Lower Duwamish Waterway
RM 2.1 West
1st Avenue South Storm Drain

Summary of Existing Information and Identification of Data Gaps

Prepared for

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List of Acronyms

2LAET	second lowest apparent effects threshold
AS/SVE	air sparging/soil vapor extraction
AST	aboveground storage tank
BBP	butyl benzyl phthalate
BEHP	bis(2-ethylhexyl)phthalate
bgs	below ground surface
BMP	best management practice
BTEX	benzene, toluene, ethylbenzene, and xylenes
CAP	Cleanup Action Plan
CELP	Center for Environmental Law and Policy
COC	chemical of concern
cPAH	carcinogenic polycyclic aromatic hydrocarbon
CKD	cement kiln dust
CLARC	Cleanup Levels and Risk Calculations
CLD	construction, demolition, and land clearing
CMP	corrugated metal pipe
CRT	cathode ray tube
CSCSL	Confirmed and Suspected Contaminated Sites List
CSL	Cleanup Screening Level
CSO	combined sewer overflow
DCE	dichloroethene
DMR	Discharge Monitoring Report
DW	dry weight
E&E	Ecology and Environment
EAA	Early Action Area
ECHO	Enforcement and Compliance History Online
Ecology	Washington State Department of Ecology
EOF	Emergency Overflow
EPA	Environmental Protection Agency
ERTS	Environmental Report Tracking System
ESA	Environmental Site Assessment
FSID	Ecology Facility/Site Database Identification
gpd	gallons per day
GIS	Geographic Information Systems
HDPE	high density polyethylene
HPAH	high molecular weight polycyclic aromatic hydrocarbon
ICE	Industrial Construction Equipment
ISGP	Industrial Stormwater General Permit
ISIS	Integrated Site Information System
JTF	Joint Training Facility
KCIW	King County Industrial Waste
LAET	lowest apparent effects threshold
LDW	Lower Duwamish Waterway
LDWG	Lower Duwamish Waterway Group

List of Acronyms (continued)

LUST	leaking underground storage tank
MAPSCO	Magnetic & Penetrant Services Co., Inc.
MEK	methyl ethyl ketone
mgy	million gallons per year
MOU	Memorandum of Understanding
MTCA	Model Toxics Control Act
NFA	No Further Action
NOT	Notice of Termination
NPDES	National Pollutant Discharge Elimination System
NWES	Northwest Enviroservice
OC	organic carbon
PAH	polycyclic aromatic hydrocarbon
PARIS	Permitting and Reporting Information System
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PHSKC	Public Health Seattle & King County
PSAPCA	Puget Sound Air Pollution Control Agency
PSCAA	Puget Sound Clean Air Agency
PVC	polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
RM	river mile
RZA	Rittenhouse-Zeman & Associates
SAIC	Science Applications International Corporation
SCAP	Source Control Action Plan
SCWG	Source Control Work Group
SD	storm drain
SDOT	Seattle Department of Transportation
SEPA	State Environmental Policy Act
SHA	Site Hazard Assessment
SIC	Standard Industrial Classification
SKCDPH	Seattle King County Department of Public Health
SMS	Sediment Management Standards
SPPD	South Park Property Development
SPU	Seattle Public Utilities
SQS	Sediment Quality Standard
SR	state route
SRDS	South Recycle and Disposal Station
SVOC	semivolatile organic compound
SWPPP	Stormwater Pollution Prevention Plan
TCA	trichloroethane
TCE	trichloroethylene
TCLP	Toxicity Characteristic Leaching Procedures
TEQ	toxic equivalence quotient

List of Acronyms (continued)

TOC	total organic carbon
TPH	total petroleum hydrocarbons
TRI	Toxics Release Inventory
USEPA	United States Environmental Protection Agency
UST	underground storage tank
VCP	Voluntary Cleanup Program
VOC	volatile organic compound
WAC	Washington Administrative Code
WARM	Washington Ranking Method
WDOH	Washington Department of Health
WSDOT	Washington State Department of Transportation
WWTP	wastewater treatment plant

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1.0 Introduction

1.1 Background and Purpose

This *Summary of Existing Information and Identification of Data Gaps* report (Data Gaps Report) pertains to River Mile (RM) 2.1 West[1] (1st Avenue South Storm Drain), one of 24 source control areas identified as part of the overall cleanup process for the Lower Duwamish Waterway (LDW) Superfund Site (Figure 1). It summarizes readily available information regarding properties in the 1st Avenue South Storm Drain (1st Avenue S SD) source control area. The purpose of this Data Gaps Report is to:

- Identify chemicals of concern (COCs) in sediments within the 1st Avenue South SD source control area;
- Identify and describe potential adjacent or upland sources of contaminants that could be transported to sediments;
- Evaluate potential contaminant migration pathways to RM 2.1 West sediments;
- Identify critical data gaps that should be addressed in order to assess the potential for recontamination of sediments and the need for source control; and
- Determine what, if any, effective source control is already in place.

The LDW consists of 5.5 miles of the Duwamish Waterway, as measured from the southern tip of Harbor Island to just south of the Norfolk Combined Sewer Overflow (CSO). The LDW flows into Elliott Bay in Seattle, Washington. The LDW was added to the U.S. Environmental Protection Agency (USEPA or EPA) National Priorities List in September 2001 due to the presence of chemical contaminants in sediment. The key parties involved in the LDW site are EPA, the Washington State Department of Ecology (Ecology), and the Lower Duwamish Waterway Group (LDWG), which is composed of representatives from the City of Seattle, King County, the Port of Seattle, and The Boeing Company. In December 2000, EPA and Ecology signed an agreement with the LDWG to conduct a Remedial Investigation/ Feasibility Study (RI/FS) for the LDW site.

EPA is leading the effort to determine the most effective cleanup strategies for the LDW through the RI/FS process. Ecology is leading the effort to investigate upland sources of contamination and to develop plans to reduce contaminant transport to waterway sediments.[2] The LDWG collected data during the Phase I Remedial Investigation (RI) that were used to identify candidate locations for early cleanup action. Seven candidate early action areas (EAAs or Tier 1 sites) were identified. Ecology's *Lower Duwamish Waterway Source Control Status Report, 2003 to June 2007* (Ecology 2007i) and *Lower Duwamish Waterway Source Control Status Report, July 2007 to March 2008* (Ecology 2008b) identified another 16 areas where source control actions may be necessary. The 1st Avenue S SD source control area was added by Ecology in 2010, for a total of 24 source control areas. Subsequently, Ecology and EPA redefined the boundaries of the source

[1] River miles as defined in this report are measured from the southern tip of Harbor Island.

[2] EPA and Ecology signed an interagency Memorandum of Understanding (MOU) in April 2002 and updated the MOU in April 2004. The MOU divides responsibilities for the site. EPA is the lead agency for the sediment RI/FS, while Ecology is the lead agency for source control issues (EPA and Ecology 2002, 2004).

control areas, generally defined by stormwater drainage basins. The seven candidate EAAs and 17 additional source control areas are shown on Figure 1. Figure 2 shows the extent of the 1st Avenue S SD basin and adjacent storm drain basins.

Ecology is the lead agency for source control for the LDW site. Source control is the process of finding and reducing or eliminating releases of contaminants to LDW sediments, to the extent practicable. The goal of source control is to prevent sediments from being recontaminated after cleanup has been undertaken.

The LDW Source Control Strategy (Ecology 2004a) describes the process for identifying source control issues and implementing effective controls for the LDW. The plan is to identify and manage potential sources of sediment recontamination in coordination with sediment cleanups. Source control will be achieved by using existing administrative and legal authorities to perform inspections and require necessary source control actions.

The strategy is based primarily on the principles of source control for sediment sites described in EPA's *Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites* (USEPA 2002), and the Washington State Sediment Management Standards (SMS) (Washington Administrative Code [WAC] 173-340-370[7] and WAC 173-204-400). The Source Control Strategy involves developing and implementing a series of detailed, area-specific Source Control Action Plans (SCAPs).

Before developing a SCAP, Ecology prepares a Data Gaps Report for the source control area. Findings from the Data Gaps Report are reviewed by LDW stakeholders and are incorporated into the SCAP. This process helps to ensure that the action items identified in the SCAP will be effective, implementable, and enforceable. As part of the source control efforts for the 1st Avenue S SD source control area, Ecology requested Science Applications International Corporation (SAIC) to prepare this Data Gaps Report.

1.2 Report Organization

Section 2.0 of this report provides background information on the 1st Avenue S SD source control area, including location, physical characteristics, COCs, and pathways by which contaminants may reach sediments. Sections 3.0, 4.0, and 5.0 describe potential sources of contaminants and data gaps that must be addressed in order to develop and implement a SCAP for the source control area. Section 6.0 provides a summary of data gaps, and Section 7.0 lists the documents cited in this report. Appendix A provides sediment sampling data for the sediments near RM 2.1 West. Appendix B provides storm drain solids and wetlands sediment sampling data, and Appendix C provides a summary of soil and groundwater data collected at facilities within the 1st Avenue S SD source control area. Appendices D and E provide excerpts from environmental investigation reports for the South Transfer Station and the Former South Park Landfill, respectively.

Information presented in this report was obtained from the following sources:

- Ecology Northwest Regional Office Central Records;
- Washington State Archives;
- EPA files;

- Seattle Public Utilities (SPU) business inspection reports;
- Ecology Underground Storage Tank (UST) and Leaking Underground Storage Tank (LUST) lists;
- Ecology Facility/Site Database;
- Ecology Integrated Site Information System (ISIS) Database;
- Washington State Confirmed and Suspected Contaminated Sites List (CSCSL);
- Ecology Water Quality Permitting and Reporting Information System (PARIS);
- EPA Enforcement and Compliance History Online (ECHO);
- EPA Envirofacts Warehouse;
- King County Geographic Information Systems (GIS) Center Parcel Viewer, Property Tax Records, and iMap;
- GIS shape files produced by SPU; and
- Historical aerial photographs.

Information collected from the Facility/Site Database, ISIS, ECHO, EPA Envirofacts Warehouse, and King County property tax records was current as of May 2012. Recent updates to these databases may not be reflected in this report.

1.3 Scope of Report

This report documents readily available information relevant to potential sources of contaminants to sediments near the 1st Avenue S SD source control area, including outfalls, properties directly adjacent to the LDW, and upland properties within the 1st Avenue S SD basin.

Air pollution is a potential source of sediment contamination with origins outside of the 1st Avenue S SD source control area. Although limited discussion of atmospheric deposition is provided in Section 2.0, the scope of this report does not include an assessment of data gaps pertaining to the effects of air pollution on the sediments associated with the source control area. Because air pollution is a concern for the wider LDW region, Ecology will review work being conducted by the Washington State Department of Health and planned by the Puget Sound Partnership regarding atmospheric deposition, and has initiated a preliminary study of the relationship between air deposition and LDW sediment contamination, if any.

Information presented in this report is limited to the 1st Avenue S SD source control area, direct discharges to the sediments near the source control area, and potential adjacent and upland contaminant sources. This report focuses on sources that have the potential to recontaminate sediments near RM 2.1 West in the event that sediment remediation is required.

Chemical data have been compared to relevant regulatory criteria and guidelines, as appropriate. The level of assessment conducted for the data reviewed in this report is determined by the source control objectives. The scope of this Data Gaps Report does not include data validation or analysis that exceeds what is required to reasonably achieve source control.

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2.0 RM 2.1 West (1st Avenue S SD)

The 1st Avenue S SD source control area is located along the western side of the LDW Superfund Site at RM 2.1, as measured from the southern end of Harbor Island (Figure 1). The source control area is south of the Port of Seattle's Terminal 115, east of Highland Park Way SW, west of the Trotsky Inlet and Riverside Drive source control areas, and extends south to SW Roxbury Street (Figure 3).

Stormwater in the 1st Avenue S SD basin is transported via underground pipes and surface ditches to a series of wetlands, referred to in this report as the 1st Avenue S wetlands or 1st Avenue S central wetlands, which discharge to an intertidal slough under the 1st Avenue S bridge (Figure 4). The 1st Avenue S SD source control area is unique in that there are no facilities located directly adjacent to the LDW; the right-of-way for the 1st Avenue S bridge is included in the 1st Avenue S SD source control area, but adjacent properties to the southeast and northwest are addressed as part of other source control areas. Parcel ownership near the 1st Avenue S bridge is shown in Figure 5.

Douglas Management Company (southeast of the bridge) leases 50,408 square feet of land from the Washington State Department of Transportation (WSDOT); this property is used for storage of empty cargo, shipping containers, and related equipment, and contains a weight scale for loading and unloading of gravel (WSDOT 2004). Activities at Douglas Management Company are discussed in more detail in *Early Action Area 2 Supplemental Data Gaps Report, Douglas Management Company Property, 7100 2nd Avenue SW, Seattle* (SAIC 2008).

The Seattle Department of Transportation (SDOT) parcels (5367202518 and 5367202510) and State of Washington parcels (5367202512 and 5367202514) located to the northwest of the bridge and north of SW Michigan Street are discussed in the Terminal 115 Data Gaps Report; these parcels are identified as the Seattle Engineering Department Penn Yard (SAIC 2011a).

The Duwamish Bikeway is a 2.95-mile trail from State Route (SR) 99 and S Holden Street (in the 1st Avenue S SD source control area) to West Marginal Way SW and SW Idaho Street. It passes through the north end of the source control area (Figure 3). The neighborhoods of Highland Park and White Center are partially within the 1st Avenue S SD source control area.

The 1st Avenue S SD is located almost entirely within the 8th Avenue S CSO basin, which discharges to the LDW in the Riverside Drive source control area. Discharges from the 8th Avenue S CSO are addressed in the Data Gaps Report for the RM 2.2 to 3.4 West (Riverside Drive) source control area (SAIC 2012). A small area on the north end of the 1st Avenue S SD is located within the Terminal 115 CSO basin, while the western edge of the source control area is in the West Michigan CSO basin. Discharges from the Terminal 115 and West Michigan CSO basins are addressed in the Data Gaps Report for the Terminal 115 source control area (SAIC 2011a).

There are 72 upland facilities in the 1st Avenue S SD source control area that are listed in Ecology's Facility/Site Database; these are identified in Table 1. Releases from these facilities could potentially affect LDW sediments near RM 2.1 West.

2.1 Site Description

General background information on the LDW is provided in the Phase I RI Report (Windward 2003), which describes the history of dredging/filling and industrialization of the Duwamish River and its environs, as well as the physiography, physical characteristics, hydrogeology, and hydrology of the area.

In the late 1800s and early 1900s, extensive topographic modifications were made to the Duwamish River to create a straightened channel; many of the current side slips are remnants of old river meanders. The upland areas adjacent to the LDW have been industrialized for many decades; both commercial and industrial operations occur in the 1st Avenue S SD source control area.

Bottom sediment composition is variable throughout the LDW, ranging from sands to mud. Typically, the sediment consists of slightly sandy silt with varying amounts of organic detritus. Coarser sediments are present in nearshore areas adjacent to storm drain discharges (Weston 1999); finer grained sediments are typically located in remnant mudflats and along channel side slopes. Sediments near RM 2.1 West consist of 40 to 60 percent fines (dry weight [DW]). Total organic carbon (TOC) in this area ranges from 1 to 3 percent (Appendix A) (Windward 2003, 2005a,b, 2007a,b, 2010a).

The 1st Avenue S bridge, formally named the Duwamish River Bridge, consists of a pair of double-leaf bascule bridges constructed between 1956 and 1998; it carries SR 99 across the Duwamish River. The northbound span was built in 1956 to connect the industrial areas northeast of the Duwamish River to the residential neighborhoods to the south and southwest. Between 1996 and 1998, the drawspan was retrofitted and the approaches completely demolished and rebuilt. The southbound span opened in 1996 and carried traffic in both directions for two years while the northbound span was rebuilt. In 1998, the northbound span, with new approaches, was reopened to traffic.

Prior to construction of the 1st Avenue S bridge at its current location, an earlier bridge was present slightly to the north, near the former Boeing Plant 1.

Stormwater in the northern portion of the source control area historically drained to the McAllister Slough, which discharged to the LDW near Boeing Plant 1; additional information is provided in the Terminal 115 Data Gaps Report (SAIC 2011a). The approaches to the current bridge from the south are situated on fill material that was placed in the area in the late 1950s and early 1960s, in conjunction with filling of the Duwamish River oxbow that is now the Douglas Management Company property, within the Trotsky Inlet source control area. During construction of the bridge, the portion of West Marginal Way S to the west of SR 509 was relocated 1,000 feet to the north of its prior position.

The 1st Avenue S SD source control area is located along the base of a hill, which rises to over 400 feet along the west side of the source control area. Some of the industrial properties on the west side of Detroit Avenue SW and 1st Avenue S abut the heavily vegetated hillside; residential areas are generally located at the top of the hill to the west, above 300 feet in elevation. A large park, Westcrest Park, is located in the southern portion of the source control area, as is the West Seattle Reservoir. A series of engineered wetlands in the northern portion of the source control area, adjacent to SR 99/SR 509, collects stormwater and runoff, which is discharged to the LDW under the 1st Avenue S bridge.

During reconstruction of the 1st Avenue S bridge during the mid-1990s, impacts to natural wetlands in this area were mitigated by the construction of a 2.08-acre Y-shaped wetland, which is hydrologically connected to the tidally influenced, pre-existing wetland (Figure 6). The constructed wetland was intended to enhance the functions and values of the wetland system and assist in enhancing the water quality of the LDW and estuary system (WSDOT 1994a).

At the same time, impacts to a 400-square foot area of intertidal habitat along the shore of the LDW was mitigated by pulling back the bank of the river to increase the size of the existing intertidal area by 29,500 square feet (WSDOT 1994a).

Groundwater in the Duwamish Valley alluvium is typically encountered within about 10 feet (3 meters) of the ground surface and under unconfined conditions (Windward 2003). The general direction of groundwater flow is toward the LDW, although the direction may vary locally depending on the nature of the subsurface material, and temporally, based on proximity to the LDW and the influence of tidal action. High tides can cause temporary groundwater flow reversals, generally within 100 to 150 meters (300 to 500 feet) of the LDW (Booth and Herman 1998). Groundwater flow in the 1st Avenue S SD source control area is generally toward the LDW.

2.2 Chemicals of Concern in Sediment

COCs in sediment associated with the 1st Avenue S SD source control area were identified based on sediment sampling conducted between 1998 and 2011.

2.2.1 Sediment Investigations

Sediment samples have been collected adjacent to the 1st Avenue S SD source control area as part of the investigations listed below and in Table 2. Sample locations are shown in Figure 7. Data and information regarding the investigations performed prior to 2005 were compiled by Windward for the LDW RI (Windward 2003). Chemicals in surface and subsurface sediment samples detected at concentrations above screening levels are presented in Table 3.

- **EPA Site Inspection, Lower Duwamish River (Weston 1999)**

  During August of 1998, one surface sediment sample was collected in the vicinity of RM 2.1 West. The sample was analyzed for metals, polychlorinated biphenyls (PCBs), semi-volatile compounds (SVOCs), and TOC.

- **LDW RI Phase 2, Rounds 1, 2, and 3 (Windward 2005a,b, 2007b)**

  In August 2004, March 2005, and October 2006, five surface sediment samples were collected near RM 2.1 West. All samples were analyzed for SVOCs, PCBs, metals, and TOC; a subset of samples was analyzed for pesticides and organo-tin compounds.

- **LDW RI Phase 2, Subsurface Sediment Sampling (Windward 2007a)**

  Four subsurface sediment samples were collected from two coring locations adjacent to the source control area in February 2006. LDW38a was collected at depth intervals of 0 to 1 foot, 1 to 2 feet, and 2 to 3 feet. LDW38b was collected at a depth interval of 3 to 3.3 feet. All four samples were analyzed for metals, PCBs, SVOCs, and TOC.

- **LDW Dioxin/Furan Sampling (Windward 2010a)**

  One surface sediment sample (LDW-SS523) was collected near the 1st Avenue S SD source control area in December 2009. This sample was analyzed for dioxin/furan compounds.

- **Surface Sediment Sampling at Outfalls in the Lower Duwamish Waterway (SAIC 2011b)**

  In March 2011, five surface sediment samples were collected adjacent to the 1st Avenue S SD source control area. All samples were analyzed for metals, PCBs, SVOCs, and TOC.

Sediment sampling results are listed in Appendix A, Tables A-1 and A-2 for surface and subsurface sediments, respectively.

2.2.2 Identification of Chemicals of Concern

A COC is defined in this report as a chemical that is present in sediments near the 1st Avenue S SD source control area at concentrations above regulatory criteria, and is therefore of particular interest with respect to source control. These COCs are the initial focus of the evaluation of potential contaminant sources.

