CONTAMINATED SOIL MANAGEMENT PLAN

PREPARED BY:

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RGI PROJECT NO. 2016-118B

CONTAMINATED SOIL MANAGEMENT PLAN

LITTLE SAIGON APARTMENTS
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SEPTEMBER 28, 2018

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1 INTRODUCTION

This Contaminated Soil Management Plan (CSMP) provides information and describes procedures regarding the management of soil during the development project at Little Saigon Apartments, located at 1253 South Jackson Street in Seattle, Washington (Property or Site). This CSMP was prepared by Riley Group, Inc. (RGI) on behalf of Little Saigon, LLLP (Client).

RGI understands that the existing commercial building will be demolished and a new apartment building constructed. RGI understands the planned building does not include any underground parking. It is understood that as part of the redevelopment of the Site, an unknown amount of soil will be removed and reused on-site or disposed of off-Site.

The purpose of the investigation is to test soil planned for excavation and to evaluate the appropriate material handling for reuse on-Site or export for off-Site disposal. The off-Site receiving disposal facilities of earth materials require verification of soil conditions.

1.1 CSMP OBJECTIVE

The objective of the CSMP is to provide information regarding the type and location of potentially contaminated soil present at the Site, to assist the Contractor with its proper management and disposal.

This CSMP contains:

- Information on current environmental conditions and potential and known contaminants of concern,
- Roles and responsibilities of project team members for the CSMP,
- Procedures for the management and sampling of new discoveries of contaminated materials,
- Procedures for the storage of potentially contaminated soil in stockpile or staging piles awaiting sampling, classification, load-out, and disposal,
- Acceptable reuse of materials on the subject Site,
- Receiving facilities information,
- Required documentation for contaminated soil handling, storage, loading, and disposal,

2 PROJECT INFORMATION

2.1 PROJECT LOCATION AND HISTORY

The Site is located at 1253 South Jackson Street Seattle, Washington (Figure 1). The Site is developed with a commercial building, utilized as low income housing, and associated parking. The Site slopes to the south, and is surrounded by commercial properties. The property is owned by the City of Seattle and is operating as Low Income Housing Institute. The Site was reportedly previously used as offices for Washington Alarm Company and, prior to that, a gasoline service station.

2.2 PROJECT ORGANIZATION

Prior to Site redevelopment, management roles will be identified and are detailed in the following table (subject to change):

Title	Name	Affiliation	E-mail	Phone Numbers
Owner: The City of Seattle				
Site Superintendent	Walsh Construction Company	Contractor	TBD	TBD
Project Engineer /Architect	Runberg Architecture Group	Architect	TBD	TBD
Owner / Manager	Robin Amadon	Low Income Housing Institute	Robin.amadon@lihi.org	(206) 957-8050
Environmental Professional	Stafford Larsen (Project Manager) Audrey R. Heisey, LHG (Supervisor)	Riley Group, Inc.	slarsen@riley-group.com audreyh@riley-group.com	(425) 415-0551

2.3 PROCEDURES FOR SPECIFIC CONSTRUCTION ACTIVITIES

The anticipated activities that will disturb or excavate soil that will require reuse or off-Site export of the soil includes the following.

General Site Grading

RGI understands that general Site grading will be undertaken prior to the placement the building floor slab.

Installation of Subsurface Utilities, Foundations and Footings

Installation of subsurface utilities includes water lines and connection to the water main, sewer lines and connection of the existing sewer main, stormwater piping and connection to the existing system, natural gas lines, and others.

3 SAMPLE AND ANALYSIS RESULTS

Previous environmental reports indicate that the Site, as well as the east-adjoining property, were previously utilized as gasoline service stations. The sample and analysis plan was prepared to test the in-place soil to develop soil management procedures. Based on the general Site usage and prior history of the project area, the sampling plan included a general scan for potential petroleum hydrocarbons and volatile organic compounds.

3.1 INITIAL INVESTIGATION 2011

RGI's 2011, Supplemental Phase II included five test probe locations advanced on the Site to depths of approximately 15 feet below ground surface (bgs) with collection of soil samples.

Two of the five test probes were advanced near the potential former pump island and within the footprint of the former gasoline station building. Contaminants of concern were not found above cleanup levels in the analyzed soil samples.

The remaining three probes were advanced on the east side of the Site to investigate possible contamination that may have migrated onto the Site from the east-adjoining (former gasoline service station) property. Test probe TP4, at a depth of 11 feet bgs, had soil concentrations of 24,000 parts per million (ppm) of diesel total petroleum hydrocarbons (TPH) and 52,000 ppm of oil-range TPH (above the MTCA Method A Soil Cleanup Level of 2,000 ppm). At least a portion of this soil was subsequently removed in 2012. Soil samples were not analyzed for other potential contaminants of concern associated with waste oil (for example, chlorinated solvents, polychlorinated biphenyls, and other potential heavy metals.

The 2011 investigation is detailed in the Supplemental Phase II Environmental Site Assessment performed by RGI, dated September 2, 2011.

3.2 SUPPLEMENTARY INVESTIGATION FEBRUARY 2012

Sound Earth Strategies' (SES) report included an Ecology agency file review for the east-adjoining former gasoline service station (Unocal 5473) cleanup Site, a limited Phase II, and soil excavation at the Site.

Adjacent Property File Review – Unocal 5473: SES reported approximately 4,300 tons of petroleum contaminated soil (PCS) was excavated and transported off-Site for treatment/disposal in 1998. Analytical results for confirmation (post-excavation) soil samples collected from the western limits of the remedial excavation indicated concentrations of the contaminants of concern below their respective cleanup levels. However, the contaminants of concern were not provided in the report. Analytical results for groundwater samples collected from at monitoring well MW-9, reported as located in the southwest corner of the east-adjoining property (within an easement, see Figure 3), indicated non-detectable concentrations of the contaminants of concern between the years 2000 and 2004. The reported groundwater flow direction was to the southwest. The SES report did not include copies of the reviewed agency files. It was noted that Ecology rescinded the "Interim" NFA for the east-adjoining property in 2006, and a Further Action letter that was issued in 2008. Further release investigation and/or characterization were not apparent in reported documents. Additionally, the east-adjoining property was terminated from the VCP in 2010 due to inactivity.

Limited Phase II: SES's 2012 Phase II and Cleanup Action Report indicated they completed seven borings, boring B09 through B15, to depths ranging from 4 and 18 feet bgs.

Borings B13 through B15 were advanced in the vicinity of boring B3 because a previous investigation in 2002 by EA found contamination at this location. SES reported analytical results for soil samples collected at borings B13 through B15 below laboratory detection limits.

Analytical results for boring B11 (located where SES subsequently performed their cleanup effort) indicated an oil-range TPH concentration of 67,000 ppm above MTCA Method A Cleanup levels at a depth of 11 feet bgs, and an elevated total lead concentration. The elevated lead concentration detected with oil TPH contamination in soil suggests the potential for waste oil.

On January 11, 2012, SES excavated and disposed of approximately 9 yards (13.39 tons) of PCS. Soil confirmation samples collected along the east sidewall of the remedial excavation (at the eastern property boundary) reported oil TPH concentrations above the MTCA Method A Cleanup level for oil, with 17,000 ppm at 11 feet bgs (sample EX01EO1) and 2,100 ppm at 11 feet bgs (sample EXO2EO2).

