCID (Presence/Absence)												
Gasoline Range Hydrocarbons	NA	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND
Diesel Range Hydrocarbons	NA	--	--	--	DETECT	DETECT	ND	DETECT	ND	ND	ND	ND
Motor Oil Range Hydrocarbons	NA	--	--	--	ND	ND	ND	ND	ND	ND	ND	ND
NOTES: Detected results in bold font. Shaded values exceed MTCA Method A Cleanup Levels https://fortress.wa.gov/ecy/clarc/FocusSheets/Soil%20Methods%20B%20and%20A%20unrestricted.pdf -- = not analyzed DETECT = analyte detected ft bgs = feet below ground surface mg/L = milligrams per liter mg/kg = milligrams per kilogram NA = not applicable ND = non-detect TCLP = toxicity characteristic leaching procedure U = Analyte not detected at or above method reporting limit.												

APPENDIX C

STOCKPILE CHARACTERIZATION METHODOLOGY



Stockpile Characterization Methodology

Material that is removed from the Yakima Valley Transportation Company Trolley Barn Site for disposal may contain levels of indicator hazardous substances (IHSs) that are regulated under the Resource Conservation and Recovery Act (RCRA) and the Washington State Model Toxics Control Act (MTCA). The material must be adequately characterized before its removal from the Site to ensure compliance with federal and state waste management regulations, including Code of Federal Regulations (CFR) 261.24 (RCRA). Excavated material should be stockpiled methodically in order to facilitate the sampling method and organization. Composite sampling is conducted in order to best characterize each stockpile to complete a waste profile for the landfill. Waste characterization samples are to be obtained directly from the excavated material stockpiles at a frequency of approximately one composite sample per a maximum 100 cubic yards of material (before conducting any characterization sampling, confirm with the waste disposal facility that the sample collection frequency and analytical methods prescribed in the Soil Management Plan are appropriate).

Five-point composite samples will be obtained from each 100-cubic-yard stockpile section that is to be disposed of off site. In order to develop a representative sample of each delineated section, five discrete subsamples of equal size will be collected from within the section. A standard stainless-steel hand auger will be used to collect samples from various depths within the stockpile (the sampler should avoid collecting samples from the stockpile surface). The stockpile section will be divided into four quadrants, with one subsample collected from within each quadrant and the fifth subsample collected from the center of the 100-cubic yard section. Of the first four subsamples, at least one should be collected from a shallow depth, one from mid-depth, one near the bottom of the stockpile, and one from a randomly selected depth.

Samples will be composited using a stainless-steel bowl with a stainless-steel spoon. A portion of the composited sample will be placed in the laboratory-provided containers, which will then be sealed (rocks and other debris should not be placed in the container). The sampling equipment is to be decontaminated after each composite sample is collected. The samples will be placed on ice in a shipping container with chain-of-custody paperwork and transported to an accredited laboratory for analysis.

Obtaining samples in this manner is intended to result in data that are representative of the contaminants in that particular section of the stockpile, and accounts for the variability of the waste generated from different excavation locations. The material in each stockpile is expected to be homogenized through the on-site handling procedures of excavating, placing in a dump truck, and dumping into a pile. Composite sampling, combined with the on-site homogenization, should result in a sample that is representative of the pile. Variability of the soil from different excavations will be addressed by collecting one composite sample per every 100 cubic yards of soil. Laboratory quality assurance and quality control (QA/QC) data, along with sample results, will be validated before handling procedures are determined for any soil. This review will be conducted as laboratory reports are received so that management of the soil can proceed rapidly.

The data quality objectives for this sampling approach address precision, accuracy, representativeness, comparability, and completeness:

- The term “precision” refers to the ability of an analytical method or instrument to reproduce a measurement. Review of laboratory-generated QA/QC documentation will allow assessment of laboratory precision.
- Accuracy is assessed by evaluating how close a measurement is to the true or expected value. Accuracy is evaluated by reviewing laboratory QC data, such as blank and spiked samples.
- Representativeness of the data is an indication of how well data represent an expected environmental condition. The compositing approach has been designed to obtain samples that are representative of the individual stockpile sections.
- Comparability, or the confidence in evaluating one data set in relation to another, will be established through the use of consistent field techniques, standard analytical methods, standard reporting formats, equipment calibration, and analysis of reference materials.
- The data will be assessed for completeness by summarizing the number of valid results versus the total number of samples collected. Because only valid laboratory results will be acceptable for disposal determination, the results will be 100 percent complete.

Stockpile Analysis

Analysis of material on the Site is required before off-site disposal. Any and all soil that is generated and intended for off-site disposal is to be analyzed by an accredited laboratory for the following constituents:

- Gasoline- and diesel-range petroleum hydrocarbons by Washington State Department of Ecology (Ecology) Methods NWTPH-Gx and NWTPH-Dx
- Benzene, ethylbenzene, toluene, and total xylenes by U.S. Environmental Protection Agency (USEPA) Method 8260B
- Polycyclic aromatic hydrocarbons by USEPA Method 8270C
- Arsenic and lead by toxicity characteristic leaching procedure USEPA Method 1311/6010B

It is the responsibility of the party generating the impacted soil to verify current disposal requirements with the disposal facility.

APPENDIX D

SITE INSPECTION SUMMARY REPORT FORM



SITE INSPECTION SUMMARY REPORT
YAKIMA VALLEY TRANSPORTATION CO TROLLEY BARN VISUAL MONITORING
YAKIMA, WASHINGTON

Date:	
Weather:	
Precipitation (prior 24 hrs)	
Completed By:	
Photograph Requirements:	
Overview photograph of each cap component to capture composite view of entire cap. Any noted changes or damage to the cap.	
General Observations:	
General cap condition. Stormwater flow characteristics (if monitoring conducted during wet weather). Activity on the site. Visible changes since previous inspection. Standing water or areas of concentrated surface water flow. Visible demarcation fabric.	
Specific Observations: To be noted with photographs, measurements, and locations:	
Soil Cap: Areas of surface erosion (rills/gullies, concentrated sediment deposits). Standing water or concentrated surface water flow. Pavement Cap: Pavement Cap: Cracking or buckling indicating lateral expansion or contraction. Building Cap: Cracking of foundation.	
Measurements:	
Length and depth of any surface erosion or damage. Estimated areal coverage of vegetation/landscaping material on soil cap. Depth of soil cap at edges adjacent to pavement/building cap.	

SITE INSPECTION SUMMARY REPORT
YAKIMA VALLEY TRANSPORTATION CO TROLLEY BARN VISUAL MONITORING
YAKIMA, WASHINGTON

Date:	
Weather:	
Precipitation (prior 24 hrs)	
Completed By:	
General Observations:	
Specific Observations: To be noted with photographs, measurements, and locations:	
Soil Cap: Pavement Cap: Building Cap: 	
Measurements:	

SITE INSPECTION SUMMARY REPORT
YAKIMA VALLEY TRANSPORTATION CO TROLLEY BARN VISUAL MONITORING
YAKIMA, WASHINGTON

[illegible]