The Washington SMS (Chapter 173-204 WAC) establish marine Sediment Quality Standard (SQS) and Cleanup Screening Level (CSL) values for some chemicals that may be present in sediments. Sediments that meet the SQS criteria (i.e., are present at concentrations below the SQS) have a low likelihood of adverse effects on sediment-dwelling biological resources. However, an exceedance of the SQS numerical criteria does not necessarily indicate adverse effects or toxicity, and the degree of SQS exceedance does not correspond to the level of sediment toxicity. The CSL is greater than or equal to the SQS and represents a higher level of risk to benthic organisms than the SQS levels. The SQS and CSL values provide a basis for identifying sediments that may pose a risk to some ecological receptors.

A chemical was identified as a COC for the 1st Avenue S SD source control area if it was detected in surface or subsurface sediment at concentrations above the SQS in at least one sample. A comparison of sample results to the SQS and CSL values is provided in Appendix A, and those chemicals that were detected at concentrations above their respective SQS/CSL values are listed in Table 3. For non-polar organics, the measured dry weight concentrations were organic carbon (OC) normalized to allow comparison to the SQS/CSL, unless the TOC concentration was less than or equal to 0.5 percent or greater than or equal to 4.0 percent. OC normalization is not considered appropriate for TOC concentrations outside of this range (Michelsen and Bragdon-Cook 1993, as cited in Windward 2010b). For samples with TOC concentrations outside this range, analytical results for non-polar organics were compared to the lowest apparent effects threshold (LAET) and the second lowest apparent effects threshold (2LAET), as identified in the LDW RI (Windward 2010b). The LAET and 2LAET are functionally equivalent to the SQS and CSL, respectively. Chemicals detected in sediment for which no SQS/CSL values are available may be identified as COCs on a case-by-case basis.

Chemicals with concentrations above the SQS in surface or subsurface sediment samples are listed below. Chemicals were present in sediment samples collected near the 1st Avenue S SD outfall, at concentrations slightly exceeding the SQS. The greatest exceedances occurred in subsurface sample LDW-SC38a for PCBs, with an exceedance factor of 19.

Chemicals Detected at Concentrations Above the SQS/CSL	Surface Sediment		Subsurface Sediment	
	> SQS	> CSL	> SQS	> CSL
Metals				
Mercury			●	
PAHs				
Acenaphthene			●	
Phthalates				
Bis(2-ethylhexyl)phthalate	●	●		
Butyl benzyl phthalate	●			
Other SVOCs				
1,4-Dichlorobenzene	●			
Benzyl alcohol	●	●		
Dibenzofuran			●	
PCBs				
PCBs (total)	●		●	●

Exceedance factors, which are a measure of the degree to which maximum detected concentrations exceed the SQS/CSL values, are listed in Table 3.
PAH – polycyclic aromatic hydrocarbon
PCB – polychlorinated biphenyl

Results for these chemicals are discussed in more detail below.

Metals

Mercury slightly exceeded the SQS in subsurface sediment sample LDW-SC38a at a depth of 2 to 3 feet, with a concentration of 0.45 mg/kg DW. The sample was collected between outfalls 2507, 2508, and 2512.

Polycyclic Aromatic Hydrocarbons (PAHs)

Acenaphthene concentrations exceeded the SQS in two subsurface samples ranging at depths of 2 to 3 feet. The highest concentration of acenaphthene, 0.81 mg/kg DW (54 mg/kg OC), was detected in sample LW-SC38a at a depth of 2 to 3 feet. The samples were collected between outfalls 2507, 2508, and 2512.

Phthalates

Bis(2-ethylhexyl)phthalate (BEHP) exceeded both the SQS and CSL in two surface sediment samples, both located near outfall 2506 (the West Michigan CSO). The maximum detected concentration was 4.9 mg/kg DW (395 mg/kg OC). Butyl benzyl phthalate (BBP) slightly exceeded the SQS in two surface samples, near outfalls 2506 and 2512.

PCBs

PCB concentrations exceeded the SQS in three surface sediment samples and three subsurface sediment samples. One subsurface sample also exceeded the CSL, with a concentration of

3.4 mg/kg DW (227 mg/kg OC) at a depth of 2 to 3 feet. This sample was collected between outfalls 2507, 2508, and 2512.

Other SVOCs

Other chemicals with that exceeded screening levels in sediment were 1,4-dichlorobenzene (one surface sample), benzyl alcohol (two surface samples), and dibenzofuran (one subsurface sample).

Pesticides, including DDT and related compounds, aldrin, chlordane, and endosulfan, were detected in one or more surface sediment samples. All concentrations were below the corresponding mean LDW surface sediment concentrations (Windward 2010b). Pesticides are not considered COCs in the 1st Avenue S SD source control area.

Dioxins/furans were analyzed in one sample collected in 2009. The total dioxin/furan toxic equivalence quotient (TEQ) was 9.1 ng/kg, below the LDW Remedial Action Level of 25 ng/kg but above the LDW background level of 1.6 ng/kg. Therefore, dioxins are considered COCs in the 1st Avenue S SD source control area.

2.2.3 Chemicals of Concern

As described above, COCs were identified based on the results of sediment sampling conducted between 1998 and 2011. Chemicals that exceeded the SQS in at least one surface or subsurface sediment sample near the 1st Avenue S SD source control area are considered COCs.

Because outfalls associated with other source control areas are located in close proximity to RM 2.1 West, particularly the West Michigan CSO (Outfall 2506 on Figure 7), the presence of contaminants in LDW sediments in this area may not be directly related to contaminant discharges from the 1st Avenue S SD. However, for purposes of this Data Gaps Report, the following chemicals are considered to be sediment COCs for the 1st Avenue S SD source control area:

- Mercury
- Acenaphthene
- BEHP
- BBP
- PCBs
- 1,4-dichlorobenzene
- Benzyl alcohol
- Dibenzofuran
- Dioxins/furans

In addition, arsenic and carcinogenic PAHs (cPAHs) are considered risk drivers for the LDW Superfund Site.

2.3 Potential Pathways to Sediment

Potential sources of sediment recontamination associated with the 1st Avenue S SD source control area include storm drain outfalls and discharges from upland properties. There are no facilities located adjacent to the LDW within the 1st Avenue S SD source control area. Transport pathways that could contribute to the recontamination of sediments within the source control area following remedial activities include direct discharges via outfalls, bank erosion, groundwater discharges, surface runoff from upland facilities to storm drain ditches and wetland areas, and air deposition. These pathways are described below and are discussed in more detail in Sections 3.0 and 4.0.

2.3.1 Direct Discharges via Outfalls

Direct discharges may occur from public or private storm drain systems, CSOs, and emergency overflows (EOFs). Four WSDOT bridge drains discharge to the LDW within the 1st Avenue S SD source control area. In addition, the 1st Avenue S SD central wetland discharges to the LDW under the 1st Avenue S bridge via an open channel (Figure 4). No CSOs or EOFs discharge to the LDW within this source control area.

Upland areas within the LDW are served by a combination of separated storm/sanitary systems and combined sewer systems. Storm drains convey stormwater runoff collected from pervious surfaces (yards, parks) and impervious surfaces (streets, parking lots, driveways, and rooftops) in the drainage basin. In the LDW, there are both public and private SD systems. Most of the waterfront properties are served by privately owned systems that discharge directly to the waterway. The other upland areas are served by a combination of private and publicly owned systems. Typically, private onsite storm drain systems discharge to the public storm drain in the street, which conveys runoff from private property and public rights-of-way to the LDW.

The sanitary sewer system collects municipal and industrial wastewater from throughout the LDW area and conveys it to King County's West Point wastewater treatment plant (WWTP), where it is treated before being discharged to Puget Sound. The smaller trunk sewer lines, which collect wastewater from individual properties, are owned and operated by the individual municipalities (e.g., cities of Seattle and Tukwila) and local sewer districts. The large interceptor system that collects wastewater from the trunk lines is owned and operated by King County. A King County interceptor extends along the west side of West Marginal Way SW.

Some areas of the LDW are served by combined sewer systems, which carry both stormwater and municipal/industrial wastewater in a single pipe. These systems were generally constructed before about 1970 because it was less expensive to install a single pipe rather than separate storm and sanitary systems. Under normal rainfall conditions, wastewater and stormwater are conveyed through this combined sewer pipe to a wastewater treatment facility. During large storm events, however, the total volume of wastewater and stormwater can sometimes exceed the conveyance and treatment capacity of the combined sewer system. When this occurs, the combined sewer system is designed to overflow through relief points, called CSOs. The CSOs prevent the combined sewer system from backing up and creating flooding problems.

A mixture of untreated municipal/industrial wastewater and stormwater can potentially be discharged through CSOs to the LDW during these storm events. The city's CSO network has its own National Pollutant Discharge Elimination System (NPDES) permit; the county's CSOs are administered under the NPDES permit established for the West Point WWTP.

An EOF is a discharge that can occur from either the combined or sanitary sewer systems that is not necessarily related to storm conditions and/or system capacity limitations. EOF discharges typically occur because of mechanical issues (e.g., pump station failures) or when transport lines are blocked; pump stations are operated by both the city and county. Pressure relief points are provided in the drainage network to discharge flow to an existing SD or CSO pipe under emergency conditions to prevent sewer backups. EOF events are not covered under the city's or county's existing CSO wastewater permits.

There are 14 CSOs/EOFs in the LDW. The 1st Avenue S SD is located almost entirely within the 8th Avenue S CSO basin, which discharges to the LDW in the Riverside Drive source control area. A small area on the north end of the 1st Avenue S SD is located within the Terminal 115 CSO basin, while the western edge of the source control area is in the West Michigan CSO basin. Discharges from these CSOs are addressed in the Terminal 115 and Riverside Drive Data Gaps Reports (SAIC 2011a, 2012).

Annual stormwater discharge volumes are usually substantially higher than annual CSO discharges because storm drains discharge whenever it rains, while CSOs only occur when storm events exceed the system capacity. Annual stormwater discharges to the LDW have been estimated at approximately 4,000 million gallons per year (mgy) compared to less than 65 mgy from the county CSOs and less than 10 mgy from the city CSOs (Windward 2010b).

To minimize the frequency and volume of CSO events, the county uses different CSO control strategies to maximize system capacity. An automated control system manages flows through the King County interceptor system so that the maximum amount of flow is contained in pipelines and storage facilities until it can be conveyed to a regional WWTP for secondary treatment. In some areas of the system, where flows cannot be conveyed to the plant, the overflows are sent to CSO treatment facilities for primary treatment and disinfection prior to discharge. County CSOs discharge untreated wastewater only when flows exceed the capacity of these systems (King County 2009).[3]

As a result, some areas may overflow to different outfalls at different times, depending on the route that the combined stormwater/wastewater has taken through the county conveyance system. Furthermore, some industrial facilities in the LDW basin may discharge stormwater to a separated system and industrial wastewater to a combined system, or a conveyance that begins as a separated system may discharge to a combined system further downstream along the flow path.

When preparing a Data Gaps Report for a source control area, all properties that potentially discharge to that source control area (whether through a CSO/EOF or a separated storm drain) are identified to the extent that the boundaries of the drainage basin are known. However, for areas where drainage basins overlap, a property review is performed only if the property has not already been included in a previously published Data Gaps Report. Exceptions include situations where contaminants may be transported to the current source control area via a transport pathway that was not applicable for the earlier evaluation.

Large spills of hazardous substances and waste materials containing COCs may be transported to a storm drain and therefore have the potential to impact sediment in the LDW. There is a potential for spills of COCs from many of the industrial and commercial businesses from upland properties as well as from trucks and trains transporting hazardous substances and waste materials. Spills that occur in upland properties could enter the onsite or public storm drain system and be discharged to the LDW. Spill prevention is a major element of the business

[3] City CSOs are generally smaller and flows are not treated prior to discharge.

inspections conducted by SPU, King County, and Ecology. Many businesses are required to have spill prevention plans. In the event of a spill, Ecology and SPU respond to and investigate spill incidents.

2.3.2 Surface Runoff (Sheet Flow)

In areas lacking collection systems, spills or leaks on properties adjacent to the LDW could flow directly over impervious surfaces or through creeks and ditches to the waterway. Surface runoff from the right-of-way under the 1st Avenue S bridge and its approaches may be transported to the LDW.

2.3.3 Spills to the LDW

Near-water and over-water activities have the potential to impact adjacent sediment from spills directly to the LDW of material containing COCs. There are no industrial properties adjacent to the LDW within the 1st Avenue S SD source control area. However, the 1st Avenue S bridge (SR 509/SR 99) is a busy roadway that carries thousands of vehicles each day, including a large volume of industrial traffic. An accident on the 1st Avenue S bridge or its approaches could result in transport of contaminants directly to the LDW.

2.3.4 Bank Erosion

The banks of the LDW shoreline are susceptible to erosion by wind and surface water, particularly in areas where banks are steep. Shoreline armoring and the presence of vegetation reduce the potential for bank erosion. Contaminants in soils along the banks of the LDW, if any, could be released directly to sediments via erosion. In the 1st Avenue S SD source control area, the shoreline consists of an intertidal/mud flat area under the bridge and its approaches.

2.3.5 Groundwater Discharges

Contaminants in soil resulting from spills and releases to upland properties may be transported to groundwater and subsequently released to the LDW. Concentrations of chemicals in soil and groundwater were compared to draft soil-to-sediment or groundwater-to-sediment screening levels (SAIC 2006).

These screening levels were initially developed to assist in the identification of upland properties that may pose a potential risk of recontamination of sediments at Slip 4. The screening levels incorporate a number of conservative assumptions, including the absence of contaminant dilution and ample time for contaminant concentrations in soil, sediment, and groundwater to achieve equilibrium. In addition, the screening levels do not address issues of contaminant mass flux from upland media to sediments, nor do they address the area or volume of sediment that might be affected by upland contaminants. Because of these assumptions and uncertainties, these screening levels are most appropriately used for one-sided comparisons. If contaminant concentrations in upland soil or groundwater are below these screening levels, then it is unlikely that they will lead to exceedances of the SMS. However, upland concentrations that exceed these screening levels *may or may not* pose a threat to marine sediments; additional property-specific information must be considered in order to make such an assessment. While not currently considered COCs in sediment, these chemicals may warrant further investigation, depending on property-specific conditions, to evaluate the likelihood that they will lead to exceedances of the SMS.

Contaminants in soil as a result of spills and releases to upland properties may be transported to groundwater, which generally flows toward the central wetlands area along 1st Avenue S and 2nd Avenue SW (Figure 3), and could subsequently be released to the LDW.

Two seeps (LDW-SP-57 and LDW-SP-58) were identified in this area during a 2004 seep reconnaissance survey, but were not selected for chemical analysis (Windward 2004). RM 2.1 West was identified as an area with a higher general seepage level.

2.3.6 Atmospheric Deposition

Atmospheric deposition occurs when air pollutants enter the LDW directly or through stormwater. Air pollutants may be generated from point or non-point sources. Point sources include industrial facilities; air pollutants may be generated from painting, sandblasting, loading/unloading of raw materials, and other activities, or through industrial smokestacks. Non-point sources include dispersed sources such as vehicle emissions, aircraft exhaust, and off-gassing from common materials such as plastics. Air pollutants may be transported over long distances by wind and can be deposited to land and water surfaces by precipitation or particle deposition. None of the properties within the 1st Avenue S SD source control area are currently regulated as point sources of air emissions.

Contaminants originating from nearby properties and streets may be transported through the air and deposited at RM 2.1 West or in areas that drain to the LDW. Although chemical deposition from air directly to the LDW probably occurs, this mechanism is not likely to result in sediment concentrations above local background levels. Secondary impacts of air sources on the stormwater pathway to receiving waters and sediment are not well understood; additional information is needed. Recent and ongoing atmospheric deposition studies in the LDW area are summarized in the LDW Source Control Status Report (Ecology 2007i and subsequent updates). Ecology will continue to monitor these efforts.

3.0 Potential for Sediment Recontamination from Outfalls

Storm drains convey stormwater runoff collected from streets, parking lots, roof drains, and residential, commercial, and industrial properties to the LDW. Storm drain outfalls entering the LDW carry runoff generated by rain and snow. A wide range of chemicals may become dissolved or suspended in runoff as rainwater flows over the land. Urban areas generally accumulate particulates, dust, oil, asphalt, rust, rubber, metals, pesticides, detergents, or other materials as a result of human activities throughout the storm drain basin.

Human activities include landscaping, spills, illegal dumping, vehicle maintenance (fueling, washing), and vehicle use (wear on roads, tires, brakes, fluid leaks, and emissions). These materials can be flushed into storm drains during wet weather and are then conveyed to the waterway, mainly through the storm drain system. In addition, contaminants in soil or groundwater could enter the storm drain system through cracks or gaps in the system piping.

Stormwater from the 1st Avenue S SD source control area flows to an engineered wetland system located on either side of the SR 99/SR 509 approach (Figure 3). Prior to construction of the new bridge in 1994/1995, a series of wetlands, identified as Wetland No. 1 through Wetland No. 5, were present in this area (Figure 6). During this period, stormwater was transported through a pipe connecting Wetland No. 5 to Wetland No. 1 to Wetland No. 3, and subsequently to McAllister Slough, which discharged to the LDW near Boeing Plant 1. Additional information about this historical discharge location is provided in the Terminal 115 Data Gaps Report (SAIC 2011a).

During bridge construction, Wetland No. 5 and portions of Wetland No. 1 were filled (WSDOT 1994b), and a 2.1-acre Category I wetland was constructed. This new “Y”-shaped estuarine wetland was constructed in the area north of, and hydrologically connected to, the northeastern edge of the tidally influenced Wetland No. 1 (WSDOT 1994a). The “Y”-shaped design was used to allow greater interface between wetland and upland areas; provide effective flushing of nutrients, sediment, and other materials; provide for more frequent and prolonged periods of saturation and inundation; and encourage the establishment of more native plant species. A 50-foot buffer of native upland vegetation was installed to surround the wetland, reducing noise and glare from surrounding roadways. The remainder of the site was vegetated with upland species.

The wetland was designed to intercept tidal water from Wetland No. 1, and to receive freshwater from biofiltration swales located at the north and south ends of the site. According to the WSDOT wetland mitigation plan, all stormwater was to be treated in drainage swales before entering Wetland No. 1 (WSDOT 1994a). In addition, a wet pond was constructed in the area of Wetland No. 4.

The original wetland mitigation proposal indicated that discharge would continue to be through Wetland No. 3 and via pipeline to the LDW near Terminal 115. Revised plans included an open channel to the LDW along the east side of the new wetland (just west of the new bridge approach), which discharges to the LDW under the 1st Avenue S bridge (WSDOT 1994b). Since construction, the site (which was previously owned jointly by the City of Seattle and WSDOT) has been owned and maintained by WSDOT.

In February 1994, prior to wetland mitigation, a spill of approximately 5,500 gallons of blended fuel, oil, and paint products at 8105 1st Avenue S (Northwest EnviroService, currently Waste Management 1st Avenue S) occurred adjacent to the wetland area. Although most of the spilled material was recovered, some of the material entered the wetlands, causing concern over the impacts of the spill on project construction and mitigation. WSDOT determined that the proposed mitigation areas were not significantly adversely affected by the spill (WSDOT 1994b). Areas designated for filling were impacted by the spill; WSDOT agreed to characterize and remediate any contamination within the footprint of the fill prior to fill placement (WSDOT 1994b). Additional information about the spill is provided in Section 5.13.

3.1 Piped Outfalls

Within the 1st Avenue S SD source control area, four piped outfalls discharge to the LDW. All are owned by WSDOT and are believed to be bridge drains. The public outfalls are shown in Figure 8 and are listed below, from north to south:

Outfall No.	Secondary ID	Location	Pipe Diameter/Material	Outfall Type
2505	340W	2.0 W	12- to 18-inch corrugated metal pipe	WSDOT SD
2512	342W	2.1 W	4-inch ABS plastic	WSDOT SD
2507	344W	2.1 W	8-inch steel	WSDOT SD
2510	347W	2.1 W	8-inch polyvinyl chloride (PVC)	WSDOT SD

Source: LDW RI Report (Windward 2010b, Appendix H)

The West Michigan CSO (outfall 2506) is located just to the north of the source control area boundary and was addressed in the Data Gaps Report for the Terminal 115 source control area (SAIC 2011a).