Additional soil samples collected beyond SES' remedial excavation limits (and on the Site) also had detectable oil TPH concentrations, albeit at concentrations close to, or below, the applicable cleanup levels. Soil samples were not analyzed for other potential contaminants of concern associated with waste oil (for example, metals, polychlorinated biphenyls, or chlorinated solvents).

SES did not speculate as to the origin of the contaminated soil encountered along the eastern Site property boundary (other than stating the contamination did not originate from the east-adjoining property). SES concluded that:

- The Site was located cross-gradient relative to the Unocal 5473 contamination and had, therefore, not adversely affected soil and/or groundwater quality beneath the Site beyond the limited PCS cleanup conducted.
- That the PCS encountered has been effectively removed from the Site up to the eastern property boundary.
- The residual impacts to the soil beneath the Site are *de minimis*, and no additional action is recommended.

This investigation is detailed in the Phase II Environmental Site Assessment and Cleanup Action Report, prepared by SES, dated February 16, 2012.

3.3 SUPPLEMENTARY INVESTIGATION JULY 2012

G-logics, Inc.'s (GLI) 2012 subsurface exploration completed 10 borings (GLB-1 through GLB-10) to depths between 20 and 45 feet bgs across the Site. Groundwater was encountered at several locations at depths of approximately 25 feet bgs to 30 feet bgs. However, no groundwater samples were collected for laboratory analysis during their subsurface investigation.

Soil samples collected from borings GLB-9 and GLB-10, advanced at the northwest portion of the Site, had low concentrations of oil TPH (ranging from 162 ppm to 173 ppm) at depths of 15 feet bgs and 10 feet bgs, respectively. Analytical results for soil samples collected did not indicate concentrations of contaminants above the MTCA Method A Cleanup Levels.

GLI indicated that the potential for soil contamination on Site, above and/or below cleanup levels, may exist outside of and beyond the SES 2012 remedial excavation limits.

GLI recommended that soil that will be excavated during redevelopment activities be assessed for proper off-Site disposal.

This investigation is detailed in the Subsurface Exploration, prepared by GLI, dated July 31, 2012.

3.4 CONTAMINANTS OF POTENTIAL CONCERN

Identified Soil PCOCs: The following PCOCs have been detected above the laboratory reporting limit or above regional background concentrations for metals, and are therefore, considered PCOCs in soil at the site:

- TPHg, TPHd, and TPHo,
- BTEX,
- PCE was not detected in analyzed soil at the site, but has been detected in groundwater; thus, PCE is considered a PCOC in soil at the site.
- Lead and arsenic

Identified Groundwater PCOCs: The following PCOCs have been detected above the laboratory reporting limit or below regional background concentrations for metals and are therefore, considered PCOCs in groundwater at the site:

- TPHd
- PCE
- BTEX, TPHg, and TPHo were not detected in groundwater at the site, but have been detected in soil at or above cleanup levels; thus, BTEX, TPHg, and TPHo are considered PCOCs in groundwater at the site.
- Lead and arsenic were not analyzed in groundwater at the site, but have been detected in soil above cleanup levels; thus, lead and arsenic are considered a PCOC in groundwater at the site.

Polychlorinated biphenyls (PCBs) and polyaromatic hydrocarbons (PAHs) have not been tested at the site and are associated with waste oil contamination. PCBs and PAHs, while not known as present, may also potentially be encountered at the site.

3.5 CONTAMINATED MEDIA: DEGREE AND EXTENT

3.5.1 PETROLEUM CONTAMINATED MATERIAL

Petroleum hydrocarbon contamination as a gasoline or diesel range was not detected above the Method A Cleanup Level in collected samples, with the exception of the soil removed from the Site previously. Soil above the Method A Cleanup level is documented at the eastern property boundary.

Petroleum hydrocarbons as fuel are commonly encountered during redevelopment of old buildings, particularly on properties with historical gasoline service station usage. These contaminants may be associated with drains, underground piping, and/or underground storage tanks (USTs).

4 HEALTH AND SAFETY PLAN

A Site-specific Health and Safety Plan (HASP) will be prepared by the contractor in accordance with applicable Washington Industrial Safety and Health Act (WISHA) and OSHA regulations. The HASP will provide information for Site workers such as awareness of health risks and hazards for each Site task, employee training to assure compliance with applicable federal, state, and local regulations, selection of personal protective equipment, control measures, and decontamination procedures. The HASP shall include procedures and controls that are Site specific to the identified risks.

The contractor is responsible for conducting all on-Site activities in accordance with the HASP and other applicable Site contracts and specification documents. The contractor will review the contents of the HASP with all necessary workers and will ensure adequate training for all on-Site workers in accordance with the HASP, applicable regulations, and contract documents. All contractors or consultants participating in soil management activities have the responsibility to ensure their employee's health and safety procedures are adhered to while on Site.

5 CONTAMINATED MATERIAL DEFINITIONS

This section describes the classification and management of the excavated material for on-Site reuse or off-Site waste disposal criteria. How you handle contaminated soil depends on what it contains and the amount of contamination.

5.1 DANGEROUS WASTE

Soil/material/debris/liquid that has contaminant levels that potentially exceed the Washington State Dangerous Waste criteria in accordance with WAC 173-303 would be considered Dangerous Waste.

Site soil characterization did not identify material exceeding Washington State dangerous waste criteria in accordance with WAC 173-303.

5.2 ABOVE MTCA LEVEL CATEGORY

Contaminated soil waste that are exported from the Site and have COPC levels equal or above MTCA Method A levels requires disposal at a RCRA Subtitle D landfill or soil treatment facility.

5.3 BELOW MTCA LEVEL CATEGORY

Contamination levels below MTCA Method A pose a relatively low hazard to human health and the environment. These soils can remain in place on the Site if there are not plans for excavation. These soils may be reused as fill on the Site with certain restrictions.

Contaminated soil waste that are exported from the Site and have COPC concentrations lower than the MTCA Method A level requires disposal at a permitted facility that can accept the waste stream or may be reused at another location with certain restrictions.

5.4 PETROLEUM CONTAMINATED SOIL REUSE

The Ecology Guidelines for Reuse of PCS (Chapter 173-350 WAC) identifies four categories of PCS for reuse or disposal management. Based on the analytical soil results for soil samples collected on Site, the Ecology Guidelines for Reuse of PCS apply when considering handling and disposal criteria for exported Site soil (see Attachment III).

6 SOIL EXCAVATION AND HANDLING

This section discusses procedures for excavating, loading, and transporting the contaminated soil generated from each of the activities and procedures for determining when the contaminated soil has been effectively removed and excavation of uncontaminated soil may proceed.

6.1 ACTIVITIES WITH THE POTENTIAL TO GENERATE CONTAMINATED SOIL

There are several construction activities that may encounter and/or generate contaminated soil requiring appropriate management. Construction activities that have the potential to generate contaminated soil include the following:

- General Site grading,
- Installation of subsurface utilities, foundations and footings,
- The contractor will determine the methods and means for the soil excavation, and will develop the excavation sequence with RGI.