Outfalls 2508, 2509, and 2121 are located just to the east, within the Trotsky Inlet source control area (Early Action Area 2), on property currently occupied by Douglas Management Company. Outfall 2508 appears to be inactive; the Supplemental Data Gaps Report prepared for the Douglas Management Company property indicates that, as recently as 2003, several catch basins along the access areas and onramp to the northbound span of the 1st Avenue S bridge drained to the LDW at this location (SAIC 2008). Stormwater drainage from the northwest portion of the area occupied by Douglas Management Company is now transported to the LDW through a drainage swale that discharges to the LDW at a location identified on Figure 8 as outfall 2121. Outfall 2509 is a WSDOT bridge drain.

Figure 4 shows the shoreline and outfall area under the 1st Avenue S bridge.

3.2 1st Avenue S Storm Drain

Stormwater in the 1st Avenue S SD basin is transported via underground pipes and surface ditches to a series of wetlands, which discharge to the LDW under the 1st Avenue S bridge. The surface water discharge from these wetlands does not correspond to a numbered outfall.

Industrial and commercial facilities within the 1^{st} Avenue S SD basin have been identified as follows:

- 73 facilities within the 1st Avenue S SD basin have been assigned Ecology Facility/Site Identification (FSID) numbers.
- 16 of these facilities are listed on the CSCSL.
- 9 of these facilities have active EPA ID numbers.
- 9 of the facilities hold active NPDES permits.
- 5 of these facilities have King County Industrial Waste (KCIW) discharge authorizations or permits.
- 13 of these facilities are listed on Ecology's UST/LUST lists.

These facilities are listed by category in Table 1. Additionally, an unknown number of undocumented industrial operations may take place within the 1^{st} Avenue S SD basin. Undocumented industrial activities may be an ongoing source of contaminants to sediments near the 1^{st} Avenue S SD source control area.

3.3 Storm Drain Sampling

SPU collected sediment trap and inline grab samples of storm drain solids in the 1^{st} Avenue S SD basin between September 2008 and April 2011 (Figure 8). Four sediment traps (1st-ST1, 1st-ST2, 1st-ST3, and 1st-ST5) were installed in September 2008; samples were collected in March 2009. One additional sediment trap (1st-ST7) was installed in March 2009. Sediment trap samples were collected again in November 2010. In addition, 15 inline grab samples, one right-of-way catch basin sample, and two onsite catch basin samples have been collected. Table 4 lists analytical results for chemicals detected at concentrations above screening levels in storm drain samples.

The Source Control Work Group[4] (SCWG) compares analytical results from these samples to the SQS/CSL and LAET/2LAET. Petroleum hydrocarbon results are compared to the Model Toxics Control Act (MTCA) Method A cleanup standards. Although these regulatory standards are not applicable to storm drain solids, the SCWG uses these values as a benchmark to describe storm drain solids quality (SPU 2010z). In this document, values described above (SQS/CSL, LAET/2LAET, and MTCA Method A) that are used for comparison to storm drain solids data are referred to as "storm drain screening levels." It should be emphasized that none of these values are applied as cleanup levels to storm drain or combined sewer solids. It is important to note that any comparison of this kind is most likely conservative given that sediments discharged from storm drains are highly dispersed in the receiving environment and mixed with the natural sedimentation taking place in the system.

Screening results are summarized below:

[4] The SCWG is composed of Ecology, King County, the Cities of Seattle and Tukwila, the Port of Seattle, and EPA.

Chemical	Sediment Trap	Inline Grab	Right-of-Way Catch Basin	Onsite Catch Basin	Sediment COC?
	>Storm Drain Screening Level	>Storm Drain Screening Level	>Storm Drain Screening Level	>Storm Drain Screening Level	
Metals					
Mercury		●			✓
Zinc	●	●		●	
PAHs					
Acenaphthene		●			✓
Benzo(a)anthracene			●		
Benzo(a)pyrene	●		●		
Benzo(g,h,i)perylene	●				
Benzofluoranthenes			●		
Chrysene	●		●		
Fluoranthene	●	●	●		
Indeno(1,2,3-cd)pyrene	●				
Phenanthrene	●	●	●		
Pyrene	●		●		
Total HPAH	●	●	●		
Phthalates					
BBP	●	●		●	✓
BEHP	●	●	●	●	✓
Dimethylphthalate		●			
Other SVOCs					
4-Methylphenol	●		●		
Benzoic acid	●			●	
PCBs					
Total PCBs	●			●	✓
Dioxins/Furans					
Dioxin/Furan TEQ		●			✓
Petroleum Hydrocarbons					
TPH-Diesel	●	●			
TPH-Oil	●	●		●	

The highest exceedance factors were observed for phthalates. BBP was detected at 3.2 mg/kg DW (exceedance factor of 51) in the November 2010 sediment trap sample from 1st-ST1. BEHP was detected at concentrations to 44 mg/kg (exceedance factor of 34) in the September 2008 sediment trap sample from 1st-ST5, and had an exceedance factor of 10 or greater in eight storm drain solids samples. An exceedance factor of 10 indicates that a chemical was present at a concentration at least 10 times greater than the screening level.

Samples from location 1st-ST1 exceeded the screening levels for phthalates, PAHs, petroleum hydrocarbons, dioxin/furan TEQ, and zinc. Location 1st-ST2 had fewer exceedances, mainly for phthalates, zinc, and isolated detections of benzoic acid and PAHs. Sample location 1st-ST3 had only a single sample with a screening level exceedance, for 4-methylphenol. Samples from locations 1st-ST5 and 1st-ST7 exceeded screening levels for PCBs, phthalates, zinc, PAHs, and petroleum hydrocarbons; in addition, location 1st-ST5 exceeded the mercury screening level.

Relatively high exceedance factors were observed for phthalates (9.7 to 12) and zinc (5.2 to 9.2) in onsite catch basins CB150 and CB158. These onsite catch basin samples are discussed further in Section 4.0.

3.4 Potential for Sediment Recontamination

Given the large traffic volume that crosses this bridge daily, it is likely that PAHs, phthalates, and petroleum hydrocarbons are discharged to the LDW through the WSDOT bridge drains. No information was available about the volume of stormwater that is discharged through these structures, and no data on contaminant concentrations in these discharges were identified. PAHs, and phthalates were identified as sediment COCs in Section 2. Therefore, the WSDOT bridge drains are believed to represent a potential source of LDW sediment recontamination.

Sediment trap, inline, and catch basin storm drain solids sampling has indicated that concentrations of sediment COCs above storm drain screening levels are present in the 1st Avenue S SD basin. Specifically, mercury, acenaphthene, BEHP, BBP, PCBs, and dioxins/furans exceeded screening levels in both storm drain solids and surface sediment samples in this source control area. These COCs in storm drain discharges from the 1st Avenue S SD may represent a potential source of LDW sediment recontamination.

3.5 Data Gaps

Information needed to assess the potential for sediment recontamination associated with public storm drain outfalls in the 1st Avenue S SD source control area is listed below:

- Stormwater from upland facilities may enter the 1st Avenue S SD system via surface ditches or underground piping. Additional information on the configuration of pipes and drainage ditches in this area would support identification of potential contaminant sources to the 1st Avenue S SD.
- Additional information is needed regarding the quantity and quality of stormwater discharged to the LDW through the WSDOT bridge drains.
- Additional information is needed to determine if undocumented industrial operations are occurring within the 1st Avenue S SD basin that may be an ongoing source of sediment recontamination.

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4.0 Potential for Sediment Recontamination from Adjacent Properties

In addition to the 1st Avenue S bridge right-of-way, three parcels are adjacent to the tidal wetland in the area where the 1st Avenue S SD discharges to the LDW. These parcels are located south of SW Michigan Street and east of 2nd Avenue SW (Figure 9).

Parcel 5367202516 is owned by the State of Washington. It is listed by King County Department of Assessments as "vacant industrial."

Parcel 5367202505 is part of the Port of Seattle's Terminal 115 property. This rectangular parcel is currently vacant. Activities at Terminal 115 are described in the Data Gaps Report for the Terminal 115 source control area (SAIC 2011a). Based on aerial photos presented in the Terminal 115 Data Gaps Report, the lot has been used intermittently for parking of vehicles since as early as 1956.

Parcel 5367202513 is owned by the SDOT; it is the SW Michigan Street right-of-way.

No information about releases to soil or groundwater associated with these parcels, if any, was available. The parcels are located adjacent to the LDW intertidal area under the 1st Avenue S bridge (Figure 4); contaminants in soil or groundwater, if present, could contribute to sediment recontamination in this area.

Property leased by Douglas Management Company from WSDOT is located to the east and southeast of the 1st Avenue S SD discharge area (Figure 5). Activities at Douglas Management Company are described in *Early Action Area 2 Supplemental Data Gaps Report, Douglas Management Company Property, 7100 2nd Avenue SW, Seattle* (SAIC 2008). Douglas Management Company uses this property for storage of empty cargo, shipping containers, and related equipment.

Property owned by Herman and Jacqualine Trotsky (currently the Industrial Container Services facility) is also adjacent to the intertidal area at the 1st Avenue S SD discharge location. Activities at Industrial Container Services are described in *Early Action Area 2 Summary of Existing Information and Identification of Data Gaps* (SAIC 2007).

Both Douglas Management Company and Industrial Container Services have entered into Agreed Orders with Ecology to conduct investigations and develop cleanup action plans to remediate contamination at these facilities.[5]

[5] Additional information is available from Ecology's website at http://www.ecy.wa.gov/programs/tcp/sites_brochure/lower_duwamish/sites/early_action_area_2/early_action_area2.htm

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5.0 Potential for Sediment Recontamination from Upland Properties

Upland properties in the 1st Avenue S SD source control area that could potentially affect LDW sediments are described in the following sections. These upland properties are not adjacent to the LDW; therefore, surface runoff, spills directly to the waterway, and bank erosion are not potential sediment recontamination pathways and will not be discussed in this section. Contaminants from upland properties could be transported to the LDW via stormwater and groundwater discharge pathways.

Stormwater associated with these properties is conveyed to the LDW through the 1st Avenue S SD system. Contaminants suspended in stormwater, if any, may be transported to LDW sediments. If spills occur at these properties, the spilled materials may flow directly to storm drain catch basins and surface ditches or may become commingled with stormwater and be conveyed to the 1st Avenue S SD. Contaminants in soil and groundwater beneath these properties, if any, may leach into groundwater and infiltrate the storm drain system. Base flow in the storm drain system is likely to be highly diluted.

The 1st Avenue S SD collects drainage from an area of approximately 609 acres (Figure 8). Ecology has assigned 73 FSID numbers to facilities in the 1st Avenue S SD basin. Many of these represent historical operations at properties with current operations for which FSID numbers have also been assigned. As a result, a given property may have as many as eight FSID numbers. To facilitate the discussion in this Data Gaps Report, the facilities have been grouped into 35 "properties." Table 5 lists the facilities associated with each property, including addresses, applicable parcel numbers, and the current taxpayer for each parcel as listed in King County's property tax records.[6] Figure 9 shows property locations by parcel number.

In addition to the 73 facilities with FSID numbers, Table 5 includes several facilities for which no FSID number has been assigned. These include Second Use Building Materials (two locations), Intermountain Supply, and Global Diving & Salvage.

Most of these properties are discussed in detail in Sections 5.1 through 5.33. Precise locations of the following sites could not be determined based on the limited information available:

Facility/Site Name	Facility/ Site ID	Location Description	Ecology Program ID	Ecology Interaction
1st Kenyon Drum	46918719	1st Avenue S and SW Kenyon Street	WAD988476073	Hazardous waste generator (Aug 1990 to Dec 1991)
Kenyon Drum	29892767	Kenyon Street S at Transfer Station	WAD980985659	Hazardous waste generator (Jul 1986 to Dec 1996)
Metro Holden Marginal Way	9677878	West Marginal Way SW and S Holden Street	WAD980985956	Hazardous waste generator (Aug 1986 to Jun 1987)

[6] http://www.kingcounty.gov/operations/GIS/PropResearch/ParcelViewer.aspx

Facility/Site Name	Facility/ Site ID	Location Description	Ecology Program ID	Ecology Interaction
Transfer Sta Barrel	39937726	8100 Occidental Ave S	WAD988524237	Hazardous waste generator (Sep 1993 to Nov 1993)
Greg Peterson Duwamish River	7130166	None provided	NA	Spills: Enforcement Final (Feb 2007)
Exxon Co USA Div of Exxon Cor	5542431	7150 2nd Avenue SW	WAD980978621	Hazardous waste generator (Aug 1985 to Jan 1987)[7]

No additional information about these facilities/sites was available in the files reviewed during preparation of this Data Gaps Report. All appear to be historical spills or unidentified drums for which cleanup/disposal has been completed. These facilities/sites are not discussed further in this section, and are not included on figures presented in this report.

For the two facilities described briefly below, very limited information was available in the files reviewed during preparation of this Data Gaps Report. None of these are believed to represent a significant risk of LDW sediment recontamination.

ABC Metal Finishing, 501 S Elmgrove Street (FSID 97913617)

This property was identified as a hazardous waste generator (WAD981768453) between September 1987 and April 1989. The facility is no longer present at this location, and no other information was available in the files reviewed during preparation of this Data Gaps Report.

Arrowhead Senior Housing Association, 9200 2nd Avenue SW (FSID 17746)

This property received coverage under the construction stormwater general permit between February 2008 and February 2010, during construction of the housing development. No other information was available, and no potential impacts to LDW sediments have been identified.

Cement Kiln Dust

Many lowland areas within the 1st Avenue S SD basin were filled with cement kiln dust (CKD) from the cement manufacturing plants located along the LDW. The specific source of the CKD is unknown, but filling during this time period generally coincides with operations at Ideal Basic Industries (also known as Holman Inc. and Lafarge Cement) (Riley 2005e). CKD was not regulated at that time, and was believed to represent “clean fill.”

CKD is generated as a very fine material emitted from the calcining process (the heating process used to make cement out of raw materials such as limestone, clinker for metals, and other calcareous materials). The cement dust generated during calcining is a very fine, talcum-like dust, or flue “ash,” captured in dust collection systems attached to the rotary calcining kilns. Baghouse filters and electrostatic precipitators are generally used to capture and collect the fine dust from the hot gases of the calcining operation (Riley 2005e). The CKD generally has a strong alkali content (pH 10.5 to 12.0), and often contains metals that represent the content of the

[7] A 1985 aerial photo does not show a gas station in this area (SAIC 2011a, Figure B-7).

clinker source materials used in the calcining operation. Capture of CKD and use as fill material increased after passage of the Clean Air Act in 1970.

A review of environmental studies for properties in the LDW basin where CKD was used as fill material, conducted by The Riley Group (Riley) in 2005, found elevated concentrations of metals in the CKD material and in shallow groundwater in direct contact with CKD (Riley 2005e). These metals included lead (400 to 2,000 mg/kg in CKD, 5 to 8 ug/L in groundwater), arsenic (20 to 280 mg/kg in CKD, 3 to 120 ug/L in groundwater), cadmium (1.0 to 10 mg/kg in CKD, 0.3 to 3 ug/L in groundwater), and chromium (20 to 30 mg/kg in CKD, 50 to 80 ug/L in groundwater). The pH ranged from 11 to 12 in CKD and 7 to 12 in groundwater.

CKD fill material has been observed at the following properties within the 1st Avenue S SD basin:

- Seaport Petroleum (Former West Coast Equipment 2)
- Kenyon Street Property (Former Dr Concrete Recycle)
- Intermountain Supply (Former Recycle America)
- South Transfer Station (Former S Kenyon Street Bus Yard)

Environmental investigations associated with the presence of CKD at these facilities are summarized in the relevant subsections below.

5.1 Seattle Engineering Department 2nd Avenue SW

Property Summary: Seattle Engineering Department 2nd Avenue SW	
Address	2nd Avenue SW & West Marginal Way SW
Tax Parcel No.	7643400010
Property Owner	Seattle Department of Transportation
Parcel Size	3.81 acres (165,863 sq ft)
Facility/Site ID	84167493 (Seattle City Eng Dept 2nd Ave SW)
Alternate Names	None
SIC Code	4226: Special Warehousing and Storage 9199: General Government
EPA ID No.	WAD988476057 (inactive)
NPDES Permit No.	NA
UST/LUST ID No.	NA

This property is partially located within the 1st Avenue S SD source control area (Figure 10). The western portion of this property is in the Terminal 115 source control area. To the south is a vacant parcel owned by the State of Washington, and to the east is 2nd Avenue SW and the central wetland area that drains to the LDW under the 1st Avenue S bridge. The property is currently vacant.

The Seattle Engineering Department 2nd Avenue SW facility was listed in Ecology's Facility/Site Database as a small quantity hazardous waste generator from August 1990 to December 1995.

As of March 2011, it was listed on EPA Region 10's list of regulated hazardous waste handlers as a conditionally exempt small quantity generator.

SPU is identified as the facility owner (Ecology 2010d). The eastern part of the property, which is located in the 1st Avenue S SD source control area, has historically been vacant; occasional storage of materials, equipment, and possibly wastes can be observed on aerial photographs of the area.

According to an Initial Environmental Report Tracking System (ERTS) Report (No. 630663), dated November 30, 2011, a caller indicated that approximately 100 yards of contaminated soil, from a nearby construction zone at 7500 Detroit Avenue SW (Seattle Housing Authority), had been dumped at this property in late 2010. The soil may have been contaminated with PCBs (Ecology 2011b). The caller indicated that barrels of chemicals had also been dumped on the WSDOT property immediately to the south (parcel 9182 on Figure 9).

No other information on current or historical activities at this property was available.

5.1.1 Potential for Sediment Recontamination

This property has been used intermittently for storage of materials, equipment, and possibly wastes, and a recent ERTS report indicates that illegal dumping may have occurred in late 2010 at this location and on the WSDOT parcel directly to the south. No environmental investigations have been conducted at this property.

Soil and Groundwater

No specific information about releases to soil or groundwater associated with activities at this property, including illegal dumping, if any, was available. The property is located across 2nd Avenue SW from the central wetland area that drains to the LDW. Contaminants in soil or groundwater, if present, could therefore be transported to LDW sediments.

Stormwater

This property is currently vacant and unpaved. Stormwater would likely infiltrate the ground surface. Therefore, the potential for sediment recontamination associated with stormwater discharges from this property is low.

5.1.2 Data Gaps

Information on historical activities at this property is needed to determine whether these activities may have resulted in the release of contaminants to soil, groundwater, or stormwater.

Additional information about illegal dumping of contaminated soil in this area is needed, including information on concentrations of contaminants in soil and/or groundwater.

5.2 Waste Management Eastmont Transfer Station

Property Summary: Waste Management Eastmont Transfer Station	
Address	7201 West Marginal Way SW 98106 7155 West Marginal Way SW 98106
Tax Parcel No.	3024049167
Property Owner	Waste Management
Parcel Size	2.36 acres (102,802 sq ft)
Facility/Site ID	2425 (Waste Management of Seattle) 91926231 (Eastmont Transfer Station)
Alternate Names	Bayside Disposal Co, Eastmont Transfer Station, Sunset Disposal, Waste Management of Seattle Marg Wy, Eastmont Transfer Station and Material Recovery Facility, Washington Waste Hauling & Recycling, Inc.
SIC Code	4212: Local Trucking Without Storage 4953: Refuse Systems 5093: Scrap and Waste Materials 753: Automotive Repair Shops 2699: Repair Services, NEC
EPA ID No.	WAD041333576 (Waste Management; active) WAD980836050 (Eastmont Transfer Station; inactive)
NPDES Permit No.	WAR000581 (active)
UST/LUST ID No.	3446

The Eastmont Transfer Station, operated by Waste Management, is located between West Marginal Way SW to the east, and Detroit Avenue SW to the west, less than ¼ mile southwest of the LDW (Figure 10). To the north is Pacific Plumbing Supply[8] and to the south is Jones Stevedoring. The undeveloped West Duwamish Greenbelt is located to the west of Detroit Avenue SW.

The Eastmont Transfer Station is a waste transportation, vehicle maintenance, and transfer station facility in operation at this location since 1983. The facility supports a fleet of approximately 35 collection vehicles and service vehicles. The collection vehicles are parked offsite at the Waste Management 1st Avenue S property (Section 5.13).

The transfer station and material recovery facility occupy a multi-level 25,000-sq ft building and a 400-sq ft scale house (Figure 15). Office and maintenance facilities are also located onsite. The main facility entrance is located along West Marginal Way SW.

The property is located on King County tax parcel 3124049167, and is owned by Waste Management. King County's Parcel Viewer[9] lists an incorrect address for this parcel as 7901 1st Avenue S; the correct address is 7201 West Marginal Way SW. The property at 7901 1st Avenue S is discussed in Section 5.12 (Intermountain Supply/Former Recycle America).

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[8] Pacific Plumbing Supply is in the Terminal 115 source control area, and was discussed in the Terminal 115 Data Gaps Report (SAIC 2011a).
[9] http://www.kingcounty.gov/operations/GIS/PropResearch/ParcelViewer.aspx

The property is underlain by fill material, which was deposited at the property between the early 1900s and the mid-1970s. Approximately 5 to 13 feet of fill are present at the property; fill materials reportedly included construction debris (wood, concrete, plaster board), sand-blasting sands from local shipyards, pot liner slag, and battery chips (Waste Management 1992b).

Beneath the fill is a soft, gray, organic-rich, clayey silt, which ranges in depth from 25 to 42 feet. The organic-rich silt is underlain by the following:

Northeast Side of Property	Southwest Side of Property
Compact, fine to medium sand, extending to maximum depths of 42 to 64 feet	Compact to dense, fine to coarse sand, containing silt and gravel in places, at a depth of 1 to 15 feet
A 3- to 6-foot layer of sandy silt	Hard, clayey silt to 51 to 74 feet
A 6-foot layer of compact, silty sand containing shells	
Compact fine to coarse sand, with gravel, beginning at 48 to 64 feet	

The water table is within 8 feet of the surface, and groundwater flows in a generally northeast direction (Waste Management 1992b).

5.2.1 Current Operations

Waste Management of Seattle operates the Eastmont Transfer Station and Material Recovery Facility to manage municipal solid waste and construction, demolition, and land clearing (CDL) waste for transfer to the Columbia Ridge Landfill & Recycling Center and the Cedar Hills Regional Landfill. Transfer operations at this facility began in 1983.

Municipal solid waste and CDL waste is processed in the transfer station on a concrete tipping floor. The tipping floor is sized to allow 13 vehicles to tip their loads simultaneously. The capacity of the tipping floor is about 1,950 tons per day. Since June 1, 1994, the facility has been designated as a CDL receiving facility.

The tipping floor is designed to allow recovery of recyclable CDL and waste materials. If processing is needed to prepare materials for recycling, they are pushed onto a below-grade conveyor, which moves materials to a raised sorting station. Sorters separate recyclable materials from waste materials. Recyclables are placed into containers for temporary storage, transport, and sale to brokers and recycling facilities. Wastes remaining on the conveyor are moved to the upper tipping floor to be managed with the rest of the waste stream. The facility encourages the recovery of wood, concrete, old corrugated containers, metal, clean gypsum, asphalt, and soils from the CDL stream to the extent practicable (Waste Management 1996).

Two compactors are located on-site. Municipal solid waste is tipped onto the tipping floor and pushed with a front loader to the loading chute/hopper of the compactors. Waste feeds down through the hopper into the compaction chamber. The waste is compacted into a load-shaped bale weighing between 25 and 30 tons for shipments destined for Columbia Ridge Landfill & Recycling Center, and 22 to 26 tons for shipments destined for Cedar Hills Regional Landfill.

A solid waste transfer trailer is backed up and hooked to the compactor for loading. When a bale is complete, the compactor ram discharges the load into a trailer or intermodal container; the load is then transported to the intermodal facility or landfill, as appropriate. Two scales are located onsite for weighing incoming and outgoing loads of municipal solid waste.

Some waste streams require special handling; these include asbestos, organic and compostable debris, contaminated soils, and special wastes as defined under WAC Chapter 173-303-040.

The transfer station accepts residential and commercial solid waste, including asbestos, CDL waste, special waste, contaminated soil, and sharps; it does not accept hazardous waste, untreated biomedical waste, liquid waste, tires, large appliances, or unapproved or improperly handled special waste.

Solid waste originating in King County is flow controlled to King County facilities. In other words, while wastes from King County and Seattle are commingled at the transfer station, the same tonnage of waste as that originating in King County is sent to the Cedar Hills Regional Landfill (Waste Management 1994b).

Potential Pollutant Sources

The following activities conducted at the facility may generate pollutants (Waste Management 2012):

- Management of vehicles and containers which are used for solid waste and recyclables;
- Collection vehicle or container storage;
- Management of fuels, oils, and automotive fluids;
- Outdoor vehicle and equipment storage and parking;
- Washing of collection vehicles and containers;
- Vehicle and equipment maintenance;
- Liquid storage in bulk storage tanks and containers; and
- Overflow/leakage from oil/water separators.

Three new product oil tanks are located at the northwest corner of the maintenance building; these have secondary containment. A double-walled fuel tank for the compactors is located in the Transfer Building (SPU 2009j).

According to the facility's Stormwater Pollution Prevention Plan (SWPPP), the following materials are used at the facility: diesel fuel, engine and lubricating oils, greases, transmission fluid, cleaners and degreasers, antifreeze, used oil, and used antifreeze (Waste Management 2012).

Facility trailers are parked outdoors; small amounts of hydraulic fluids or stormwater in contact with refuse might leak or drip from equipment. As of 2012, Waste Management had not had any reportable spills or releases in the past five years.

One 20,000-gallon diesel UST and two 10,000-gallon USTs were present at the facility until 1995, when they were decommissioned and closed in place (Omega Services 1995). The pump island, dispensers, and associated piping were also removed. The tanks were located immediately west of the truck maintenance building, under a concrete slab.

Waste Disposal

Wastes handled at the facility include parts cleaning solvents, diesel fuel, detergents, used oil, used lead-acid batteries, vehicle wash water, antifreeze, and facility-generated refuse. Oil, transmission fluid, and hydraulic fluid are stored in tanks on the north side of the shop, under cover and within secondary containment.

The facility generates approximately 100 gallons of used oil per month; used oil is stored in a 275-gallon tank along the south side of the maintenance building. Used antifreeze (300 gallons per year), parts washer solvent (10 gallons per year), and waste batteries (10 per year) are also generated. Used oil, antifreeze, and parts washer solvent are collected by Emerald Services for recycling or disposal.

Wastewater

Water from the tipping floor, compactors, trailer loading area, and full trailer staging areas, including a large portion of the paved areas on the western side of the facility, is discharged to the sanitary sewer system in accordance with King County Discharge Authorization No. 322 (Waste Management 1994b).

Approximately 17,000 gallons of wastewater per day is discharged to the sanitary sewer after passing through a gravity separator (SPU 2009j). The separator is inspected monthly and maintained as needed.

Stormwater

Runoff from the paved parking areas and driving areas on the eastern portion of the facility drains to the storm drain system, which includes five onsite catch basins and underground piping (Figure 15). The catch basins have filters, which are inspected twice per week and cleaned as needed. Catch basins are cleaned out by vactor trucks once per week (SPU 2009j). Stormwater discharges to a detention pond just beyond the northeast property line, and is then directed through underground storm drain piping to the LDW. The facility is covered under Industrial Stormwater General Permit (ISGP) No. WAR000581.

5.2.2 Historical Operations

Bayside Disposal Company occupied this property from 1964 until it was acquired by Waste Management, Inc. in 1987 (Waste Management 1994a). Transfer station operations began at this facility in 1983. Bayside Disposal (1983 to 1987) and Waste Management (after 1987) operated the Eastmont Transfer Station and Material Recovery Facility, which processed approximately 650 tons per day of municipal solid waste from King County, the City of Seattle, and surrounding areas for final disposal at the Cedar Hills Regional Landfill and the Columbia Ridge Landfill & Recycling Center (Waste Management 1994b). Beginning June 1, 1994, this facility was designated as a primary receiving facility for CLD waste under a contract with the King County Solid Waste Division.

Two 10,000-gallon underground storage tanks (USTs) were installed by Bayside Disposal in 1973 and 1978 (Tank ID No. 1 and 3, respectively); ownership of the tanks was transferred to Waste Management in May 1991 (Bayside 1992).

Sunset Disposal also previously operated at this location. No information about Sunset Disposal was available in the files reviewed during preparation of this Data Gaps Report.

5.2.3 Regulatory History

Eastmont Transfer Station (FSID 91926231) was identified as a hazardous waste generator between August 1983 and December 1996.

Waste Management of Seattle (FSID 2425) was identified as a hazardous waste generator between August 1980 and February 2004; the facility currently has an active EPA ID number (WAD041333576). Four underground storage tanks at this location are included on Ecology's Regulated UST Site List; three have been closed place and one used oil tank has been removed.

Waste Management of Seattle is included on Ecology's LUST list, with confirmed contamination of soil and groundwater with petroleum, confirmed contamination of soils with priority pollutant metals, suspected contamination of surface water with petroleum, and suspected contamination of groundwater and surface water with priority pollutant metals. Site status is listed as "Cleanup Started", dated June 1, 1995.

Waste Management of Seattle is also listed on Ecology's CSCSL, with a cleanup unit listed as Bayside Disposal/Sunset Disposal. Bayside Disposal was acquired by Waste Management in 1983. Site discovery/release reports were received on March 1, 1988 and October 27, 1992. A Site Hazard Assessment was completed in August 2001, and the site was assigned a ranking of 5, where a score of 1 represents the highest level of risk and 5 the lowest. Current site status is listed as "Awaiting Cleanup."

Stormwater

Ecology conducted a stormwater compliance inspection at the Waste Management Eastmont Transfer Station facility on November 1, 2005 (Ecology 2005i). Waste Management had not submitted quarterly Discharge Monitoring Reports (DMRs) to Ecology, as required by their stormwater permit, during 2005, and only once each year in 2003 and 2004. These indicated benchmark exceedances for pH, zinc, and oil & grease in 2003, and benchmark exceedances for zinc and turbidity in 2004. A large exposed CDL pile was observed in the northeast corner of the property; leachate flowed from the pile to a pool of water offsite near the West Marginal Way SW entrance. The inspector observed an employee hosing out the back of a truck trailer in the same area. An oil sheen and other possible pollutants were observed entering a storm drain in the employee parking area (Figure 15). Later during the inspection, the drain had backed up and water was bubbling up out of the structure. Drums of waste oil were stored outdoors against the maintenance facility, with no best management practices (BMPs) in place to prevent spills or leaks. Poor housekeeping practices were observed in the areas that drain to the sanitary sewer.

The following compliance issues and recommendations were noted:

- Conduct quarterly monitoring and submit DMRs as required by the stormwater permit; if a parameter exceeds a benchmark level, initiate appropriate response.

- Discharge of leachate from the exposed trash pile is a permit violation.
- Immediately begin quarterly visual monitoring of the facility, as required by the permit.
- Implement a plan to ensure that trucks are cleaned or hosed out in areas where the water will discharge to a sanitary sewer drain.
- Install and maintain catch basin inserts with oil-absorbent materials.
- Consider moving waste oil drums indoors, or implement proper liquid/chemical storage BMPs to prevent spills or leaks.
- Improve housekeeping practices to prevent trash and debris from being tracked into areas that discharge to the storm drain system.

Ecology conducted a follow-up inspection on December 2, 2005 (Ecology 2005j). The CDL pile had been covered. The facility had a designated trailer washout area in the portion of the facility that drains to the sanitary sewer. Waste oil drums had been moved indoors. All facility stormwater discharged to a pond adjacent to the north side of the facility. The pond was turbid, but no discharge was observed. This pond is not visible in aerial photographs of the facility (Figure 10).

The following recommendations were made:

- Install and maintain catch basin inserts in the storm drains at the facility; install oil-absorbent inserts if possible.
- Increase sweeping frequency as needed to prevent accumulation of sediments and discharge of turbid water to the storm drain system.
- Consider rebuilding berms in the CDL processing area; as these berms degrade, contaminated water may flow toward storm drains.
- Update permit information to reflect correct contact information, and include a map showing the onsite stormwater pond.

A joint Ecology/SPU environmental compliance inspection was conducted at the Waste Management Eastmont Transfer Station on September 15, 2009 (Ecology 2009j). The Ecology inspector noted that the SWPPP must include a clear delineation of the areas of the facility where stormwater flows to the sanitary sewer and those areas that flow to the storm drain system. Catch basin filter inserts had been installed in all catch basins; these are inspected twice per week and vactored out weekly. The paved areas of the facility are swept once per week. At the garbage and CDL debris processing and sorting bays, a water misting system is used to suppress dust; the dust suppression water may not discharge to the storm drain system or contribute to track out problems. The area in front of the eastern-most processing bay was dirty with concrete, sheet rock dust, and debris. Material was being tracked out of the building along with the dust suppression water. There is a storm drain immediately to the southeast of the transfer building.

The following recommendations and requirements were identified:

- Properly delineate the areas of the facility that flow to the storm drain system in the SWPPP; consider delineating this boundary with markings or paint.
- Improve housekeeping and source control in the used oil/waste oil-filter area.
- Ensure that the delineated stormwater/sanitary sewer boundaries are accurate.
- Improve source control at the eastern-most bay of the processing/sorting building.

During the same inspection, SPU identified the following corrective actions (SPU 2009l):

- Post a written spill plan at existing spill kit locations.
- Improve the level of housekeeping at the southeast corner of the transfer building.
- Delineate the drainage areas at the facility to verify the boundaries of stormwater and sanitary discharge areas.

As of November 19, 2009, all SPU corrective actions had been implemented (SPU 2009t).

No information on the follow-up to this inspection was available in the files reviewed during preparation of this Data Gaps report.

Underground Storage Tanks

On December 16, 1991, Waste Management reported that a 1,000-gallon single-wall steel underground waste oil tank, located immediately south of the service garage, failed a tightness test for the second time (Ecology 1991). The tank was emptied and an aboveground tank installed over the UST in January 1992. The bottom of the waste oil tank was at a depth of about 6 feet bgs (SCS Engineers 1992). In April 1992, soil samples confirmed that the tank had been leaking (Ecology 1992b); total petroleum hydrocarbons (TPH) were detected at 7,000 mg/kg at 5 feet below ground surface (bgs), which is below the water table in this area (Ecology 1992c). An environmental investigation was subsequently conducted (see Section 5.2.4). The tank was removed on September 21, 1992 (Waste Management 1992c). In June 1993, Waste Management requested and received acknowledgement that the tank had been properly closed in accordance with state regulations (Waste Management 1993; Ecology 1993e)..

On March 31, 1995, a suspected leak in a diesel fuel tank dispenser pump and underground line was discovered (Ecology 1995d). The pump was immediately shut down. Tightness tests were conducted on all three tanks, and they were found to be sound. Waste Management postulated that concrete settling may have been responsible for the suspected breach in the line (Waste Management 1995). Approximately 40 gallons of diesel fuel leak was suspected. Waste Management indicated that the company plans to perform major facility renovations, including installation of tanks meeting the 1998 UST standards, during the summer of 1995. Sampling and characterization of the area of the suspected leak was planned to be performed in conjunction with the renovations. The facility was assigned a LUST Incident Number of 3446. All three diesel fuel tanks were closed in place in July 1995 (Omega Services 1995).

5.2.4 Environmental Investigations and Cleanups

Sampling results for chemicals detected in soil at this facility are provided in Appendix C. Results for chemicals that exceed screening levels in soil are listed in Table 6.

Waste Oil Tank Investigation and Cleanup (1992-1993)

An environmental investigation was conducted by SCS Engineers for Waste Management in 1992 to assess whether a leaking 1,000-gallon waste oil tank identified in December 1991 had resulted in subsurface contamination. SCS conducted a soil vapor survey, installed five shallow soil borings, and analyzed 12 soil samples. Soil boring locations are shown in Figure 15. Borings B-1 to B-3 were hand augured to 2.5 to 5 feet bgs. Borings B-4 and B-5 were installed using a hollow-stem auger drill to 9.5 to 10 feet bgs, approximately 4 feet below the bottom of the tank. Subsurface fill materials adjacent to the tank consisted of wood, paper, plastic, and loose wet sand. Strong petroleum odors were observed beginning at a depth of 5.5 feet in borings B-4 and B-5. Groundwater was encountered at a depth of 8 feet; obvious evidence of petroleum hydrocarbon contamination in groundwater was observed (SCS Engineers 1992).

Results indicated the presence of significant levels of TPH on both sides of the waste oil tank at depths between 5 and 10 feet bgs (Table 6). The average concentration of TPH exceeded 7,000 mg/kg below a 5-foot depth. TPH concentrations ranged from 852 mg/kg at 5.5 feet bgs in B-5, to 14,100 mg/kg at 5.5 feet bgs in B-4 (SCS Engineers 1992). Three shallow soil samples (from B-1, B-2, and B-3) were analyzed for metals. Arsenic in boring B-3 and lead in borings B-2 and B-3 exceeded the soil-to-sediment screening levels (Table 6).[10]

In June 1992, six groundwater monitoring wells were installed at the facility by SCS Engineers as part of a Phase II Soil and Groundwater Assessment at this property. This report was not available in the files reviewed during preparation of this Data Gaps Report, and results are not included in Appendix C.

According to the Tank Removal Report (SCS Engineers 1993), a total of 23 soil samples were collected and analyzed during the drilling of the monitoring wells. Results indicated the presence of TPH at 1,150 mg/kg at 7.5 feet in MW-3, and 360 mg/kg at 10 feet in MW-4. Soil samples were also analyzed for metals, including arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. Lead was detected in all soil samples. In groundwater, TPH was detected at 1.6 mg/L in MW-3, and at 0.6 mg/L in MW-4. Significant concentrations of total metals were detected in groundwater, including arsenic, barium, and lead in all six wells, cadmium in MW-3, chromium in MW-3, MW-5, and MW-6, and mercury in MW-5. Dissolved arsenic (to 12 ug/L) and dissolved cadmium (8 ug/L) exceeded the MTCA cleanup level in groundwater.

Tank removal was conducted on September 21, 1992 (SCS Engineers 1993). The tank measured approximately 10 by 4 feet; the top of the tank was encountered at approximately 4 feet bgs. No holes or obvious signs of leakage were observed. Petroleum hydrocarbon contamination was observed in the fill material beneath the one-foot sand-fill base under the tank. Immiscible oily product was observed in the groundwater, at about 10 feet bgs. Approximately 150 cubic yards of soil and construction fill debris (including a large amount of wood debris) was removed from around the sides and bottom of the tank; the excavation measured approximately 18 by 18 by 12 feet deep. The excavation was backfilled with crushed glass. The excavated material was loaded into roll-off bins for temporary storage. A total of 13 additional soil samples were collected: four from the tank excavation, and nine from excavated soil in the roll-off bins.

TPH concentrations in samples from the excavation ranged from 847 to 20,700 mg/kg; three of the four samples exceeded the current MTCA soil cleanup level for diesel-range and heavy oil-range hydrocarbons (2,000 mg/kg). Soil samples from the roll-off bins averaged 3,850 mg/kg (SCS Engineers 1993). One roll-off bin sample was analyzed for volatile and semivolatile organics, pesticides/herbicides, and metals. Several PAH compounds were present in this sample at concentrations above the soil-to-sediment screening levels (Table C-1).

[10] Note that soil in this area was subsequently excavated.

Groundwater in the tank excavation was visibly contaminated with oily fuel product (SCS Engineers 1993). One sample was collected directly from the excavation; TPH was detected at 3,070 mg/L, well above the MTCA cleanup level of 0.5 mg/L. SCS Engineers concluded that, due to the large amounts of construction debris in the tank excavation and the historical filling that has occurred at the facility, other sources of the petroleum contamination could not be eliminated. The extent of groundwater contamination was not determined.

Site Assessment – Transfer Station Building Improvements (1993)

In response to the discovery of subsurface contamination during the construction of improvements to the Transfer Station Building, a Phase II Site Assessment was conducted by SCS Engineers. The Phase II Site Assessment Report was not available in the files reviewed during preparation of this Data Gaps Report. Preliminary results of the investigation indicated the presence of TPH and metals in the subsurface fill material, both above and below the water table. The TPH generally appeared to be associated with the wood-fill debris (Waste Management 1993).

Site Characterization and Independent Cleanup Action (1995)

In July 1995, one 20,000-gallon and two 10,000-gallon diesel fuel USTs were cleaned and closed in place (Omega Services 1995). The tanks were slurry-filled with a control density fill. Suspected petroleum-impacted soil was stockpiled onsite. The USTs were in good condition; however, the associated piping showed moderate to heavy rusting in places. Discolored soil, petroleum odors, and field screening suggested that petroleum hydrocarbons had impacted soil surrounding the tanks. The most likely source of release was believed to be from periodic tank overfill and pipe leakage.

Soil samples were collected through the tank sidewalls and from the associated soil stockpile. Additional soil samples were collected after tank decommissioning. A total of 12 samples were analyzed, including nine samples collected through the sidewalls of USTs 1, 2, and 3. Groundwater was encountered at 8 feet bgs. Soil samples collected from the east ends of UST 2 and 3 contained diesel-range petroleum hydrocarbons at 3,400 mg/kg and 15,000 mg/kg, respectively. An overburden soil sample contained TPH-diesel at 6,700 mg/kg.