6.2 CONTAMINATED SOIL MANAGEMENT PROCEDURES

Soils will be excavated from the project Site as part of the project development. The soil management procedures have been developed to:

- Segregate below-MTCA level excavated soil that will be re-used for fill on the project or removed from the Site.
- Segregate above-MTCA level impacted soils for proper disposal.
- Potentially stockpile contaminated waste for additional sample and waste profile.
- Allow direct loading of soil and minimize soil stockpiling to the extent possible.
- Properly dispose of exported below-MTCA contaminated soil waste at an approved facility.
- Properly dispose of exported above-MTCA contaminated soil waste at an approved RCRA Subtitle D landfill.

6.3 ON-SITE SOIL MANAGEMENT

With the exception defined zones, most of the soil being excavated from the Site is below MTCA Method A cleanup criteria. There are no restrictions if the soil (below MTCA levels) remains on Site. If the soils were to be exported from the Site, then disposal criteria and requirements presented in Section 8.0 would apply.

6.4 STOCKPILING

There may be occasions where stockpiling may be required for the temporary storage of contaminated soil in a clean area or pending analytical test results, or the discovery of undocumented contamination. Stockpiles in these circumstances shall adhere to the following:

- Stockpiles shall be lined with plastic sheeting with a minimum thickness of 6 millimeters, with adjacent sheeting sections overlapping a minimum of 3 feet.
- The perimeter of the stockpiles shall be surrounded by a berm to prevent run-on and/or run-off of precipitation.
- Stockpiles shall be covered when not in use and the cover should be anchored to prevent it from being disturbed by wind and shielded from precipitation.

6.5 DUST AND ODOR CONTROL

Nuisance odors may be emitted during contaminated soil excavation and handling. The designated health and safety officer will describe odor and dust control in the conditions during excavation activities and will advise the contractor if odor control measures should be implemented. Odor monitoring can be performed by visual evidence of dust during excavation of PCS or by monitoring with a photoionization detector (PID) to detect volatile organic vapors greater than 10 ppm.

The contractor should be prepared to implement one or more of the following odor control measures, should nuisance odors develop during excavation:

- Apply a mist of water over the area as needed to minimize odor.
- Cover exposed areas with elevated concentrations of contaminants with plastic sheeting at the end of each day and when excavation activities are not being performed.
- Keep stockpiles covered when not in use.
- Apply commercially available foams over exposed areas as needed.

6.6 DECONTAMINATION PROCEDURES

Soil residue on equipment and excavator tracks/tires and truck tires will be removed using a combination of wet and dry methods. During dry conditions, soil residues will be removed by dry brushing. Soil that cannot be removed by this procedure will be removed from equipment by washing with high-pressure water. During winter conditions, high-pressure water washing will be used to remove material residues and mud from equipment and tires. A decontamination station will be constructed at an appropriate location on the Site. The station will consist of a bermed bed of crushed aggregate rock equipped with a water collection sump. Water generated during decontamination activities will be processed through the storm water process system. The work areas will be kept clean and free of excessive soil or debris.

7 CONTINGENCY PLAN FOR UNKNOWN OR SUSPECT CONTAMINATION

Contaminated soil or suspect media may be encountered by equipment operators. The equipment operator shall notify the construction manager and the Environmental Professional if any of the following are encountered:

- Obvious petroleum staining, sheen, or colored hues in soil or standing water,
- The presence of petroleum products or leachate of other chemicals,
- The presence of utility pipe lines with sludge or trapped liquid indicating petroleum or chemical discharge sludge,
- The presence of buried pipes, conduit, tanks, or unexplained metallic objects or debris,
- Unusual vapors causing eye irritation or nose tingling or burning,
- Presence of gasoline- or oil-like vapor or odor.

In the event that suspect soil or media are observed, the contractor will notify the Environmental Professional and the project team to determine further necessary action.

7.1 SOIL SAMPLING

A RGI Environmental Professional will conduct soil sampling during development work.

7.1.1 SAMPLING ANALYSIS PROCEDURES

In coordination with the contractor, the Environmental Professional shall collect environmental samples. Samples will be collected in laboratory-provided containers and placed on ice in a cooler immediately after collection. Sample analysis will depend upon the COPCs at that location and may include the following:

- Total Petroleum Hydrocarbons (TPH) as gasoline and diesel/oil range by Method NWTPH-Dx and Gx with BTEX
- Volatile organic compounds (VOCs) by Method 8260
- Total Lead and other metals using EPA Method 6020
- PCBs and PAHs

All non-disposable components of the sampling equipment (e.g., hand augers, shovels, spoons, or other equipment used to collect samples that contact the soil will be decontaminated prior to, and in between, collection of individual samples as follows:

- Scrub with potable water containing Alconox/Liquinox detergent
- Potable water rinse

Chain-of-custody documentation will be prepared and will accompany the samples at all times. Analytical requests will be prepared that will clearly identify the compositing to be performed by the laboratory.

7.1.2 EVALUATION OF ANALYTICAL RESULTS

The analytical results from collected samples will be reviewed by the Environmental Professional. The analytical results will be compared to the criteria defined for the types of wastes this plan addresses. Management of the soils will be based on the material meeting the following conditions:

- Petroleum-contaminated soils that are not dangerous wastes are regulated under the Solid Waste Handling Standards, Chapter 173-350 WAC. "Guidance for Remediation of Petroleum Contaminated Sites," Toxics Cleanup Program Publication No. 10-09-057 - *Draft* November 2010 Table 12.1-Guidelines for Reuse of Petroleum-Contaminated Soil.
- Dangerous waste characteristic WAC 173-303-090: Soils that fail analysis for lead or constituents such as benzene must be disposed of as dangerous waste.
- Excluded categories of waste WAC 173-303-071 (3)(t): Petroleum-contaminated media and debris that fail the test for the toxicity characteristic of WAC 173-303-090 (8) (dangerous waste numbers D018 through D043 only) and are subject to the corrective action regulations under 40 C.F.R. Part 280.

8 CONTAMINATED SOIL TRANSPORT AND OFF-SITE DISPOSAL

Transport of contaminated soil to the appropriate disposal facility will be performed by haulers licensed to transport contaminated soil. Contractor shall submit a copy of its transporter's permit/qualifications for shipping prior to any waste shipment.

8.1 CONTAMINATED SOIL WASTE TRANSPORT

Contaminated Soil Waste may be directly loaded into trucks for transport to the approved disposal Site. The contractor shall provide the Environmental Professional with copies of shipping records (manifest or bill of lading) and weight tickets for all shipped wastes, indicating each waste shipment has been received at a disposal facility. Provide copies to the Environmental Professional within 7 working days of removal.

An approved certified trucking company will haul soil from the Site. Soil will be transported to the pre-approved landfill or facility permitted for such material.

8.2 CONTAMINATED SOIL WASTE OFF-SITE DISPOSAL

See Section 5 for contaminated soil waste disposal criteria. Example facilities that may be used (upon approval) for disposal of PCS or MTCA Contaminated Soil Waste include:

- Waste Management's Lander Transfer Station
- Republic – Allied Waste Black River Transfer Station
- Ravensdale, LLC (Erickson Pit) – (below MTCA level, only)
- Other approved – permitted facility

Disposal of contaminated soil as "dangerous" per WAC 173-303 is NOT included in the work.

The contractor is responsible for determining waste facility requirements and facilitating preliminary waste profiling prior to bidding using available data. Additional characterization analysis may be required by the receiving facility prior to approval and will be at the cost of the contractor and performed by the Environmental Professional or its designated individual.