Based on these analytical results, petroleum-contaminated soils were removed from the east end of the USTs and in the area between the abandoned pump island and the former diesel dispensers. Excavation did not extent below the water table. A total of approximately 40 cubic yards of soil (450 tons) was excavated in July 1995. Localized pockets of visually impacted soil remained between the USTs at the time of the closure.

On July 14, 1995, 450 tons of petroleum-contaminated soils were excavated and disposed of. Excavation was successful with the exception of small pockets remaining between the tanks. Groundwater was not tested.

5.2.5 Potential for Sediment Recontamination

Eastmont Transfer Station has been in operation as a transfer station and material recovery facility at this location since 1983. Sunset Disposal and Bayside Disposal Company previously operated at this location. Environmental investigations and cleanups were conducted for petroleum contamination from leaking underground tanks and fueling area in the early 1990s.

Soil and Groundwater

Leakage from underground petroleum storage tanks and fueling area resulted in contamination of soil and groundwater. Residual soil petroleum hydrocarbon contamination above MTCA Cleanup Levels remained in place after remediation in the early 1990s (Table 6). Cadmium exceeded the groundwater-to-sediment screening level in one groundwater sample collected in 1993. Because petroleum hydrocarbons and cadmium are not considered COCs for LDW sediments, and because these releases occurred over 20 years ago, the potential for sediment recontamination via the groundwater pathway is considered low.

Stormwater

The facility currently operates under the ISGP. Inspections conducted in 2005, 2009, and 2010 indicated compliance issues associated with activities at the facility, including issues related to the potential for releases of contaminants to the storm drain system. The most recent inspection (September 2010) identified two compliance items; no follow-up inspection has been conducted. The potential for sediment recontamination via the stormwater pathway is considered moderate.

5.2.6 Data Gaps

A follow-up stormwater compliance inspection is needed to assess whether Waste Management Eastmont Transfer Station has complied with the corrective actions identified during a September 2010 inspection, and whether current activities at the property may represent a potential source of LDW sediment recontamination.

5.3 Jones Stevedoring

Facility Summary: Jones Stevedoring	
Address	7205 West Marginal Way SW 98106 7245 West Marginal Way SW 98106
Tax Parcel No.	3024049176, 3024049159
Property Owner	9176: Jones Washington Stevedoring 9159: Jones Stevedoring
Alternate Names	Jones Washington Stevedoring Co UST 2313, Jones Washington Stevedoring, Nuprecon, Icicle Seafoods, MC Delivery, Seafreeze Storage, MDE Engineering, Van Tech, Specialty Storage Company, Western Crane, Smoki Foods, Sound Delivery Service
Parcel Size	9176: 2.8 acres (121,082 sq ft) 9159: 5.3 acres (230,870 sq ft)
Facility/Site ID	94931167
SIC Code	None
EPA ID No.	WAH000030554 (Nuprecon LP)
NPDES Permit No.	None
UST/LUST ID No.	UST/LUST: 2133, 2313

Jones Washington Stevedoring, now called Jones Stevedoring, is a marine cargo handling business that owns two parcels (3024049176 and 3024049159) located at 7245 West Marginal Way SW, between Detroit Avenue SW on the west and West Marginal Way SW/2nd Avenue SW on the east (Figure 10). To the north is the Waste Management Eastmont Transfer Station, and the south is Seattle Housing Authority. Across Detroit Avenue SW to the west are two parcels at the base of the hill, identified as “vacant” in King County Property Tax records. Parcel 3024049111 is owned by Prentice Holdings LLC (1.96 acres at 7201 Detroit Avenue SW) and parcel 3024049163 is owned by Ribera-Balko Enterprises (4.13 acres at 7557 Detroit Avenue SW). To the west of these properties is a heavily vegetated hillside owned by the City of Seattle.

A wetland (formerly known as Wetland No. 3) is located on the southeast corner of the property (Figure 10). This is a Category III wetland located downstream of and hydrologically connected to Wetland No. 1 (Figure 6). Before construction of the new 1st Avenue S bridge in 1994-1996, this wetland was connected to the LDW through a series of pipes and culverts that discharged to the Highland Park Way SW storm drain. The wetland is approximately 0.7 acre and highly disturbed as a result of development. It is located in a deep depression, and consists of an unvegetated mudflat surrounded by reed grass. It receives stormwater from nearby ditches and roadways, and experiences extreme water-level fluctuations (CH2M Hill 1994c).

According to King County Tax Assessor records, the property includes two masonry storage warehouse buildings: one 17,085-sq ft building constructed in 1976, and a 140,520-sq ft building constructed in 1968.

5.3.1 Current Operations

Jones Stevedoring provides container ship loading and unloading services. The company’s administrative offices are located at this property. Jones Stevedoring formerly had two gasoline USTs and one diesel UST at this location; these were removed in 1994 (see Section 5.3.4).

Jones Stevedoring currently has nine tenants at this property; most of these are warehousing operations. Tenants operating at this property as of August 2009 are (SPU 2009d):

- Nuprecon – demolition and remediation contractor. Nuprecon, CST Environmental, and MARCOR Remediation merged in July 2011 to form NCM (NCM 2011);
- MC Delivery – small scale delivery service with one forklift, no storm drain or sanitary discharges, and no maintenance activities;
- Seafreeze Storage – storage of dry goods (breading and packaging materials);
- MDE Engineering – evidence storage associated with fatal crashes;
- Van Tech – evidence storage;
- Specialty Storage Company;
- Western Crane – dispatches, stores, and certifies cranes at this location;
- Icicle Seafoods (Smoki Foods) – stores packaging material and a small forklift at this location; and
- Sound Delivery Service – stores components for wood garage doors.

Stormwater Drainage

During a July 2009 inspection at Nuprecon, staff expressed frustration with drainage coming from the hillside to the west that causes flooding and maintenance issues.

A large corrugated metal pipe (CMP) discharging into a pond located at the southeast corner of the property (Figure 10) is believed to run under the Jones Stevedoring building (SPU 2009d). The pond is a designated wetland, which was identified and delineated during the 1st Avenue Bridge project (Lo 2009). The pond currently receives runoff from a drainage ditch along the west side of 2nd Avenue SW. According to SPU staff, this pond was formerly connected to the large wetland on the east side of 2nd Avenue SW by a 48-inch CMP; water flowed in both directions through this pipe with the tide. During the 1st Avenue bridge construction, this pipe was removed and replaced with a 24-inch pipe, which may have been plugged after completion of the channel through the large wetland (Lo 2009).[11]

According to SPU, the 24-inch pipe and the large CMP that runs toward the Jones Stevedoring building are both the responsibility of the property owner. The large CMP may have been installed by a private party; it appears that a creek or stream was piped and filled to make room for industrial use at some point in the past (SPU 2009g).

Drainage ditches on the property were cleaned during the winter of 2008, and the pond between Jones Stevedoring and Seattle Housing Authority was cleaned in 2000. Since that time, SPU has conducted periodic maintenance dredging of the pond; Jones Stevedoring cuts brambles and ivy annually (Holland 2009).

In October 2009, Jones Stevedoring staff observed that the pond was nearly covering the 48-inch pipe, and requested that the pond be dredged as soon as possible to prevent flooding (Holland 2009). Because the pond is a designated wetland, dredging involves a lengthy review and permitting process. SPU included dredging of this pond in its package of projects submitted to the Corps of Engineers for approval, to be conducted during the 2010 summer season (Wisdom 2009). No updated information was available.

5.3.2 Historical Operations

Jones Stevedoring was previously known as Maritime Service Company.

Prior to industrial development, a creek ran south to north through this property to McAllister Slough, discharging to the LDW adjacent to the former Boeing Plant 1, in the Terminal 115 source control area. The Jones Stevedoring property was reportedly used as a landfill at one time (O'Sullivan Omega 1994a).

No other information about historical operations at this property was identified in the files reviewed during preparation of this Data Gaps Report.

5.3.3 Regulatory History

According to Ecology's Facility/Site Database, Jones Stevedoring was identified as a hazardous waste generator from March 5, 2007, to December 31, 2007, and the facility's EPA ID number

[11] This 24-inch pipe is likely the same 24-inch storm drain pipe that was encountered during the 1994 removal of USTs near the southern property boundary; see Section 5.3.4.

(WAH000030554) is currently inactive. As of March 2011, Nuprecon LP was listed as a small quantity hazardous waste generator on EPA's Region 10 list of regulated handlers, with the same EPA ID number.

Jones Washington Stevedoring is included on Ecology's LUST list, with suspected contamination of soil with benzene, diesel-range petroleum, and gasoline-range petroleum. Two releases are identified: one was reported as cleaned up in June 1995; the second is listed as "Cleanup Started", dated July 1, 2011. The tank removal and cleanup associated with the June 1995 release event is described in Section 5.3.4 below. No additional information about the 2011 release was available at the time this Data Gaps Report was prepared.

Source Control Inspections

Jones Stevedoring

SPU conducted an initial source control inspection at Jones Stevedoring on July 16, 2009. The following corrective actions were identified (SPU 2009f):

- Designate and properly dispose of all waste.
- Complete and implement a written spill plan and post at each entrance used by tenants at the property.
- Obtain spill containment and cleanup materials and make them available at all entrances and exits used by tenants.
- Educate employees and tenants about the spill plan and spill kit.

SPU conducted a follow-up inspection at Jones Stevedoring on August 31, 2009. All corrective actions had been implemented at that time (SPU 2009h).

SPU conducted another initial inspection at Jones Stevedoring on April 20, 2012. Inspectors observed facility tenant NCM (formerly Nuprecon) washing equipment in three different areas at the property. There are three drains in the area where the pressure washing occurs. Connections to the sanitary sewer from the discharge points for the drainage features could not be verified. The following corrective actions were identified (SPU 2012e):

- Do not allow tenants to wash in areas of the facility that drain to the storm drain system.
- Conduct a study and provide documentation of how all drains are connected and where the facility drains discharge to.
- Dispose of fluids and wastes properly.

Additional information regarding compliance with corrective actions identified during the April 2012 SPU inspection was not available for review.

Nuprecon

SPU conducted an initial source control inspection at Nuprecon, 7245 West Marginal Way SW, on July 8, 2009 (SPU 2009c). Nuprecon, a tenant of Jones Stevedoring, is a demolition and remediation contractor. Stormwater drainage at the property is not clearly understood. Wash water from steam cleaning of engines and from washing of industrial equipment is pre-treated through an oil/water separator prior to discharge to the sanitary sewer. The facility generates the following wastes: antifreeze, batteries, fluorescent light tubes, petroleum/oils, solvents, concrete slurry, asbestos, and rags. Activities include fueling, washing of vehicles and equipment, containerized and non-containerized storage, vehicle and equipment maintenance and repair, parking, and outside manufacturing activities. Two trailers full of asbestos waste were at the facility at the time of the inspection. The following corrective actions were identified (SPU 2009e):

- Clean catch basins.
- Obtain discharge authorization for process water to the sanitary sewer system, if needed.
- Ensure that the design and operation of the pretreatment system is fully understood, and implement an appropriate maintenance schedule.
- Manage and dispose of solvents property; solvents should not be used to clean parts or equipment outside on the ground, and should not be discharged to drains that lead to the oil/water separator.
- Maintain copies of all waste disposal receipts and other paperwork.
- Implement secondary containment for fuel and hazardous material storage areas, and keep drums and containers closed when not in use.
- Complete and post a written spill plan, educate employees about the spill plan, and obtain spill containment and cleanup materials.

SPU referred the facility to KCIW to evaluate whether a waste discharge authorization or permit is needed, and to the Puget Sound Clean Air Agency (PSCAA) for review of asbestos waste handling and storage practices (SPU 2009e).

A follow-up inspection was conducted at Nuprecon on October 2, 2009 (SPU 2009m). The inspector observed a Nuprecon truck pull up briefly near a storm drain; a very turbid discharge was observed at the drain immediately after the truck pulled away. Nuprecon cleans out catch basins every few months; the catch basins are equipped with filter socks. Corrective actions had been implemented as of October 7, 2009 (SPU 2009n).

Other Tenants

SPU conducted source control screening visits at Icicle Seafoods, MC Delivery, MDE Engineers, Seafreeze, Sound Delivery Service, Specialty Storage Company, and Western Crane on July 16, 2009. No compliance issues were identified.

5.3.4 Environmental Investigations and Cleanups

UST Removal and Excavation (1994)

O'Sullivan Omega, Inc. removed two 10,000-gallon gasoline USTs and one 10,000-gallon diesel fuel UST on August 22, 1994. The USTs, which were located south of the warehouse and adjacent to the property boundary, were installed in 1982 and taken out of service in 1994. The USTs were partially buried in fill, and were oriented east-west; the vent and distribution lines were located on the east end of the USTs. The dispensers were approximately 20 feet to the north. A concrete block wall was in place at the facility boundary to retain soil covering the USTs.

The tanks were emptied, triple-rinsed, rendered inert, and removed on August 22, 1994 by O'Sullivan Omega. Ancillary piping and dispensers were also removed. The USTs were in good condition with no rust, pitting, or holes. Groundwater was not encountered during excavation. Due to the presence of heavy oil hydrocarbons in the initial soil samples that were collected, over-excavation was performed in a portion of the UST cavity. There were visually detectable indications of a petroleum release in the vicinity of the dispenser island, which was reportedly located at the edge of a historical landfill (O'Sullivan Omega 1994a).

Ten composite and/or discrete soil samples were collected from the UST system excavation and associated soil stockpile on August 22, 1994. TPH was detected in three of the samples; one sample from the dispenser soil stockpile contained gasoline and heavy oil-range TPH. Samples from the excavation floor and west sidewall contained heavy oil TPH. The center of the excavation floor and the pump island dispenser area were over-excavated (O'Sullivan Omega 1994a,b).

During removal of soil from the excavation floor, a 24-inch storm drain from the hillside west of the facility was encountered, at a depth of 10 feet bgs. The storm drain was located directly below the former center 10,000-gallon UST. The riprap cover material surrounding the storm drain was exposed; additional excavation of this area of the excavation floor was therefore not possible. Soils surrounding and underlying the storm drain appeared to be an intertidal organic-rich mud. O'Sullivan Omega postulated that this organic-rich mud may have been responsible for heavy oil range hydrocarbons detected in the excavation floor (O'Sullivan Omega 1994a).

A total of 50 cubic yards of petroleum-contaminated soils were removed from the former dispenser island area. The excavated soil contained fragments of very highly weathered asphalt, creosote-treated wood, fishing net floats, clothing, and miscellaneous debris. This is believed to be associated with the historical landfill in this area. A composite sample was collected from the excavation underlying the former pump island dispensers (TPH-oil at 65 mg/kg), and from the pump island dispenser soil stockpile (TPH-oil at 450 mg/kg) (Table C-2). The heavy oil TPH in these samples may be related to the fragments of asphalt and creosote-treated wood at this location, rather than a petroleum release from the UST system. The soil was transported to Holnam, Inc. for high temperature thermal destruction treatment (O'Sullivan Omega 1994a).

5.3.5 Potential for Sediment Recontamination

Jones Stevedoring, previously known as Maritime Service Company, provides container ship loading and unloading services. Nine tenant facilities are also located on this property. Three petroleum USTs, associated dispenser island and piping, and 50 cubic yards of petroleum-contaminated soils were removed in 1994.

Soil and Groundwater

During a LUST excavation in 1994, landfill debris was encountered. The potential for sediment recontamination from historical activities associated with landfill debris at this location is unknown.

Ecology's LUST list indicates that a cleanup was started in July 2011 for petroleum contamination of soil. However, no underground tanks are currently present at this property and a previous LUST was cleaned up in 1994.

Stormwater

Flooding and stormwater drainage appears to be an issue at this property, including drainage from the hillside to the west and discharge to the wetland pond in the southeast corner of the property. A source control inspection conducted at Jones Stevedoring in April 2012 identified corrective actions associated with washing practices and drainage connections at the facility. Based on the available information, the potential for sediment recontamination associated with current activities at this property are believed to be low to moderate.

5.3.6 Data Gaps

No information was available in the files reviewed during the preparation of this Data Gaps Report regarding a LUST release in 2011. Additional information is needed to evaluate whether the release poses a risk of sediment recontamination to the LDW.

Additional information is needed about historical landfilling activities at this location; sampling may be needed to determine whether buried landfill debris poses a risk of sediment recontamination.

A review of compliance with corrective actions identified during the April 20, 2012, initial inspection is needed to assess the facility's compliance with environmental regulations and BMPs.

Additional information is needed regarding the locations, materials, and condition of storm drain system pipes and structures at this property. Also, updated information about the status of the wetland drainage pond at the southeast corner of the property is needed. A solids sample from this pond would be useful to assess the potential for sediment recontamination associated with stormwater discharges from this and other properties along 1st Avenue S.

5.4 Seattle Housing Authority

Facility Summary: Seattle Housing Authority	
Address	7500 Detroit Avenue SW 98106
Tax Parcel No.	3024049073
Property Owner	Seattle Housing Authority
Alternate Names	Chemical Processors Inc Detroit; Impact Property Services, Northwest Equipment and Parts Company, Intertractor Equipment Co.
Parcel Size	0.87 acre (37,786 square feet)
Facility/Site ID	2109 (Chemical Processors Inc Detroit)
SIC Code	None provided.
EPA ID No.	None
NPDES Permit No.	None
UST/LUST ID No.	None

This property is currently owned by the Seattle Housing Authority, and is the former location of the Chemical Processors Inc. Detroit facility.

Parcel 9073 is located south of Jones Stevedoring, west of 2nd Avenue SW, north of a parcel owned by Burkheimer Family LLC, and east of Detroit Avenue SW (Figure 10). According to King County Property Tax Assessor records, one 10,900-square foot pre-fabricated steel warehouse building, constructed in 1960, is present on the property. The property name is listed as "Inter Tractor." Seattle Housing Authority purchased the property in March 2003.

The property slopes slightly to the northeast. The property is underlain by fill material (3.5 to 8 feet bgs) and alluvium. Groundwater was encountered at 3.1 to 8.3 feet bgs during wet season sampling conducted in 1990 (RZA 1990b).

5.4.1 Current Operations

The Seattle Housing Authority provides long-term rental housing and rental assistance to low-income residents.

Ecology's Facility/Site Database lists "Impact Property Services" as an alternate name for this property. Impact Property Services is a division of Seattle Housing Authority, made up of several business units that provide property maintenance and repair services to the affordable housing industry. According to its website, Impact Property Services is currently located at 810 Martin Luther King Jr Way S.[12]

5.4.2 Historical Operations

The parcel was purchased by Seattle Housing Authority from Little Matthew Ruggles et al. in March 2003, who purchased it from Oshea & McGregor in May 1991. No information on dates of occupancy or activities associated with Chemical Processors, Inc. was available.

A 1990 report indicated that Northwest Equipment and Parts Company occupied the property at that time (RZA 1990b). Northwest Equipment and Parts conducted repairs on heavy equipment. Three concrete drainage structures (described as manholes/catch basins/sumps) were present on the property, two of which were open and one that was covered with a metal lid and soils. Solvents were utilized for parts cleaning; self-contained solvent sinks were serviced monthly by Recycling Technology, Inc. No chlorinated solvents were reportedly used (RZA 1990b).

Three underground petroleum product storage tanks were located adjacent to and north of the Northwest Equipment and Parts facility. These 10,000-gallon tanks stored diesel, leaded gasoline, and unleaded gasoline, and were constructed in the mid- to late-1980s. No evidence of leakage was observed during a 1990 investigation (RZA 1990b).

In 1994, the property was occupied by Intertractor Equipment Company (O'Sullivan Omega 1994a). No additional information on historical operations at this property was available in the files reviewed during preparation of this Data Gaps Report.

5.4.3 Regulatory History

Chemical Processors Inc Detroit (FSID 2109) is listed on Ecology's CSCSL. Current status is listed as "No Further Action." A release report was received by Ecology in March 1988 for suspected contamination of soils with halogenated organics. On September 13, 1995, Ecology

[12] http://www.impactpropertyservices.org/about/

changed the status of this site to No Further Action (NFA) for soil contaminated with halogenated organics, with a notation that the site was cleaned up under prior authority.[13]

Source Control Inspections

Ecology conducted an environmental compliance inspection at Seattle Housing Authority on May 20, 2009 (Ecology 2009d). Several issues of concern were identified:

- Outside storage of PCB ballast drum – ballast in open, rain-filled bucket;
- Discharge of garbage truck washout to storm drain;
- Outside storage of electronic waste (cathode ray tubes [CRTs], televisions, computers);
- Outside storage of lamps on open carts;
- Outside storage of batteries;
- Improper vehicle washing practices;
- Leaking compost dumpster discharging to nearby wetlands;
- Drums of unknown material stored in outside yard;
- Waste drums not properly marked or labeled.