Waste Management – Above MTCA level Waste

Waste Management is a RCRA Subtitle D permitted landfill that accepts solid waste as well as Petroleum Solid Waste and state Dangerous Waste. Soil found to be contaminated but not hazardous/dangerous can be disposed at Waste Management's Olympic View Transfer Station. Hazardous/Dangerous waste is not anticipated to be discovered on Site.

The use of another disposal facility shall be approved by the property owner.

9 POST CONSTRUCTION MANAGEMENT

The CSMP was created as guidance related to identified contamination during the construction period. It is understood that additional management related to contamination may be required once construction is complete. Ongoing management may include inspection, notification, maintenance, and monitoring.

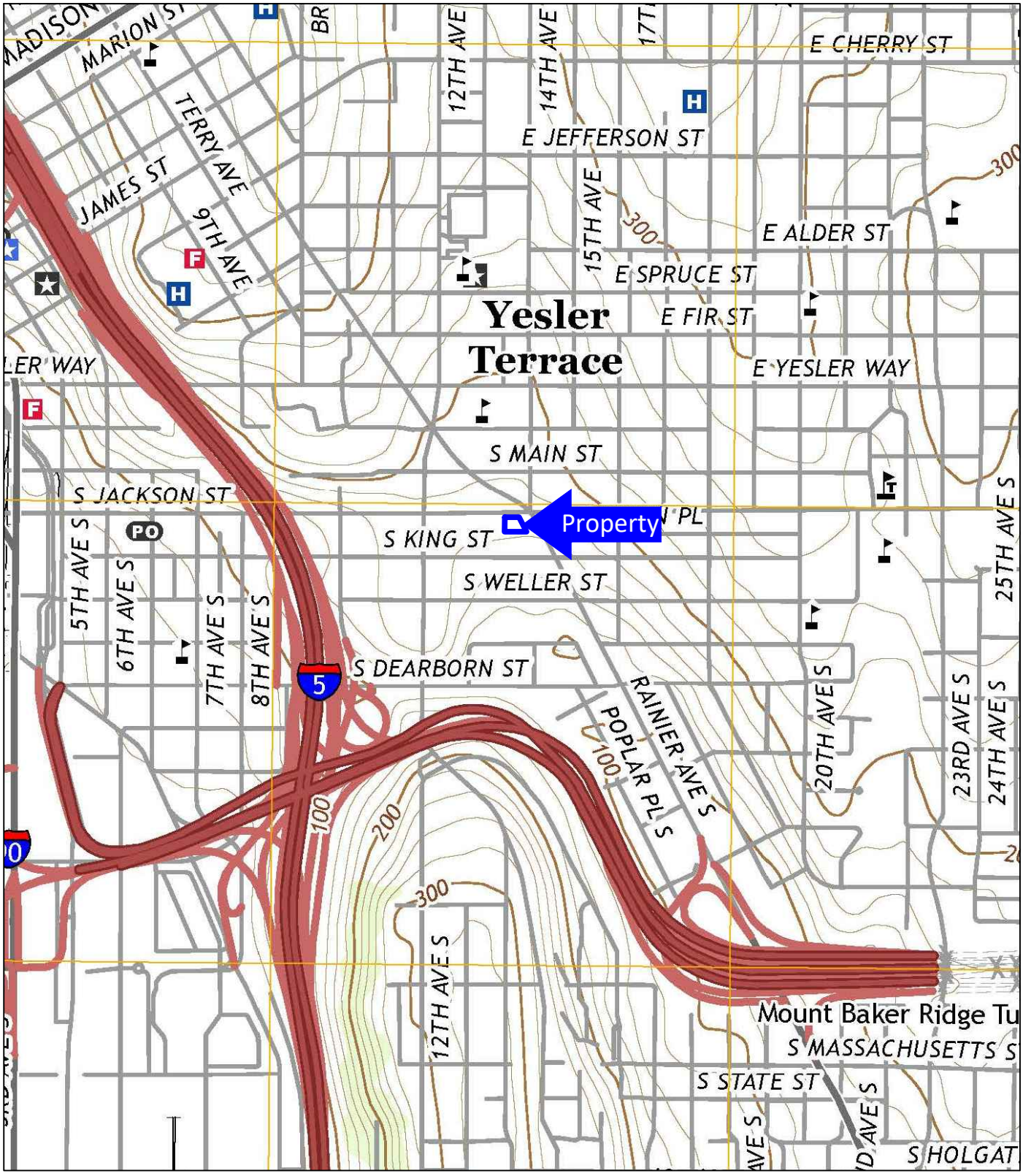
10 REPORTING AND DOCUMENTATION

Contractors managing contaminated soil will maintain all necessary permits and approvals related to the excavation, management, storage, transportation, and treatment/disposal of the contaminated soil that might be generated during excavation. Permits may include, but are not limited to, excavation permits, transportation permits and manifests, and approvals and permits for treatment or disposal of contaminated waste. Copies of permits and disposal receipts should be retained for future reporting by the Owner.

In summary, reports will include:

- Quantity by weight as determined by number of truckloads and type of material hauled,
- Quantity by volume in bank yards as determined by contractor measurements during excavation,
- Disposable facility for each truck load,
- Manifests / Bills of Lading (BOL) for each truck and specified facility,
- Disposal facility receipts, including weight tickets and of fee receipts,
- Physical characteristics including analytical results when applicable.

The report shall be presented to the owner. It may be in a spreadsheet of table format with documentation attached. An accompanying narrative will describe any deviations to the procedures that occurred. Corrective actions will be identified as needed, and the resolution of any discrepancies will be reported.



USGS, 2017, Seattle South, Washington
7.5-Minute Quadrangle

Approximate Scale: 1"=1000'

0 500 1000 2000

N

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Little Saigon Apartments		Figure 1
RGI Project Number 2016-118B	Property Vicinity Map	Date Drawn: 09/2018
Address: 1253 South Jackson Street, Seattle, Washington 98144		