Inspectors also indicated that the facility needs to apply for coverage under the Industrial Stormwater General Permit. Follow-up inspections were conducted on July 7, 2009, and April 29, 2010. No inspection reports were available in the files reviewed during preparation of this Data Gaps Report, and no NPDES permit had been issued as of May 2012. The facility needs to be re-evaluated to determine if activities require coverage under an ISGP (Wright 2012).

A hazardous waste inspection was conducted at this facility on September 22, 2009. No additional information about this inspection was available.

5.4.4 Environmental Investigations and Cleanups

Sampling results for chemicals detected in soil and groundwater at this facility are provided in Appendix C. Results for chemicals that exceed screening levels in soil and groundwater are listed in Tables 7 and 8, respectively.

Phase II Environmental Site Assessment (1990)

A Phase II Environmental Site Assessment was conducted in 1990 to determine if there was soil or groundwater contamination at this property (RZA 1990b). Analytical results for detected chemicals are presented in Appendix C. Chemicals with soil and groundwater concentrations above screening levels are shown in Tables 7 and 8, respectively. Sample locations are shown in Figure 16.

Three soil borings were drilled and one sample from each boring was analyzed for halogenated and aromatic volatiles and TPH. Tetrachloroethylene (PCE) was detected at 0.42 to 0.75 mg/kg, above the current MTCA soil cleanup level (0.05 mg/kg), in all three soil samples. Low levels of TPH (5.2 to 16.2 mg/kg) were also detected in soil samples. PCE is a chlorinated solvent that

[13] Ecology Integrated Site Information System, Cleanup Site ID 1306. Accessed 6/26/2012.

was commonly used for dry cleaning and less commonly used an industrial solvent or degreasing agent.

The borings were completed as groundwater monitoring wells; one groundwater sample was collected from each well and analyzed for halogenated and aromatic volatiles and TPH. PCE was not detected in groundwater at a detection limit of 50 ug/L; however, the current MTCA Method A cleanup level for PCE in groundwater is 5 ug/L. TPH (6,000 ug/L) was detected in wells MW-4 and MW-5, above the MTCA groundwater cleanup level.

One sample of catch basin sludge was also collected and analyzed for halogenated and aromatic volatiles and TPH. The sample contained low levels of toluene and xylenes; TPH was detected at 3,942 mg/kg, above the current MTCA soil cleanup level of 2,000 mg/kg for diesel-range hydrocarbons.

Storm Drain Sampling (2009)

On May 28, 2009, SPU collected a catch basin sample (CB150) near the northeast corner of the Seattle Housing Authority building. The following chemicals exceeded screening levels in this sample (Table 4):

Chemical	Conc'n (mg/kg DW)	Exceedance Factor
Zinc	2,140 J	5.2
TPH-Oil	8,200	4.1
BEHP	16.0 B	12
BBP	6.5	103
Dimethylphthalate	0.54	7.6
Di-n-butylphthalate	2.8	2.0
Total PCBs	0.135	1.0
2-Methylphenol	0.11 J	1.7
4-Methylphenol	13	19
Benzoic acid	1.9	2.9
Phenol	1.0	2.4

BEHP, BBP, and PCBs are also considered sediment COPCs in the 1st Avenue S SD source control area (Section 2.2).

5.4.5 Potential for Sediment Recontamination

This property is a former state cleanup site, with halogenated solvent contamination of soil and groundwater. Historical operators include Chemical Processors, Inc., Northwest Equipment and Parts Company, and Intertractor Equipment Company.

Soil and Groundwater

An investigation at the property in 1990 found PCE and TPH in groundwater at concentrations above current MTCA cleanup levels. No information about cleanup activities at this facility, if any, was available in the files reviewed during preparation of this Data Gaps Report. Ecology updated the status of this site to "No Further Action" in 1995. The potential for LDW sediment recontamination associated with historical activities at this property is unknown, but is believed to be low.

Stormwater

A May 2009 Ecology source control inspection identified several corrective actions, and indicated that Seattle Housing Authority must apply for a stormwater permit. The facility should be re-evaluated for possible ISGP coverage. No information on follow-on inspections was available at the time this Data Gaps Report was prepared. A catch basin solids sample collected in May 2009 contained phthalates, zinc, PCBs, TPH-oil, phenols, and benzoic acid at concentrations above storm drain screening levels. Unless corrective actions are implemented, there is a potential that storm drain discharges could transport contaminants to the central wetland area and ultimately contribute to LDW sediment recontamination.

5.4.6 Data Gaps

Information is needed regarding the status of compliance with stormwater and hazardous waste regulations and BMPs at the Seattle Housing Authority facility. Coverage may be required under an ISGP or a CNE certificate (Wright 2012).

5.5 Burkheimer Family Property

Property Summary: Burkheimer Family Property	
Address	7739 1st Avenue S 98108 (First Student, Volvo Road Machinery) 7600 2nd Avenue SW 98108 (Samson Tug Maintenance Shop) 7553 Detroit Avenue SW (Samson Tug Maintenance Shop) 7272 1st Avenue S (Hussmann Corp)
Tax Parcel No.	3024049018; 3024049153; 3024049174
Property Owner	Burkheimer Family LLC
Parcel Size	9018: 1.61 acres (70,000 sq ft) 9153: 0.94 acre (40,833 sq ft) 9174: 2.66 acres (115,814 sq ft)
Facility/Site ID	2320 (Laidlaw); 15539 (Samson Tug Maintenance Shop); 21272 (Samson Tug & Barge 2nd Ave SW); 24041 (Samson Tug & Barge Detroit Ave SW); 9437672 (Volvo Road Machinery Inc.); 61437393 (Hussmann Corp)
Alternate Names	First Student Inc 1st Ave S; Gazelle International; Laidlaw First Ave SEA; Laidlaw Transit; Laidlaw Transit Inc 1st Ave; Laidlaw Transit Inc. South Park; South Park Terminal; Duwamish Fill Site
SIC Code	4111: Local & Suburban Transit; 4141: Local Bus Charter Service; 4151: Bus Terminal Facilities – School Buses; 4173: Bus Terminal and Service Facilities
EPA ID No.	WAD980836001 (Laidlaw, inactive); WAR000005314 (Hussmann Corp, inactive)
NPDES Permit No.	WAR124991 (Laidlaw/First Student); WAR011800 (Samson Tug Maintenance)
UST/LUST ID No.	12778 (UST; Laidlaw); 419116 (LUST; Laidlaw)

First Student and Samson Tug Maintenance Shop currently operate on three parcels owned by Burkheimer Family, LLC. The property is located between Detroit Avenue SW and 2nd Avenue SW, which becomes 1st Avenue S mid-way along the property boundary. To the north is a parcel owned by the Seattle Housing Authority, to the south is Eastern Supply, to the west (across Detroit Avenue SW) is MacDonald Miller Service, Inc., and to the east (across 2nd Avenue SW/1st Avenue S) is a wetland area that was the former location of the First Avenue Bridge landfill (Figure 11).

According to the King County Tax Assessor, two buildings are located at the property, both on parcel 9018:

- A 23,260-square foot masonry building originally constructed in 1963 and subdivided into four sections: garage/service repair (10,424 sq ft); storage warehouse (2,651 sq ft); office building (5,606 sq ft); and open office space (4,579 sq ft).
- A 1,040-square foot prefabricated steel structure, built in 1964 and used as a paint shop and garage/service repair.

Soils at this property consists of a 10- to 12-foot thick fill layer, consisting mostly of sandy and silty soil; a 15- to 20-foot layer of organic silt that grades with depth to silt with less organic matter. Wood, believed to be logs, was detected in several borings completed in the area. Below the silt are various layers of sand, silty sand, and silt that were deposited as the Duwamish Valley was filled over many thousands of years (Dalton Olmsted 1998). Groundwater is generally encountered at 6 to 7 feet bgs, and the direction of groundwater flow in the surface fill deposit varies between easterly to northerly, depending on the season.

5.5.1 Current Operations

Samson Tug Maintenance Shop

Samson Tug & Barge is a tenant on the Burkheimer Family property, and operates primarily on parcel 9174 (Figure 9). The Samson Tug Maintenance Shop conducts repair and maintenance of shipping containers. The company also operates a marine cargo loading facility on the east side of the LDW, just north of the 1st Avenue S bridge, at 6365 1st Avenue S (Duwamish Marine Center).

Ecology has assigned three Facility/Site ID numbers to the Samson Tug Maintenance Shop: 15539 (Samson Tug Maintenance Shop), 21272 (Samson Tug & Barge 2nd Ave SW[14]), and 24041 (Samson Tug & Barge Detroit Ave SW). Several addresses have been associated with the Samson Tug Maintenance Shop: 7553 Detroit Avenue SW; 7600 2nd Avenue SW; and 7739 1st Avenue S. All refer to the Samson Tug & Barge operation on the Burkheimer Family property.

Samson Tug & Barge conducts the following pollution-generating activities at the Tug Maintenance Shop: fueling; loading/unloading; outside waste storage in portable containers; vehicle/equipment maintenance and repair; parking/storage of vehicles and equipment; and painting/finishing of vehicles, buildings, or equipment (SPU 2010t). No catch basins are located on the portion of the Burkheimer Family property occupied by the Samson Tug Maintenance

[14] Ecology's Facility/Site Database lists the address for this facility as 7600 2nd Avenue S rather than 7600 2nd Avenue SW. This appears to be a typographical error in the Facility/Site Database.

Shop; stormwater flows to a French drain located at the northeast corner of the facility (Figure 17). Large shipping containers and materials awaiting disposal/recycling are stored on the gravel lot. At the time of a September 2010 SPU inspection, two 55-gallon drums (one containing used antifreeze and the other containing unused petroleum/oil) were stored outside without secondary containment (SPU 2010t). An aboveground diesel fuel tank is used to conduct fueling operations.

First Student

First Student began operations at this location in October 2010 (SPU 2010v). First Student is the largest provider of Student Transportation in North America, with a fleet of approximately 57,000 yellow school buses (First Group 2011). First Group, the parent company of First Student, acquired Laidlaw Transit in 2007.

The property is used for bus maintenance, repair, and parking. Processes conducted at the facility generate waste antifreeze (350 gallons per year), batteries (100 per year), waste petroleum/oils (1,000 gallons per month), solvents (30 gallons per year), and crushed oil filters (1,000 per year). Liquids are stored in aboveground tanks. Five catch basins are located on the facility. Approximately 15 buses are washed each day; due to vandalism of a wash water recycling system installed by the previous tenant (Volvo Road Machinery), wash water is currently discharged to the sanitary sewer (Jeffers 2010). The facility layout is shown in Figure 18.

5.5.2 Historical Operations

Figure 19 presents a timeline of facilities that have historically occupied the Burkheimer Property.

Parcel 9174

Fenton's Fridge Sales was listed at 7272 1st Avenue S in 1989/1990 in the Seattle City Directory (Riley 1999b). No additional information was available about this facility.

According to Level I and II Environmental Site Assessments performed in 1990 for Burkheimer Management, Inc., a prospective purchaser of the property, Northwest Equipment may have been operating on parcel 9174 at that time (RZA 1990a). Three USTs were reportedly present; these were identified as having been installed "fairly recently (1985 to 1987)."

Hussmann Corp (FSID No. 61437393) was formerly located at 7272 1st Avenue S. This address does not correspond to a current parcel location, and the exact location of this facility is unclear. Hussmann manufactured refrigerated display cases for grocery stores. The company was acquired by Ingersoll-Rand Company in 2000, which closed the 1st Avenue S manufacturing plant in 2002 (Seattle P-I 2002). The facility was listed as a hazardous waste generator (WAR000005314) between September 1995 and December 2003. EPA's Toxics Release Inventory (TRI) database lists annual air emissions of trihalomethanes (1,1-dichloro-1-fluoroethane and trichlorofluoromethane) between 1991 and 2000, ranging from a low of 0 pounds in 1993 to a high of 9,319 pounds in 1991 (USEPA 2011).

Parcels 9153 and 9018

Until the early 1960s, these parcels were residential and agricultural, including dairy farming and pasture. Wood frame dairy buildings and outbuildings were occupied by the Detroit Riding Academy during the 1950s. Commercial development of the area began in the early 1960s.

Between 1960 and 1968, the property was occupied by Northwest Equipment, also known as Northwest Road Equipment and Northwest Equipment & Parts, and a 100- by 68-foot wood frame and corrugated steel structure was built at the facility (RZA 1990a).

In 1968, Puget Sound Salvage, owned by John Balke, occupied the property and constructed an addition to the large building. Filling and grading activities are believed to have occurred in the early 1960s and at various times during the 1970s and 1980s (RZA 1990a).

In 1978, parcel 9153 was purchased by Murray Pacific Metals from Puget Sound Salvage. Murray Pacific Metals occupied this portion of the property until approximately 1986. The parcel was then occupied by Northwest Equipment and Parts (also referred to as Northwest Machinery), through at least 1990 (RZA 1990a).

From the mid- to late 1970s through 1983 or 1984, parcel 9018 was owned by NC Machinery (City of Seattle 1979). The company was also referred to as the National Caterpillar Machinery Company. At that time, the main building on the property was expanded and stormwater catch basins were added that drain to a ditch on the east side of the property. According to a Site Hazard Assessment (SHA) for the Eastern Supply property to the south, Murray Pacific Metal also occupied this property from 1978 to 1986 (E&E 1991).

Laidlaw Transit, a school bus transport service, operated at this property on parcel 9018 from 1986 to approximately 2003. According to the Eastern Supply SHA, Northwest Intertractor America was also a tenant at the site in 1991 (E&E 1991).

The large building housed the administrative offices, lounges, and vehicle repair shop; the small building to the north was used as a body shop for minor cosmetic repair and painting of vehicles (RZA 1990a). A wash rack area west of and adjacent to the body shop was equipped with an oil/water separator, and fuel dispensers were located to the north of the structure. The area surrounding these structures was paved with concrete or asphalt, and most of the rest of the facility was covered with gravel. Laidlaw's fleet of school buses was parked in all open available areas on the facility (RZA 1990a).

Laidlaw used a variety of petroleum products in its operations, including lubricants, hydraulic oils, fuels, anti-freeze, non-chlorinated solvents, degreasers, paints, thinners, and waste oil. Solvents (mineral spirits and petroleum naphtha) were handled by Safety Kleen. Brake linings and batteries were used and stored at the facility. Waste oil was stored in underground tanks until their removal in December 1989; subsequently, waste oil was collected in an indoor aboveground storage tank (AST) and disposed of by a licensed disposal company.

A facility map dated May 22, 2003, identified Ingersoll-Rand Equipment & Services Company as the tenant at parcels 9153 and 9018 (PACE 2003). No information about the length of Ingersoll-Rand's tenancy or the activities conducted at this location was available at the time this Data Gaps Report was prepared.

Volvo Road Machinery, a division of Volvo Construction Equipment, operated on parcel 9018 from approximately 2008 through 2010. Volvo operated an equipment wash system that recycled the wash water.

5.5.3 Regulatory History

Samson Tug Maintenance Shop

2009 Stormwater Compliance Inspection

Ecology conducted a stormwater compliance inspection at Samson Tug & Barge (address listed as 7553 Detroit Avenue SW) on May 20, 2009. The inspection confirmed that the Samson Tug Maintenance Shop discharges industrial stormwater to surface waters and therefore is required to obtain permit coverage under the Industrial Stormwater General Permit (Ecology 2009g). Stormwater at the facility flows to a roadside ditch, which is tributary to the LDW. Shipping containers were being repaired out in the open on bare dirt, not far from the entrance gate. Petroleum products and wastes were stored in a converted shipping container. Drums and batteries were stored out in the open without proper cover and containment. No storm drains were observed in the vicinity of the Samson Tug Maintenance Shop. It was not clear to the inspectors whether all stormwater flows east to 2nd Avenue SW or whether some flows west towards a ditch along Detroit Avenue SW.

Samson Tug & Barge was directed to submit an application for an Industrial Stormwater General Permit and develop a SWPPP that includes a facility drainage map, a spill plan, and a monitoring plan. In addition, the SWPPP must address a method to prevent waste materials from shipping container repair and maintenance activities from reaching the bare ground surface.

The facility subsequently applied for and received coverage in September 2009 under Permit No. WAR011800. A SWPPP was submitted to Ecology in June 2012 (Blue Environmental 2012).

2010 Source Control Inspection

SPU conducted an initial source control inspection at the Samson Tug Maintenance Shop on September 28, 2010 (SPU 2010t). The inspection was prompted by a citizen complaint that traffic leaving the facility was causing severe track-out onto 2nd Avenue SW (SPU 2010u). The inspector observed severe track-out originating on the facility and ending approximately at the on-ramp to SR 509 South. Run-off from the Samson driveway and 2nd Avenue SW enters a ditch that eventually discharges to the LDW.

Issues/code violations and corrective actions identified during the inspection are listed below (SPU 2010u).

- Implement source control activities to prevent stormwater pollution. SPU recommended frequent sweeping of surfaces to remove accumulated debris, and directed Samson Tug & Barge to avoid washing or hosing down areas that drain to the stormwater drainage system. SPU also indicated the Samson must prevent track-out from migrating to city streets. Stabilizing the property exit with large quarry spall, gravel, or pavement was recommended to prevent mud and sediment from migrating offsite.

- Prevent spills. SPU directed Samson Tug & Barge to develop a plan and implement a procedure to prevent spills and other accidental releases of materials that may contaminate stormwater, and to post the written spill plan at appropriate locations at the facility.
- Implement controls for vehicle/equipment maintenance and control. SPU directed Samson Tug & Barge to conduct maintenance and repair work indoors, and to properly maintain the ground cloths used to capture metal grindings and paint dust from container repair work that takes place outside. At the time of the inspection, the ground cloths had been covered in mud and were not effective at capturing potential pollutants from these activities.
- Properly use and maintain containers. SPU indicated that the aboveground diesel fuel tank be kept in secondary containment to prevent spills and leaks. Also, when oil drums or antifreeze drums are removed from shipping containers, they should be stored in a hazardous chemical storage shed or kept covered and in secondary containment.

A spill was reported to Ecology by SPU on November 1, 2010 (ERTS# 623333). During a rain event, the Samson Tug Maintenance Shop was discharging stormwater to a city ditch along 2nd Avenue SW (Ecology 2010k). The stormwater was highly turbid, and sheet flow from the facility to the ditch was observed to be “extremely muddy.” The ditch flows to a wetland area and ultimately discharges to the LDW near the 1st Avenue S bridge.

On November 9, 2010, SPU and Ecology inspectors observed at least three specific discharge points from the facility (SPU 2010w). According to SPU, erosion of site soils had resulted in uncontrolled turbid discharges throughout the length of the property to a city ditch. The ditch conveys water to a wetland just to the north of the property; this wetland discharges both to a private pipe that runs under buildings and properties to the north, and to the larger wetland to the east (SPU 2010y). Both discharges eventually are transported to the LDW.

On November 22, 2010, SPU issued a second and final notice of city code violations that needed to be addressed at the Samson Tug Maintenance Shop (SPU 2010y). A follow-up inspection on January 6, 2011, identified corrective actions that had been taken, including placement of quarry spall at the facility entrance, and placement of a silt fence, hay bales, and pea gravel around the perimeter of the facility. A turbid puddle was observed on the road shoulder; however, 2nd Avenue SW had recently been swept and was fairly clean. SPU recommended ongoing maintenance, including more frequent sweeping, possible use of a vacuum sweeper to remove sediment along the road shoulder, and fixing/maintaining the entrance as needed to prevent trackout (Wisdom 2011).

A follow-up inspection was conducted on January 6, 2011, and SPU indicated that the facility was in compliance at that time.

Laidlaw Transit

The facility was identified as a hazardous waste generator under EPA ID No. WAD980836001 between July 13, 1983 and December 31, 2001.

An SHA was completed at 7739 1st Avenue S on September 9, 1990; the facility was assigned a Washington Ranking Method (WARM) score of 4, where a score of 1 represents the highest level of risk and 5 the lowest. The Laidlaw facility was subsequently added to Ecology's CSCSL for confirmed contamination of groundwater and soil with halogenated organics and petroleum products (Ecology 1991a). The facility's status is currently listed as "Cleanup Started."

Laidlaw was listed as a LUST facility (LUST ID 419116) on July 7, 1997. Laidlaw conducted a cleanup under Ecology's Voluntary Cleanup Program (VCP No. NW0303) during 1998/1999. Environmental investigation and cleanup activities associated with the leaking underground tanks are described below. On August 31, 1999, Ecology issued an Interim NFA determination for soil only (Ecology 1999b). In May 2006, Ecology removed the Laidlaw facility from the VCP, due to inactivity (Ecology 2006b,d).