South Jackson Street

Easement

Suspect Historical Pump Island

AB2						
Date	Depth	Gas	BTEX	DSL	Oil	VOCs
09/21/18	16	ND	ND	ND	ND	ND

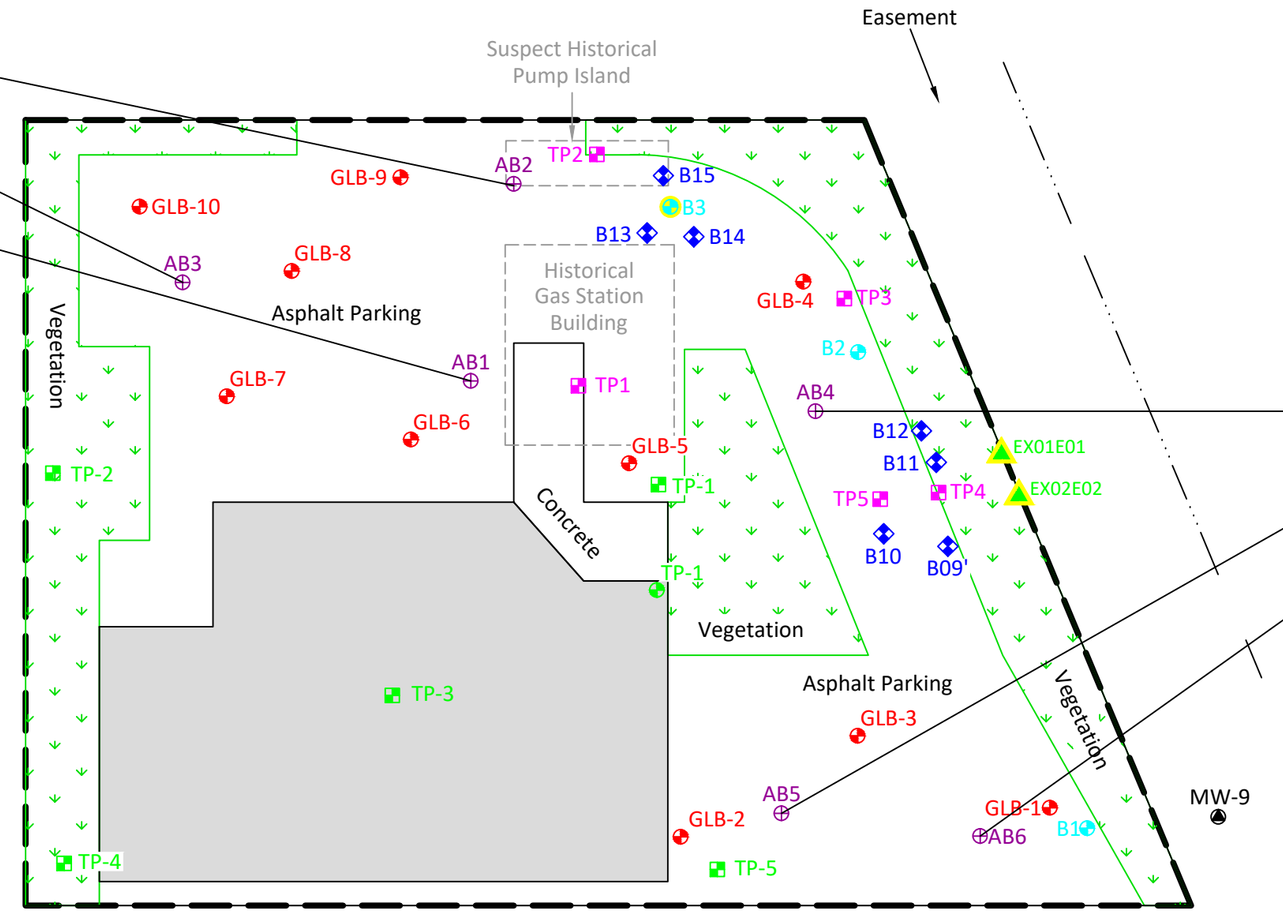
AB3						
Date	Depth	Gas	BTEX	DSL	Oil	VOCs
09/21/18	11	ND	ND	ND	ND	ND

AB1						
Date	Depth	Gas	BTEX	DSL	Oil	VOCs
09/21/18	31	ND	ND	ND	ND	ND

AB4						
Date	Depth	Gas	BTEX	DSL	Oil	VOCs
09/21/18	16	ND	ND	ND	ND	ND

AB5							
Date	Depth	Gas	BTEX	DSL	Oil	VOCs	Pb
09/24/18	26	ND	ND	ND	ND	ND	**7.18**

AB6						
Date	Depth	Gas	BTEX	DSL	Oil	VOCs
09/24/18	15	ND	ND	ND	ND	ND



= Soil Analytical Results in milligrams/kilogram (mg/kg);

Depth = Feet below ground surface
Gas/DSL/Oil = Gasoline, oil, diesel total petroleum hydrocarbons
BTEX = Benzene, toluene, ethylbenzene, xylenes
VOCs = Volatile organic compounds
Pb = Total lead
ND = Not detected above laboratory testing limits
Bold results (if any) indicate concentrations above laboratory testing limits
Bold and yellow results (if any) indicate concentrations above MTCA Method A or B Soil Cleanup Levels

Inferred Groundwater Flow Direction (Historical Creek Bed)

= Hollow stem auger location by RGI, 09/21/18 & 09/24/18
= Approximate boring location, G-Logics (GLI), June 2012
= Approximate excavation soil sample, SES, January 2012
= Approximate boring location, SoundEarth (SES), November 2011
= Approximate test probe location, RGI, August 2011
= Approximate boring location, Environmental Associates (EA), 2002
= Approximate test pit location, Earth Consultants, 1981
= Approximate boring location, Earth Consultants , 1981
= Approximate location of off-Property well
= Property Boundary

Approximate Scale: 1"=40'

0 20 40 80

N

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Little Saigon Apartments | Figure 2

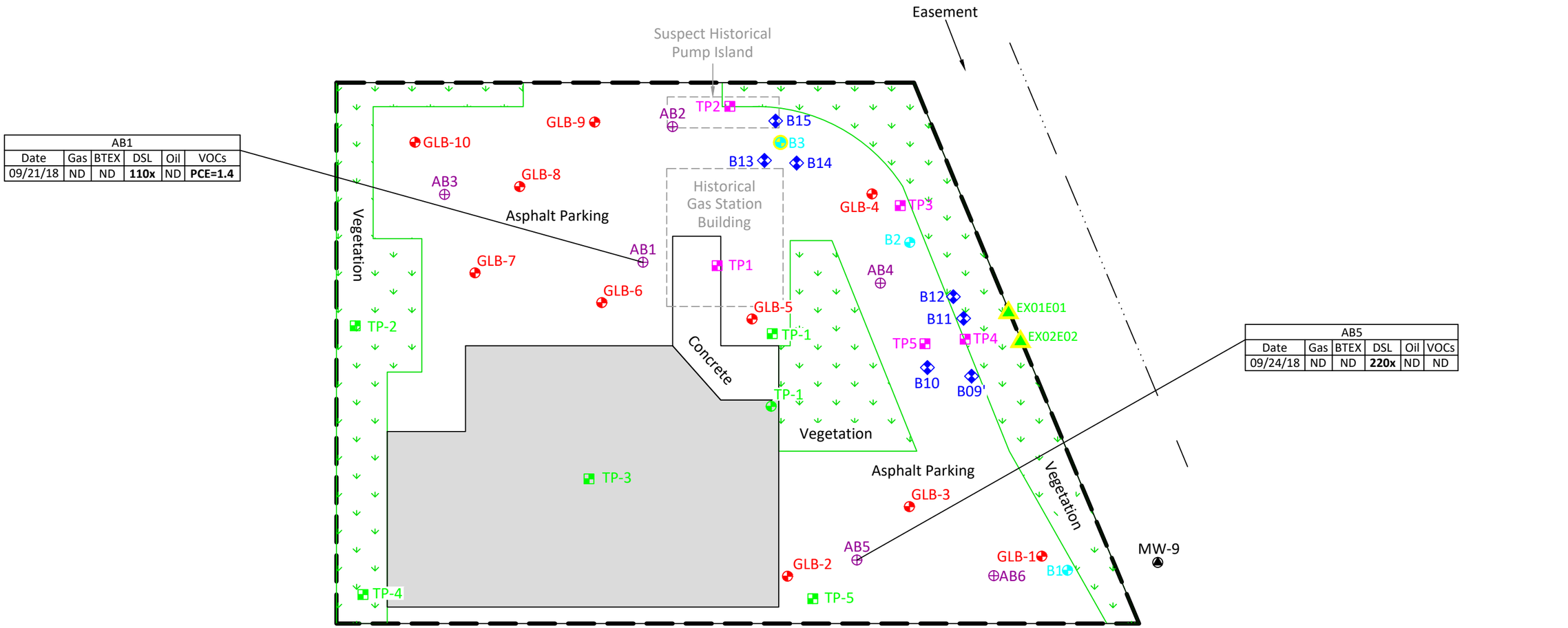
RGI Project Number: 2016-118B

Property Representation with Soil Analytical Results

Date Drawn: 09/2018

Address: 1253 South Jackson Street, Seattle, Washington 98144

South Jackson Street



= Groundwater Analytical Results in micrograms/Liter (ug/L);