In June 2006, Ecology rescinded the Interim NFA and issued a Partial Sufficiency and Further Action Determination in 2006, which stated that the release of petroleum hydrocarbons to soil had been sufficiently remediated; however, further action is needed to address PCE and its degradation products (trichloroethylene [TCE], dichloroethene [DCE], and vinyl chloride) in groundwater (Ecology 2006e). The source of the PCE contamination in groundwater is believed to be the former Eastern Supply property, located directly to the south and upgradient of the Burkheimer Family Property. Additional information about groundwater contamination at Eastern Supply is provided in Section 5.6.

Ecology conducted a stormwater compliance inspection at 7739 1st Avenue S on February 3, 1995 (Ecology 1995a), and determined that Laidlaw must apply for a stormwater permit. Laidlaw subsequently submitted a Notice of Intent (Laidlaw 1995) and application for coverage under the Stormwater Baseline General Permit. Permit coverage under permit number SO3-002250 was granted by Ecology on February 22, 1995 (Ecology 1995b). The permit was renewed in January 1996 (Ecology 1996b; effective December 18, 1995) and October 2000 (Ecology 2000g; effective November 18, 2000). Coverage was terminated on March 3, 2003, because Laidlaw discontinued operations at this location (Ecology 2003b).

Volvo Road Machinery

A source control compliance inspection was conducted at Volvo Road Machinery, 7739 1st Avenue S, on August 26, 2008 (Ecology 2008e). The following corrective actions were identified:

- Develop a plan and implement a procedure to prevent spills and other accidental releases.
- Implement an employee spill prevention training program.
- Repair damaged cover to catch basin located west of the dirt/mud rack.
- Clean out this catch basin, which was full of sediment at the time of source control inspection.

A follow-up inspection was conducted at Volvo Road Machinery on October 8, 2008 (Ecology 2008g). As of November 5, 2008, all corrective actions had been addressed and the facility was in compliance with source control requirements (Ecology 2008h).

First Student

On November 3, 2010, SPU conducted a source control inspection at First Student, 7739 1st Avenue S. First Student had begun operations at this location a week earlier. The following corrective actions were noted (SPU 2010x):

- Develop a plan and implement a procedure to prevent spills and other accidental releases.
- Implement an employee spill prevention training program.
- Provide a facility drainage map; identify the discharge point for the floor drain located in the garage, near the oil tanks. Include discharge points for all catch basins. Conduct dye testing if needed.
- Open, inspect, and clean, as necessary, the oil/water separators located at each end of the bus wash bay. Clean out the catch basin inside the wash bay to remove accumulated sediments.
- Apply for coverage under the Industrial Stormwater General Permit. Facility stormwater may drain to the culvert system emptying into the WSDOT wetlands across 2nd Avenue SW, sheet flow to the drainage ditch along 2nd Avenue SW, and possibly discharge to the sanitary sewer.

Actions had not been taken as of December 15, 2010, and a Second and Final Notice letter was sent to First Student on December 21, 2010 (SPU 2010aa, ab). SPU visited the facility again on January 10, 2011. First Student provided a copy of the SWPPP and indicated that the company had applied for a stormwater permit. The floor drain had not been dye-tested or plugged. The drainage map presented in the SWPPP appeared to be missing key structures, and did not match a 2003 drainage map of this property (PACE 2003).

SPU inspected the maintenance hole at the 1st Avenue S exit gate. A large inlet pipe was observed to enter the maintenance hole from the direction of the First Student wash bay. The inlet flow was very sudsy, and the bus wash bay was in use at the time. This indicated the presence of an illicit connection to the storm drain line. First Student was directed to stop all washing activities until the drainage was properly mapped (SPU 2011a).

SPU conducted a dye test at the facility on January 12, 2011 (Jeffers 2011a). Due to recent precipitation, a large amount of turbid stormwater was flowing through the pipe. The bus wash dye test was inconclusive; it was not possible to identify dye in either the sanitary sewer or storm drain (Jeffers 2011b). On February 14 and April 11, 2011, SPU conducted an inspection to further investigate drainage features at First Student (Jeffers 2011c; SPU 2011c). First Student subsequently determined that the wash pad is connected to the sanitary sewer. SPU confirmed drainage and determined the First Student facility did not have any illicit connections. The facility was reported to be in compliance as of April 2011 (SPU 2011c).

First Student was granted coverage under ISGP Permit No. WAR124991, which went into effect on November 17, 2010. An updated SWPPP and facility map were submitted to Ecology in June 2012 (First America 2012).

5.5.4 Environmental Investigations and Cleanup

Sampling results for chemicals detected in soil and groundwater at this facility are provided in Appendix C. Results for chemicals that exceed screening levels in soil and groundwater are listed in Tables 9 and 10, respectively.

Laidlaw Transit

Tank Removal and Remediation – 1989/1990

Petroleum underground storage tanks (USTs) were removed from two locations at the facility in December 1989 by O'Sullivan Construction. The size and number of tanks removed is unclear; various reports list two 1,000-gallon gasoline tanks and two 300 to 500-gallon waste oil tanks (RZA 1990a), or three small (less than 500-gallon) tanks (WT Services 1999b). Tanks were removed from an area on the north side of the metal maintenance shop building, and to the west of the large main building. Petroleum hydrocarbons were present in tank excavation soils at concentrations above Ecology cleanup criteria in effect at that time. Voluntary remediation of impacted soils was reportedly addressed by the property owner in January 1990 (RZA 1990a).

Environmental Site Assessment – 1990

Rittenhouse-Zeman & Associates, Inc. (RZA) conducted a Level I and II Environmental Site Assessment for this property in early 1990, at the request of Burkheimer Management, Inc., a prospective purchaser (RZA 1990a). RZA observed visual and olfactory indications of petroleum hydrocarbon contamination in soil stockpiles adjacent to the UST excavation pits, and observed dark oily staining in the excavation pits and an oily sheen on the surface of standing water in the bottom of each pit. Minor amounts of spillage and leakage on the concrete floor from various hydrocarbon containers was observed. In the northwest corner of the large building, an oil waste disposal sink was identified; this sink was at one time apparently directly connected to the waste oil tanks that were removed in December 1989. Black, oily stains were observed on the ground surface in the school bus parking areas (RZA 1990a).

RZA drilled three soil borings and installed and sampled three groundwater monitoring wells (MW-1, MW-2, and MW-3). A total of three soil samples and three groundwater samples were analyzed. TCE and tetrachloroethene PCE were detected at concentrations up to 0.42 mg/kg and 0.57 mg/kg, respectively, above the MTCA Method A soil cleanup levels (Table C-5). Relatively low concentrations of TPH were detected in soil (5.7 to 7.8 mg/kg) and groundwater (6.0 to 8.0 ug/L) (Tables C-5 and C-6). Volatile organics and metals did not exceed MTCA cleanup levels in groundwater.

RZA attributed the chlorinated organic contamination to activities at the Eastern Supply facility, located just to the south on parcel 7746 (Figure 11). An aboveground tank, approximately 5,000 to 8,000 gallons and labeled as "perchloroethylene" was observed on the Eastern Supply property; in addition, numerous overturned 5-gallon and 55-gallon containers (also labeled "perchloroethylene" or "dry cleaning solvent") were observed. Additional information about Eastern Supply is presented in Section 5.6.

Additional Groundwater Sampling – 1991

RZA collected another groundwater sample from well MW-2, located adjacent to the Eastern Supply property, in June 1991. Vinyl chloride was detected at a concentration of 41 ug/L (RZA 1991). According to RZA, a vinyl chloride concentration of 65 ug/L was detected by Ecology during a January 1991 study of the property; however, no other information about this January 1991 study was available in the files reviewed during preparation of this Data Gaps Report.

WDOH Health Investigation – 1993

The Washington State Department of Health (WDOH) conducted a health investigation at the Laidlaw site, and determined that, although the site has the potential to impact public health, it is not of immediate concern because no complete public health exposure pathway was identified (WDOH 1993).

Tank Removal and Remediation – 1997/1998

Two 8,000-gallon USTs and associated vent and product piping and dispensing equipment were removed on June 27, 1997, by Able Tank of Kent, Washington. A diesel fuel odor was observed during tank removal (WT Services 1997). The tanks were located directly north of the maintenance shop (Figure 18). Soil in the excavation contained sandy silt to silty sand with occasional rubble, wood, and refuse. The material was soft and unconsolidated. Groundwater was encountered at approximately 7 feet bgs. Soil samples from the tank excavation area and from the southwestern dispenser contained diesel-range hydrocarbons at concentrations above 200 mg/kg, which was the MTCA soil cleanup level at that time. Approximately 644 tons of petroleum-contaminated soils were removed from the site and sent to an offsite facility for treatment (WT Services 1997).

In early 1998, Dalton, Olmsted & Fuglevand, Inc., for Burkheimer Management Company, installed one monitoring well and collected two groundwater samples to assess whether leakage from these USTs resulted in groundwater contamination (Dalton Olmsted 1998). Petroleum hydrocarbons were not detected.

In a letter dated July 17, 1998, Ecology issued a determination that no further remedial action is needed for soils with respect to releases from the two leaking underground tanks (Ecology 1998c).

Independent Cleanup Action – 1999

Additional cleanup was performed in the area of the 1989 tank removal on the north side of the maintenance shed. WT Services (for Burkheimer Management Company) performed two test pit soil explorations on February 8, 1999. Nine soil samples from the test pits were collected and analyzed using method WTPH-HCID. Gasoline and diesel fuel were not detected in any of the samples; heavy oil was detected in two of the samples. Additional testing indicated heavy oil concentrations of 390 and 2,800 mg/kg (WT Services 1999b).

WT Services removed 96 tons of petroleum-contaminated soil on April 12, 1999; soil was transported to TPS Technologies of Tacoma, Washington, for remediation by thermal desorption (WT Services 1999a,b). Soil samples collected from the side walls and bottom of the excavation did not exceed MTCA soil cleanup levels.

The cleanup action did not address soils associated with tanks removed in 1989 from the west side of the main site building.

In a letter dated August 31, 1999, Ecology issued a determination that no further remedial action was necessary for soils on the north side of the maintenance shed. However, the tank excavation performed in 1989 on the west side of the main building had not been addressed. In addition, soil and groundwater sampling had indicated chlorinated solvent contamination in this area (Ecology 1999b).

Phase I/Phase II Environmental Site Assessment – 2002/2003

A Phase I/Phase II Environmental Site Assessment (ESA) was completed by MACTEC in 2002/2003 and summarized in a report dated January 15, 2003 (LSI Adapt 2003). This report was not available in the files reviewed during preparation of this Data Gaps Report. According to a letter from LSI Adapt Inc. to Ecology on October 31, 2003, the MACTEC ESA included six Geoprobe explorations to depths of up to 10 feet bgs, and screening/analytical testing of collected soil samples. The boring locations were not specified; however, it is assumed that they were located in the area to the west of the main building, where a tank excavation had been performed in 1989. Results indicated detectable concentrations of diesel-range hydrocarbons to 90.8 mg/kg and lube oil-range hydrocarbons to 200 mg/kg, below the current MTCA soil cleanup level of 2,000 mg/kg.

A vapor survey was conducted during the ESA to address concerns about groundwater contamination resulting from a release at the former Eastern Supply Company property to the south; results did not indicate the presence of detectable concentrations of volatile organic compounds (VOCs) (LSI Adapt 2003).

5.5.5 Potential for Sediment Recontamination

Samson Tug Maintenance Shop and First Student currently operate at the Burkheimer Family Property. Stormwater from this property flows to a storm drain ditch along 1st Avenue S; water in the ditch discharges to the central wetland area and subsequently to the LDW.

Several environmental investigations and cleanups have been conducted for petroleum hydrocarbon and chlorinated solvent contamination in soil and groundwater associated with historical operations at this and the neighboring Eastern Supply properties. The potential for sediment recontamination from this property is summarized below by transport pathway.

Soil and Groundwater

Soil and/or groundwater at this property contains chlorinated solvents (PCE, TCE, vinyl chloride) at concentrations above MTCA cleanup levels (Tables 9 and 10). The site has been listed on Ecology's CSCSL since 1991. No remediation of contaminated groundwater has occurred, and the most recent groundwater samples were collected 1991. Chlorinated solvents may be transported offsite and to the adjacent wetland area, which subsequently discharges to the LDW.

Insufficient information is available to assess whether contaminants associated with groundwater discharges to the 1st Avenue S storm drain system may be discharged to the LDW. However, chlorinated solvents are not considered LDW sediment COCs, and therefore the potential for sediment recontamination associated with VOCs in groundwater at this property is considered low.

Stormwater

Inspections conducted at Samson Tug Maintenance Shop in 2009 and 2010 identified improper practices that could lead to the transport of contaminants from the facility to the storm drain ditch. As of January 2011, the facility was in compliance with environmental regulations and BMPs.

At the First Student facility, soapy water was observed in a manhole near the 1st Avenue S entrance gate to the First Student maintenance and parking facility. SPU currently believes that the wash bay discharges to the sanitary sewer. As of April 2011, the facility was in compliance with environmental regulations and BMPs.

Both facilities have been granted coverage under the ISGP. Because stormwater discharges from these facilities have been identified in the past, the potential for sediment recontamination associated with stormwater discharges from the Burkheimer Family Property is considered low to moderate.

5.5.6 Data Gaps

Samson Tug and Barge and First Student appear to maintain appropriate source control BMPs and have complied with corrective actions identified by SPU. Samson Tug and Barge will continue to work with Ecology to address adaptive management needs to eliminate ongoing polluted discharges. Therefore, no data gaps were identified for these facilities or property.

5.6 Former Eastern Supply Company

Facility Summary: Former Eastern Supply Company	
Address	7745 1st Avenue S 98106 7746 Detroit Avenue SW
Tax Parcel No.	3024049164
Property Owner	Fred Weinberg
Parcel Size	0.88 acre (38,125 square feet)
Facility/Site ID	2258 (Eastern Supply Co)
Alternate Names	Duwamish Fill Site
SIC Code	5087: Service Establishment Equipment
EPA ID No.	None
NPDES Permit No.	None
UST/LUST ID No.	None

Eastern Supply Company operated at 7745 1st Avenue S from 1966 to 1994. The property is owned by Fred Weinberg, who was the owner and president of Eastern Supply. The current tenant at the property is W&O Supply, Inc. The property is located between Detroit Avenue SW and 1st Avenue S, approximately 2,200 feet west of the LDW. To the north is First Student (on property owned by the Burkheimer Family) and to the south is Seaport Petroleum (Figure 11).

According to King County Tax Assessor records, one 9,996-square foot warehouse building, constructed in 1966, is present on this parcel.

Groundwater occurs at approximately 7 feet bgs. Alternating sand, sandy silt, silty sand, and silt layers underlie the Eastern Supply property (E&E 1991). Groundwater flows to the northwest during high tide conditions, and to the northeast during low tide.

Site Geology

During a 1990 SHA conducted at the site (E&E 1991), fill material and alluvium consisting of interbedded silts and sands were encountered in each borehole to depths of approximately 14 feet bgs. At approximately 14 feet, a 6-foot thickness of wood and organic-rich silt was encountered in all borings to a depth of 20 feet bgs. The zone of organic-rich silt is within the alluvium, and may be associated with an ancient swamp bottom or abandoned river channel (E&E 1991). A gas pocket was also found at this depth in association with the organic-rich silt. With depth, the soils graded to black silty sand. Glacial till was identified at approximately 35 feet bgs, underlying the fill and alluvium.

Site Hydrology

Water-bearing sediments occur in the fine-grained fill material and valley alluvium. Saturated conditions were encountered during the SHA at depths ranging from 7 to 10 feet bgs. Saturated conditions were also encountered in the native sands located beneath the organic-rich silts. The silts were relatively dry (E&E 1991). Seasonal high groundwater is within 1.5 feet of the site grade (Dalton Olmsted 1991).

5.6.1 Current Operations

W&O Supply currently operates a plumbing and heating equipment business at 7745 1st Avenue S. No other information about current operations at this location was available during preparation of this Data Gaps Report.

5.6.2 Historical Operations

Eastern Supply Company operated at 7745 1st Avenue S from 1966 to 1994 (RZA 1990a; Ecology 1997c). The company was a distributor of supplies to the laundry and dry cleaning industry. One product the company distributed was PCE, a dry-cleaning solvent. PCE was stored in a 5,000-gallon AST located near the southern portion of the site. PCE was released to soil at the site, most likely during filling and dispensing operations over the more than 20 years of operation. PCE migrated into groundwater at the site, and the contaminated groundwater was subsequently transported offsite. Cleanup of the site was conducted under an Agreed Order with Ecology. Additional information is provided in Sections 5.6.3 and 5.6.4 below.

According to the Polk Registry for the City of Seattle, the JJ McDownel dry cleaning supply company shared this location in the early 1980s (RZA 1990a).

In 1997, the property was being leased to Conesco Storage Systems, Inc., a business that specializes in racking, shelving, and conveying equipment (Ecology 1997c). Conesco did not handle, store, or distribute dry-cleaning or laundry supplies. No additional information on use of the property between 1994 and 2011 was available during preparation of this Data Gaps Report.

5.6.3 Regulatory History

Eastern Supply Company

PCE contamination was detected in soil at the downgradient Laidlaw property in January 1990, (see Section 5.5). Ecology inspectors visited the Eastern Supply property in March 1990 to investigate potential sources of PCE. Inspectors found drums and cans of “Ethyl Per-Fect” and “Waste Perc”, and an aboveground tank that contained PCE (Ecology 1990b). The inspectors observed signs of deterioration of the tank vent and pump accessories, and a lack of secondary containment for the tank and associated transfer operations. A surface water sample was collected, which confirmed the presence of PCE (290,000 ug/L), TCE (7 ug/L), 1,2-DCE (6 ug/L), 1,1,1-trichloroethane (1,1,1-TCA) (2 ug/L), chloroform (2 ug/L), and acetone (13 ug/L) (Ecology 1990c).

An SHA was completed in February 1991, and a WARM score of 2 was assigned to Eastern Supply on March 8 (Dalton Olmsted 1991). A score of 1 represents the highest level of risk and 5 the lowest. The site was added to Ecology’s Hazardous Sites Listing in February 1991 due to the confirmed presence of halogenated organics in soil and groundwater. The facility’s status is currently listed as “Construction Complete – Active O&M/Monitoring Ongoing.”

Ecology issued a Notice of Potential Liability to Mr. Fred Weinberg, the property owner/operator, on March 26, 1991 (Ecology 1991b). A Determination of Potentially Liable Person Status was subsequently issued on May 3, 1991 (Ecology 1991c).

In July 1991, Eastern Supply conducted an independent interim action cleanup, which included relocating the PCE storage tank, upgrading the PCE storage and dispensing system, excavating 450 cubic yards of contaminated soil, and pumping approximately 4,500 gallons of water from the excavation area (Ecology 1992a).

In February 1992, the company entered into an Agreed Order with Ecology to study the nature and extent of contamination and to evaluate cleanup options (Attorney General of Washington 1992).

An RI/FS was performed in three phases during 1992 to 1994, to investigate hydrogeologic processes and characterize the horizontal and vertical extent of contamination (Dalton Olmsted 1993, 1996b). PCE, 1,2-DCE, vinyl chloride, and TCE were detected in both groundwater and soil samples. The highest concentrations of PCE (5,000 mg/kg DW) were detected near the PCE storage tank. The independent action completed in 1991 had successfully cleaned up the soil to below MTCA industrial cleanup levels; however, contaminant concentrations in groundwater exceeded the surface water quality criteria (Ecology 1997b). The findings indicated no immediate threat to human health or the environment; however, the site was determined to represent a low, long-term risk (Ecology 1997a).

The FS, which focused on groundwater remediation options, evaluated seven alternatives for site cleanup, ranging from no action to adding asphalt paving, a slurry wall, in-situ vapor extraction and sparging, off-gas destruction, and site monitoring. A combination of containment with asphalt pavement, containment with cut-off wall, in-situ vapor extraction, groundwater sparging, and off-gas destruction was selected as the preferred cleanup alternative (Ecology 1997b). The final draft Phased Remedial Investigation and Focused Feasibility Study was completed on May 21, 1996 (Ecology 1997a). An ozone sparging pilot study was initiated in the fall of 1996 (Ecology 1997a).

The Agreed Order was revised in April 1997 to include implementation of the cleanup action (Ecology 1997a).