Depth = Feet below ground surface
Gas/DSL/Oil = Gasoline, oil, diesel total petroleum hydrocarbons
BTEX = Benzene, toluene, ethylbenzene, xylenes
PCE = Tetrachloroethene
VOCs = Volatile organic compounds
x = The sample chromatographic pattern does not resemble the fuel standard used for quantitation.
ND = Not detected above laboratory testing limits
Bold results (if any) indicate concentrations above laboratory testing limits
Bold and yellow results (if any) indicate concentrations above MTCA Method A or B Groundwater Cleanup Levels

Inferred Groundwater Flow Direction (Historical Creek Bed)

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= Approximate test probe location, RGI, August 2011
= Approximate boring location, Environmental Associates (EA), 2002
= Approximate test pit location, Earth Consultants, 1981
= Approximate boring location, Earth Consultants , 1981
= Approximate location of off-Property well
= Property Boundary

Approximate Scale: 1"=40'
0 20 40 80
N

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Little Saigon Apartments | Figure 3

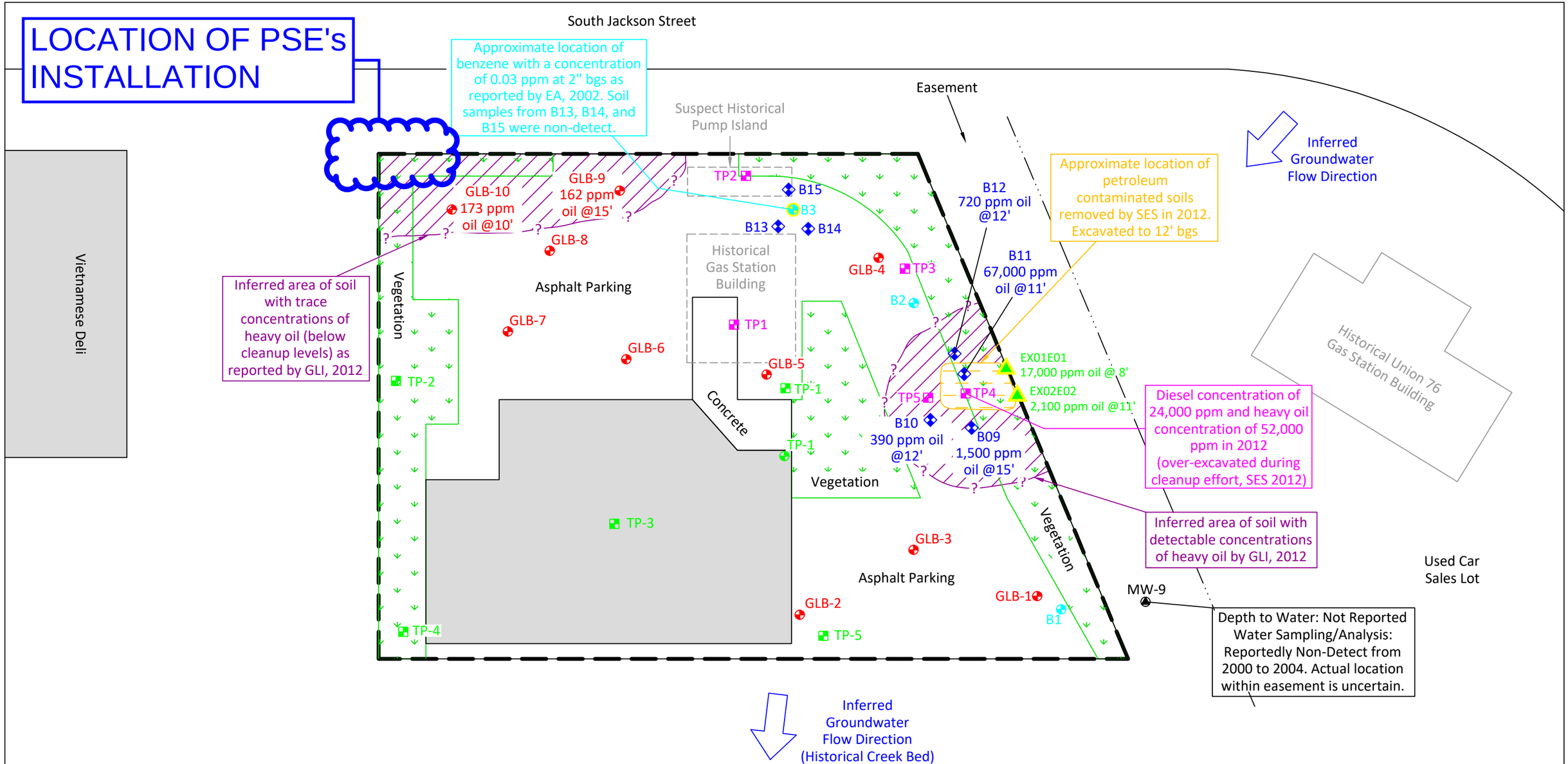
RGI Project Number: 2016-118B

Property Representation with Groundwater Analytical Results

Date Drawn: 09/2018

Address: 1253 South Jackson Street, Seattle, Washington 98144

LOCATION OF PSE's INSTALLATION



= Approximate boring location, G-Logics (GLI), June 2012
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= Approximate boring location, Environmental Associates (EA), 2002
= Approximate test pit location, Earth Consultants, 1981
= Approximate boring location, Earth Consultants , 1981
= Approximate location of off-Property well
= Property Boundary

B09 - 1,500 @15'
Sample Number / Heavy Oil Concentration (mg/kg) / Sample Depth bgs

Note: Yellow highlighted locations (B3, EX01E01, and EX02E02) have concentrations above cleanup levels.

Approximate Scale: 1"=40'
0 20 40 80
N

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Little Saigon Apartments		Figure 4
RGI Project Number 2016-118B	Property Representation with Historical Sample Locations and Analytical Data	Date Drawn: 09/2018
Address: 1253 South Jackson Street, Seattle, Washington 98144		

Table 1. Summary of Soil Sample Analytical Laboratory Results
Little Saigon Apartments
1253 South Jackson Street, Seattle, Washington 98144
The Riley Group, Inc. Project No. 2016-118B

Sample Number	Sample Depth	Sample Date	PID	Gasoline TPH	BTEX				Diesel TPH	Oil TPH	PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC	1,1-DCE	Other VOCs	Pb
					B	T	E	X										
AB1-5	5	09/21/18	0.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
AB1-10	10	09/21/18	0.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
AB1-15	15	09/21/18	0.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
AB1-21	21	09/21/18	0.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
AB1-26	26	09/21/18	0.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
AB1-31	31	09/21/18	0.0	ND<5	ND<0.03	ND<0.05	ND<0.05	ND<0.15	ND<50	ND<250	ND<0.025	ND<0.02	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND	----
AB1-36	36	09/21/18	0.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
AB2-6	6	09/21/18	0.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
AB2-11	11	09/21/18	0.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
AB2-16	16	09/21/18	0.1	ND<5	ND<0.03	ND<0.05	ND<0.05	ND<0.15	ND<50	ND<250	ND<0.025	ND<0.02	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND	----
AB3-6	6	09/21/18	0.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
AB3-11	11	09/21/18	0.2	ND<5	ND<0.03	ND<0.05	ND<0.05	ND<0.15	ND<50	ND<250	ND<0.025	ND<0.02	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND	----
AB3-16	16	09/21/18	0.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
AB4-6	6	09/21/18	0.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
AB4-11	11	09/21/18	0.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
AB4-16	16	09/21/18	0.0	ND<5	ND<0.03	ND<0.05	ND<0.05	ND<0.15	ND<50	ND<250	ND<0.025	ND<0.02	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND	----
AB5-11	11	09/24/18	0.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
AB5-16	16	09/24/18	0.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
AB5-21	21	09/24/18	0.1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
AB5-26	26	09/24/18	0.0	ND<5	ND<0.03	ND<0.05	ND<0.05	ND<0.15	ND<50	ND<250	ND<0.025	ND<0.02	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND	**7.18**
AB5-31	31	09/24/18	0.2	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
AB6-6	6	09/24/18	0.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
AB6-11	11	09/24/18	0.0	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
AB6-15	15	09/24/18	0.0	ND<5	ND<0.03	ND<0.05	ND<0.05	ND<0.15	ND<50	ND<250	ND<0.025	ND<0.02	ND<0.05	ND<0.05	ND<0.05	ND<0.05	ND	----
MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses				**100/30[1]**	**0.03**	**7**	**6**	**9**	**2,000**		**0.05**	**0.03**	**----**	**----**	**----**	**----**	**Analyte Specific**	**250**
MTCA Method B Soil Cleanup Levels for Unrestricted Land Uses[2]				**---**	**---**	**---**	**---**	**---**	**---**	**---**	**----**	**----**	**160**	**1,600**	**0.67[3]**	**4,000**	**----**	**---**

Notes:

All results and detection limits are given in milligrams per kilogram (mg/kg); equivalent to parts per million (ppm).

Sample Depth = Soil sample depth interval in feet below ground surface (bgs).

PID = Photoionization detector.

Gasoline TPH (total petroleum hydrocarbons) determined using Northwest Test Method NWTPH Gx.

BTEX (benzene, toluene, ethylbenzene, and xylenes) determined using EPA Test Method 8260C.

Diesel and Oil TPH (total petroleum hydrocarbons) determined using Northwest Test Method NWTPH-Dx with silica gel cleanup.

PCE (tetrachloroethene), TCE (trichloroethene), cis-1,2-DCE (cis-1,2-dichloroethene), trans-1,2-DCE (trans-1,2-dichloroethene), VC (vinyl chloride), 1,1-DCE (1,1-dichloroethene), and other VOCs (volatile organic compounds) determined using EPA Test Method 8260C.

Pb = lead determined using EPA Method 6020B.

ND = Not detected at noted analytical detection limit.

---- = Not analyzed or not applicable.

Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) Method A Soil Cleanup Levels for Unrestricted Land Uses (WAC 173-340-900, Table 740-1). MTCA Method B Soil Screening Levels from Ecology's Cleanup Level and Risk Calculation (CLARC) database.

[1] The higher cleanup level is allowed if no benzene is detected in the sample and the total of toluene, ethylbenzene and xylenes is less than 1% of the gasoline mixture.

[2] No MTCA Method A Cleanup Level has been established. Therefore, the MTCA Method B Non-Carcinogenic Standard Formula Value is listed for reference.

[3] No MTCA Method A Cleanup Level has been established. Therefore, the MTCA Method B Carcinogenic Standard Formula Value is listed for reference.

Bold results indicate concentrations (if any) above laboratory detection limits.

Bold and yellow highlighted results indicate concentrations (if any) that exceed MTCA Method A or B Soil Cleanup Levels.

Table 12.1 Guidelines for Reuse of Petroleum-Contaminated Soil

Parameter	Analytical Method	Soil Category (8)(9)(10)			
		1 No detectable Petroleum Components (mg/kg)	2 Commercial Fill Above Water Table (mg/kg)	3 Paving Base Material & Road Construction (mg/kg)	4 Landfill Daily Cover or Asphalt Manufacturing (mg/kg)
Total Petroleum Hydrocarbons (1)(2) See Table 7.1 for petroleum products that fall within these categories.					
Gasoline Range Organics	NWTPH-Gx	<5	5 - 30	>30 - 100	>100
Diesel Range Organics	NWTPH-Dx	<25	25 - 200	>200 - 500	>500
Heavy Fuels and Oils*	NWTPH-Dx	<100	100 - 200	>200 – 500	>500
Mineral Oil	NWTPH-Dx	<100	100 - 200	>200 – 500	>500
Volatile Petroleum Components					
Benzene	SW8260B	<0.005	0.005 - 0.03	0.03 or less	See Table 12.2
Ethylbenzene	SW8260B	<0.005	0.005 - 6	6 or less	>6
Toluene	SW8260B	<0.005	0.005 - 7	7 or less	>7
Xylenes (3)	SW8260B	<0.015	0.015 - 9	9 or less	>9
Fuel Additives & Blending Components					
(MTBE) Methyl Tert-Butyl Ether	SW8260B	<0.005	0.005 - 0.1	0.1 or less	>0.1
Lead	SW6010A	<17	17 - 50	>50 - 220	See Table 12.2
Other Petroleum Components					
Polychlorinated (4) Biphenyls (PCBs)	SW8082	<0.04	<0.04	<0.04	See Table 12.2
Naphthalenes (5)	SW8260B	<0.05	0.05 - 5	5 or less	>5
cPAHs (6)	SW8270C	<0.05	0.05 - 0.1	>0.1 - 2	>2
Other Petroleum Characteristics (Applies to soils contaminated with any petroleum product.)					
Odors	Smell	No detectable odor			
Staining	Visual	No unusual color or staining			
Sheen Test	See Footnote # 7	No visible sheen			

IMPORTANT: See Table 12.2 and the footnotes to this Table on the following pages!
Test soil for the parameters specified in Table 7.2.
****Does NOT include waste oil contaminated soils, which should be disposed of in a landfill.***
"<" means less than; ">" means greater than

Table 12.1 Guidelines for reuse of petroleum-contaminated soil.

Table 12.2 Description and Recommended Best Management Practices for Soil Categories in Table 12.1 (continued next page)

Category	Acceptable Uses	Limitations
Category 1 Soils: Soils with no detectable/ quantifiable levels of petroleum hydrocarbons or constituents using the analytical methods listed in Table 7.3 and are not suspected of being contaminated with any other hazardous substances.	• Can be used anywhere the use is allowed under other regulations. • Any use allowed for Category 2, 3 & 4 soils.	• These soils should be odor-free.
Category 2 Soils: Soils with residual levels of petroleum hydrocarbons that could have adverse impacts on the environment in some circumstances.	• Any use allowed for Category 3 & 4 soils. • Backfill at cleanup sites above the water table. • Fill in commercial or industrial areas above the water table. • Road and bridge embankment construction in areas above the water table.	• These soils may have a slight petroleum odor, depending on the sensitivity of the individual. This should be considered when reusing these soils. • Should be placed above the highest anticipated high water table. If seasonal groundwater elevation information is not available, place at least 10 feet above the current water table. • Should not be placed within 100 feet of any private drinking water well or within the 10 year wellhead protection area of a public water supply well. • Should not be placed in or directly adjacent to wetlands or surface water where contact with water is possible. • Should not be placed under a surface water infiltration facility or septic drain field. • Any other limitations in state or local regulations.
Category 3 Soils: Soils with moderate levels of residual petroleum contamination that could have adverse impacts on the environment unless re-used in carefully controlled situations.	• Any use allowed for Category 4 soils. • Use as pavement base material under public and private paved streets and roads. • Use as pavement base material under commercial and industrial parking lots.	• Should be placed above the highest anticipated high water table. If seasonal ground water elevation information is not available, place at least 10 feet above the water table. • Should be a maximum of 2 feet thick to minimize potential for leaching or vapor impacts. • Should not be placed within 100 feet of any private drinking water well or within the 10 year wellhead protection area of a public water supply well. • Should not be placed in or directly adjacent to wetlands or surface water. • Should not be placed under a surface water infiltration facility or septic drain field. • When exposed, runoff from area in use should be contained or treated to prevent entrance to storm drains, surface water or wetlands. • Any other limitations in state or local regulations.

Table 12.2 Description and recommended best management practices for soil categories in Table 12.1 (continued next page).

Table 12.2 (continued) Description and Recommended Best Management Practices for Soil Categories in Table 12.1

Category	Acceptable Uses	Limitations
Category 4 Soils: Soils with high levels of petroleum contamination that should not be re-used except in very limited circumstances.	• Use in the manufacture of asphalt. • Use as daily cover in a lined municipal solid waste or limited purpose landfill provided this is allowed under the landfill operating permit.	**Landfill Limitations:** The soil should be tested for and pass the following tests: ➢ Free liquids test. Soils that contain free liquids cannot be landfilled without treatment. ➢ TCLP for lead and benzene. Unless exempt under WAC 173-303-071(3)(t), soils that fail a TCLP for lead or benzene must be disposed of as hazardous waste. ➢ Flammability test. Soils that fail this test must be disposed of as hazardous waste. ➢ Bioassay test under WAC 173-303-100(5). Soils that fail this test must be disposed of as hazardous waste. ➢ PCBs. Soils with a total PCB content of 2 ppm or more must be disposed of as hazardous waste. Soil used for daily cover should be stockpiled within the landfill lined fill area. Soil containing more than 10,000 mg/kg TPH should be buried immediately with other wastes or daily covered to limit potential worker exposure. Any additional limitations specified in the landfill permit or in other state or local regulations. **Asphalt Manufacturing Limitations:** Soil storage areas should be contained in a bermed area to minimize contact with surface water runoff from adjacent areas. Runoff from storage areas should be considered contaminated until tested to prove otherwise. Soil storage areas should also be lined and covered with a roof or secured tarp to minimize contact with precipitation and potential groundwater contamination. Leachate from storage areas should be considered contaminated until tested to prove otherwise. The soil should be tested for and pass the following tests: ➢ TCLP for lead and benzene. Unless exempt under WAC 173-303-071(3)(t), soils that fail a TCLP for lead or benzene must be disposed of as hazardous waste. ➢ Flammability test. Soils that fail this test must be disposed of as hazardous waste. ➢ Bioassay test under WAC 173-303-100(5). Soils that fail this test must be disposed of as hazardous waste. ➢ No detectable levels of PCBs in soil (<0.04 mg/kg). Precautions should be taken to minimize worker exposure to soil storage piles and any dust or vapors from these piles prior to feeding into the asphalt batch plant.

IMPORTANT: See the following page for additional information!

Notes to Table 12.1:

Contaminated soils can be treated to achieve these concentrations but dilution with clean soil to achieve these concentrations is a violation of Washington State solid and hazardous waste laws.

(1) See Table 7.1 for a description of what products fall within these general categories. If the product released is unknown, use the limitations for gasoline range organics. If the soil is contaminated from releases from more than one product, use the limitations for both products. For example, if the release is a mixture of gasoline and diesel, the soil should be tested for components of both gas and diesel and the limitations for both fuels and their components used.

(2) The concentrations for diesel, heavy oil and mineral oil are not additive. Use the TPH product category most closely representing the TPH mixture and apply the limitations for that product to the mixture. ***The reuse of waste oil contaminated soil is not allowed due to the wide variety of contaminants likely to be present.***

(3) Value is total of m, o, & p xylenes.

(4) Value is the total of all PCBs. Only heavy oil and mineral oil contaminated soils need to be tested for PCBs. Soil contaminated with a spill from a regulated PCB containing device must be disposed of in a TSCA permitted landfill, regardless of the PCB concentration. Other PCB contaminated soils may be disposed of in a municipal solid waste landfill permitted to receive such materials, provided the concentration does not exceed 2 ppm PCBs (WAC 173-303-9904).

(5) Value is total of naphthalene, 1-methyl naphthalene and 2-methyl naphthalene. Only diesel and heavy oil contaminated soils need to be tested for naphthalenes.

(6) The value is the benzo(a)pyrene equivalent concentration of the following seven cPAHs. See Appendix C for how to calculate a toxic equivalent concentration. The seven cPAHs are as follows: benz(a)anthracene; benzo(b)fluoranthene; benzo(k)fluoranthene; benzo(a)pyrene; chrysene; dibenz(a,h)anthracene; and, indeno(1,2,3-cd)pyrene. Only diesel and heavy oil contaminated soils need to be tested for cPAHs. Soils contaminated with more than 1% polycyclic aromatic hydrocarbons, as that term is defined in WAC 173-303-040 (which is more expansive than the above list), must be disposed of as hazardous waste.

(7) No visible sheen observed on water when approximately one tablespoon of soil placed in approximately ½ liter of water held in a shallow pan (like a gold pan or similar container).

(8) A soil in a lower category can be used for uses specified in any higher category. This means that:

- A category 1 soil can be used for any use specified in categories 1, 2, 3 and 4.
- A category 2 soil can be used for any use specified in categories 2, 3 and 4.
- A categories 3 soil can be used for any use specified in categories 3 and 4.

(9) ***If an environmental site assessment or soil or groundwater analyses indicate contaminants other than common petroleum constituents and naturally occurring levels of metals are likely to be present in the soil of interest at the site (for example, solvents or pesticides), do not reuse the soil.*** The soil should instead be treated using appropriate technology to address all contaminants or landfilled at a solid waste or hazardous waste facility permitted to receive these materials.

(10) Soils in categories 2, 3 and 4 should be stockpiled consistent with the soil storage recommendations in Subsection 11.3 of this guidance.