A Cleanup Action Plan (CAP), dated August 1, 1997, included the following elements (Ecology 1997a,c):

- In-situ vapor extraction and off-gas treatment to reduce the concentration of contaminants migrating from soil to groundwater;
- Paving of the treatment area to improve vapor extraction efficiencies and prevent direct contact with soil;
- Installation of a cut-off wall around the perimeter of the treatment area to contain on-site contaminated groundwater and reduce off-site migration of contaminated groundwater;
- Treatment of groundwater within the cut-off wall containment area by groundwater sparging;
- Implementation of a vapor/off-gas treatment system;
- Installation of additional compliance monitoring wells; and
- Compliance monitoring.

Groundwater cleanup levels were developed for the protection of adjacent surface waters, as follows:

- Total 1,2-DCE: 5.8 mg/L
- PCE: 2.64 mg/L
- TCE: 22.5 mg/L
- Vinyl chloride: 0.525 mg/L

The conditional point of compliance was set at the Eastern Supply property boundary.

Eastern Supply Company completed a Compliance Monitoring Plan in April 1997 (Dalton Olmsted 1997), an Engineering Design Report in May 1997 (Charles A Gove & Associates and Dalton Olmsted 1997), and an Operation and Maintenance Plan in May 1997 (Charles A Gove & Associates 1997).

W&O Supply

SPU conducted an initial inspection at W&O Supply on August 30, 2011 (SPU 2011e). The following corrective actions were identified:

- Develop and implement spill response procedures.
- Improve or purchase adequate spill response materials.
- Properly educate employees.
- Implement proper housekeeping.
- Implement proper washing practices.

The inspection report contained no information on potential pollutant-generating activities conducted at W&O Supply, stormwater-related structures or drainage at the property, or materials/wastes handled. The facility reportedly achieved compliance with the corrective actions on October 6, 2011.

5.6.4 Environmental Investigations and Cleanups

A Phase I and II Site Assessment prepared in February 1990 for the Burkheimer Property, located directly to the north of Eastern Supply, found TCE and PCE in soils (RZA 1990a). Eastern Supply was identified as a potential source of these chemicals, and Ecology logged an Initial ERTS Report (No. N816) (Ecology 1990a). A Site Hazard Ranking was performed under the name "Duwamish Fill Site – DOT"[15] (SAIC 1990; Bardy 1990).

A series of environmental investigations were conducted at the facility as summarized below. Sampling results for chemicals detected in soil and groundwater at this facility are provided in Appendix C. Results for chemicals that exceed screening levels in soil and groundwater are listed in Tables 11 and 12, respectively.

Site Hazard Assessment (1990)

Ecology and Environment (E&E) conducted an SHA for the Eastern Supply property in late 1990 (E&E 1991). The SHA included the installation of three monitoring wells (MW-7, MW-8, and MW-9) and one borehole, and collection of four surface soil samples, 16 subsurface soil samples, three onsite groundwater samples, and six offsite groundwater samples. In addition, two samples were collected from the drainage ditch located east and southeast of Eastern Supply; the drainage ditch flows to a culvert and ultimately to the LDW.

Samples were analyzed for VOCs and petroleum hydrocarbons. Vinyl chloride, PCE, acetone, and 2-butanone were detected. A subsurface soil sample located in the vicinity of the aboveground PCE tank contained 110 mg/kg PCE. A surface soil sample collected several feet north of the PCE tank contained 30 mg/kg PCE (E&E 1991). Groundwater samples detected total 1,2-DCE and vinyl chloride at maximum concentrations of 4,800 ug/L and 2,400 ug/L, respectively.

Interim Cleanup Action (1991)

In February 1991, Dalton, Olmsted & Fuglevand, for Eastern Supply, excavated 10 test pit explorations and sampled soils for laboratory analysis, to assess the extent of soil contamination around the former tank area (Dalton Olmsted 1991). The highest concentrations of PCE in soil were detected in the test pits closest to the tank location. Concentrations were 2,500 to 5,000 mg/kg PCE in test pits TP-1 and TP-2, both located within 10 to 15 feet of the tank (Dalton Olmsted 1991). An additional 35 soil samples from test pits and borings were analyzed for halogenated volatile compounds; PCE exceeded 5 mg/kg in two of them.

Based on these results, Eastern Supply completed an independent cleanup action to reduce the potential for ongoing releases of PCE to groundwater (Ecology 1997c). The independent cleanup action included relocating the AST to gain access to the contaminated soil area; upgrading the storage and dispensing system for PCE; excavating 450 cubic yards of contaminated soil and storing and treating the soil onsite; and pumping contaminated water from the excavation (Ecology 1997c). Dalton Olmsted estimated that 90 to 95 percent of the PCE in soil was removed by this effort (Dalton Olmsted 1996b).

[15] "Duwamish Fill Site – DOT" is listed in Ecology's Facility/Site Database under FSID 2063, with a location of S 124th St & SR99. This location may be incorrect, as it is not within the 1st Avenue S SD source control area.

The independent cleanup action established that the extent of significant PCE in soil was limited to the upper 6 to 8 feet of the site, immediately adjacent to the former tank location. Soil samples collected from the floor of the excavation (8 feet deep) were below 1 mg/kg PCE; samples from the excavation walls were below 25 mg/kg, with the exception of the east wall, where 1,700 mg/kg PCE was detected in one sample. Vinyl chloride, 1,2-DCE, and TCE, which are breakdown products of PCE, were also detected (Ecology 1997c).

Phased Remedial Investigation and Focused Feasibility Study (1992 – 1996)

Groundwater samples were collected during 1992 to 1995 from three sets of wells: 11 wells screened within the shallow groundwater zone (5 to 10 feet bgs), four wells screened partially in the aquitard (10 to 22 feet bgs), and two wells screened within the lower groundwater zone (30 to 45 feet bgs). The highest chemical concentrations were found in shallow zone wells MW-11 and MW-19, located close to the north-south centerline of the Eastern Supply yard, where PCE was handled. PCE, TCE, 1,2-DCE, and vinyl chloride were detected. The highest concentrations were generally located on the western half of the property, with concentrations diminishing to the east to generally less than 0.001 mg/L in wells adjacent to 1st Avenue S. The extent of impacted groundwater to the north, south, and west could not be determined from the data set, beyond the general trend of diminishing concentrations to the north and west. Concentrations tended to fluctuate over time (Ecology 1997c).

Samples collected from MW-2 and MW-14 indicated that the aquitard zone was acting to restrict downward movement of halogenated VOCs (Ecology 1997c).

The wells in the deep groundwater zone (MW-7 and MW-12D) both initially showed very low or nondetected concentrations of halogenated VOCs. Concentrations at MW-7 subsequently increase by two orders of magnitude. The well installation may have acted as a conduit for groundwater to travel from the shallow zone to the deeper groundwater zone. Well MW-7 was abandoned in October 1994 to reduce the possible connection between the aquifers. Well MW-8 was also abandoned, since backfill for the boring extended through the aquitard (Ecology 1993f; Dalton Olmsted 1994a).

Site Remediation (1997 - 2000)

In accordance with the August 1997 CAP, a cutoff wall consisting of high density polyethylene (HDPE) curtain was installed from the ground surface into the upper portions of the underlying aquitard layer. The bottom of the wall was approximately 12 to 15 feet bgs, and the top of the cutoff wall was located beneath the paving and subbase, approximately 1.5 feet below final grade. The one exception is a 10-foot length of cutoff wall in the northwest corner of the remediation area, where the top of the wall is about 3 feet below final grade (or 1.5 feet below the paving on the Burkheimer Property to the north). Zero-valence iron was placed at this location to treat groundwater should it rise above the top of the cutoff wall (Dalton Olmsted 2007). The wall construction was completed in September 1997. Following installation of the cutoff wall, a sewer line connection for the existing on-site building was completed in February 1998; site paving was completed in May 1998.

Groundwater sparging and vapor extraction systems, consisting of a series of groundwater sparging points and near-surface vapor extraction lines as well as a blower, pump, and control equipment, were installed during September 1997 to November 1998. Approximately 78 tons of excess soils from the final installations were removed from the facility and disposed of at Olympic View Sanitary Landfill in December 1998 (Dalton Olmsted 2007).

Compliance Monitoring (2000 – 2008)

As of October 2007 (the most recent information in the files reviewed during preparation of this Data Gaps Report), 11 rounds of water quality sampling had been collected since system startup in April 2001 (Dalton Olmsted 2007). Results are listed in Appendix C; sample results with exceedances of MTCA groundwater cleanup levels or groundwater-to-sediment screening levels are listed in Table 12. Monitoring well locations are shown in Figure 20. Compliance monitoring reports were submitted by Dalton Olmsted for the property owner on June 14, 2000; January 17, 2002; June 4, 2003; December 8, 2005; June 21, 2006; and October 16, 2007 (Dalton Olmsted 2000, 2002, 2003, 2005, 2006, 2007).

Onsite Groundwater Monitoring

In April 2000, five compliance groundwater monitoring wells were installed (MW-24 through MW-28). The system, modified to be a closed circuit, started operating on April 12, 2001, and ran continuously until September 2001, when the property tenant moved. During the move, the power pole/meter base supply power to the system was damaged. The damage was repaired and the system was restarted in early 2002 (Dalton Olmsted 2007).

In late 2002, during a periodic system check, it was discovered that a plastic trash bag had blown into the equipment compound and blocked the intake of the air compressor casing, overheating the motor. The system was shut down, and it was found that the motor and compressor had seized. Samples collected from the three monitoring wells indicated that chemical concentrations were below cleanup levels. Since the operation of the closed system has no effect on water quality outside the containment area, the system remained shut down (Dalton Olmsted 2007).

Analytical results from September 2004 and April 2005 samples indicated that concentrations of vinyl chloride in wells MW-26 and MW027 were above cleanup levels, and PCE concentrations were near or above cleanup levels. The motor and compressor (that had failed in 2002) were repaired and the vapor extraction system was restarted in December 2005. Other than a brief shutdown in April 2006, the system has been operational since that time (Dalton Olmsted 2007).

After repair and restart of the system in December 2005, concentrations of COCs dropped sharply, and all were below cleanup levels during 2006 and 2007 sampling events. An increase in PCE concentrations was observed in the May 2007 groundwater samples in wells MW-26 and MW-28 (the most recent data available for review during preparation of this Data Gaps Report); however, concentrations were below cleanup levels.

On June 21, 2007, a new water “drop-out” tank was installed to replace the old tank, which had rusted. In addition, the system was modified to bypass the carbon tanks, which were at capacity. As of October 2007, concentrations of COCs were below the required cleanup levels, and the property owner planned to run the system in this configuration, and to evaluate the system’s effectiveness during the May/June 2008 sampling round (Dalton Olmsted 2007). No information about additional compliance monitoring was available in the files reviewed during preparation of this Data Gaps Report.

Offsite Groundwater Monitoring

Six wells were installed outside of the containment area; four of these wells are located on the Burkheimer Family property to the north. Concentrations of most COCs have declined since construction of the cutoff wall. Vinyl chloride concentrations have fluctuated, likely a result of the breakdown of PCE. During the most recent groundwater monitoring event for which data were available for review, vinyl chloride was present in wells MW-12S (712 ug/L, east of the remediation area), MW-13 (2,770 ug/L, south of the remediation area), and MW-25 (1,920 ug/L, north of the remediation area on the Burkheimer Family property) at concentrations above the cleanup level (525 ug/L).

5.6.5 Potential for Sediment Recontamination

Soil and groundwater contamination has been documented at this property. PCE and its degradation products were released to the environment during historical operations by Eastern Supply Company. An RI/FS was conducted under an Agreed Order with Ecology; a groundwater treatment was installed and compliance monitoring is currently in progress. W&O Supply is the current tenant at 7745 1st Avenue S.

The potential for sediment recontamination associated with this property is summarized below by transport pathway.

Soil and Groundwater

Contaminated soil at this property was excavated in July 1991; soil remaining in place contained PCE and TCE at concentrations up to 1,700 and 51 mg/kg, respectively. These concentrations exceed MTCA soil cleanup levels by factors of 34,000 and 1,700, respectively. The most recent soil samples were collected August 1991.

In groundwater, the following chlorinated VOCs exceeded the MTCA groundwater cleanup level in the most recent round of groundwater sampling for which data were available during preparation of this Data Gaps Report (May 2007): cis-1,2-DCE (up to 3,700 ug/L), methylene chloride (506 ug/L), PCE (up to 489 ug/L), TCE (up to 60 ug/L), and vinyl chloride (up to 2,770 ug/L). In addition, vinyl chloride exceeded the cleanup action levels specified in the CAP in 2007 samples collected at MW-12S and MW-13.

VOCs are not chemicals of concern with respect to sediment recontamination in the LDW. Therefore, the potential for sediment recontamination associated with VOCs in groundwater is considered low.

Metals (arsenic, cadmium, chromium, iron, and lead) exceeded the MTCA groundwater cleanup level in samples collected in 1995; in addition, cadmium, lead, and mercury exceeded the groundwater-to-sediment screening levels. None of the groundwater samples collected at the facility since 1995 have been analyzed for metals. Insufficient information is available to assess the potential for LDW sediment recontamination associated with metals in groundwater.

Stormwater

Stormwater from the former Eastern Supply Company property is discharged to a storm drain ditch located east of the facility along 1st Avenue S; the ditch transports stormwater to a wetland area and ultimately to the LDW. An SPU compliance inspection report prepared on August 30, 2011, provided no information about current activities at W&O Supply, the current tenant; however, the facility was reportedly in compliance with environmental regulations and BMPs as of October 2011. The potential for sediment recontamination associated with current operations at this property is believed to be low.

5.6.6 Data Gaps

Groundwater samples collected in 1995 indicated the presence of metals at concentrations above MTCA groundwater cleanup levels and groundwater-to-sediment screening levels. While this property is located approximately 2,200 feet from the LDW, contaminated groundwater may be discharged to the wetland area and then be transported to the LDW via surface water. Additional information on current concentrations of metals in groundwater is needed in order to assess the potential for sediment recontamination due to groundwater discharges.

5.7 Former First Avenue Bridge Landfill

Facility Summary: Former First Avenue Bridge Landfill	
Address	7700 block of 2nd Avenue SW 98106
Tax Parcel No.	None
Property Owner	WSDOT (right-of-way)
Alternate Names	DOT Landfill, WSDOT Landfill
Parcel Size	NA
Facility/Site ID	2201
SIC Code	4953: Landfill
EPA ID No.	None
NPDES Permit No.	None
UST/LUST ID No.	None

The First Avenue Bridge landfill was located in the 7700 block of 2nd Avenue SW (Figure 11); this landfill has also been referred to as the WSDOT Landfill. This area, currently a right-of-way, is located in the southern portion of the central wetland area west of SR 509, south of West Marginal Way SW, east of 2nd Avenue SW, and north of SW Kenyon Street (Figure 11). The Burkheimer Family Property, former Eastern Supply Company facility, and current Seaport Petroleum property are located to the west, across 2nd Avenue SW.

Current aerial photographs show that this property is partly vegetated with a barren area just to the north of the 2nd Avenue SW offramp from southbound SR 509 (Figure 11).

5.7.1 Current Operations

This property is currently part of the central wetland area that collects stormwater drainage and discharges to the LDW through an intertidal slough located under the 1st Avenue S Bridge.

5.7.2 Historical Operations

Bayside Disposal reportedly used the First Avenue Bridge landfill for disposal of construction debris between 1969 and 1972 (USEPA 1985). Bayside Disposal is a former operator at 7201 West Marginal Way SW, currently the Waste Management Eastmont Transfer Station.

5.7.3 Regulatory History

No documentation of hazardous waste activity was identified during an EPA Potential Hazardous Waste Site Preliminary Assessment in 1985, and no further action under the Superfund program was recommended (USEPA 1985). The site was referred to Ecology in March 1988 (PHSKC 2004).

On May 11, 1988, the Puget Sound Air Pollution Control Agency (PSAPCA) issued a Notice of Deficiency to WSDOT for improper storage and disposal of asbestos-containing waste materials. This occurred near SR 509 and 2nd Avenue S, just south of the 1st Avenue S Bridge. A request was issued for a report within 10 days detailing the location and amount of asbestos, the asbestos contractor name, and a corrective action to reduce the asbestos on the property (PSAPCA 1988). No follow-up information was identified in the files reviewed during preparation of this Data Gaps Report.

A notice of violation from the Department of Construction and Land Use was issued to Gary Merlino Construction Co. on June 8, 1988, in response to an inspection conducted on May 9, 1988 (PHSKC 2004). Violations of the city's grading ordinance were identified, including failure to comply with the final grading plan and an expiring permit. The specific location of the violations was not identified, but appears to be in the general area of the former First Avenue Bridge landfill. No further information was available.

An SHA was completed in January 2004 (PHSKC 2004); the site was assigned a hazard rank of 4, where a score of 1 represents the highest level of risk and 5 the lowest. The site is listed on Ecology's CSCSL for confirmed soil contamination with priority pollutant metals, suspected contamination of groundwater, surface water, and air with priority pollutant metals, and confirmed contamination of soil and air with inorganic conventional contaminants. Current site status is "Awaiting Cleanup."

5.7.4 Environmental Investigations and Cleanups

Sampling results for chemicals detected in soil and groundwater in the former First Avenue Bridge Landfill and central wetlands area are provided in Appendix C. Results for chemicals that exceed screening levels in soil and water samples are listed in Tables 13 and 14, respectively.

Hazardous Waste Assessment – SR 99 1st Avenue S Bridge Project (1992)

In 1992, Dames & Moore conducted a Hazardous Waste Assessment to assess the potential that hazardous wastes would be encountered during construction of the SR 99 1st Avenue S Bridge project (Dames & Moore 1992). The assessment was intended to provide input for the Environmental Impact Statement (EIS) for the project.

As part of this assessment, soil and groundwater samples were collected at locations that had been identified based on historical land use (Figure 21). A total of 54 soil samples were collected from 15 soil borings in July 1992, at depths of 2.5 feet and 5 feet bgs, and at additional 5-foot intervals to the water table. Two-inch diameter groundwater monitoring wells were installed in 14 of the borings, and 15 groundwater samples were analyzed. Groundwater was encountered at 7 to 17 feet bgs; flow directions are generally towards the LDW. Samples were analyzed for petroleum hydrocarbons and priority pollutant metals; selected samples were also analyzed for VOCs, and samples from one boring were analyzed for PCBs.

Several of these samples were located in the area currently identified as the WSDOT engineered wetland (Figure 10), or central wetland area; two monitoring wells (MW-1 and MW-2) are within the estimated location of the former First Avenue Bridge landfill (Figure 21). In April 1993, three additional borings were drilled, sampled, and completed as monitoring wells; two of these were in the central wetland area. In addition, three surface water samples were collected from the northern portion of the SR 509 wetlands, north of the First Avenue Bridge landfill area (Figure 21).

Arsenic exceeded the MTCA soil cleanup level in both soil samples, with concentrations from 6.0 to 14 mg/kg DW (Table 13). Zinc exceeded the soil-to-sediment screening level in both soil samples, with concentrations from 66 to 116 mg/kg DW; copper exceeded the soil-to-sediment screening level in one sample (52 mg/kg DW at MW-2).

In groundwater, total arsenic was detected in MW-2 at 50 ug/L in July 1992; subsequent samples were analyzed for dissolved arsenic, which was detected at 130 ug/L and 62 ug/L in September 1992 and April 1993, respectively; these concentrations exceed the MTCA groundwater cleanup level by factors of 862 to 2,241 (Table 14). At MW-1, vinyl chloride was detected at 2.7 ug/L, significantly higher than the MTCA groundwater cleanup level of 0.2 ug/L (Table 14). Vinyl chloride was not detected in samples collected in September 1992 and April 1993; however, the reporting limit was not specified (Dames & Moore 1994).

Soil collected in central wetland area downstream of the First Avenue Bridge landfill exceeded screening levels for arsenic, cadmium, copper, mercury, and zinc (Table 13). Groundwater samples in this area exceeded screening levels for arsenic, chromium, lead, TPH-diesel, and zinc (Table 14). Surface water samples exceeded screening levels for arsenic, methylene chloride, and TPH (Table 14).

In October 2003, Public Health Seattle & King County (PHSKC) contacted WSDOT to inquire whether any further testing had been conducted at this site after 1993. According to WSDOT, no soil or groundwater testing had been conducted since the bridge was rebuilt in 1994 (PHSKC 2004).

5.7.5 Potential for Sediment Recontamination

This property was reportedly used as a construction waste landfill between 1969 and 1972. Samples collected in 1992 to 1994 indicated the presence of the following contaminants (Tables 13 and 14):

- Arsenic in soil and groundwater at concentrations above MTCA Method B soil and groundwater cleanup levels;
- Vinyl chloride in groundwater at a concentration above the MTCA Method A groundwater cleanup level; and
- Copper and zinc in soil at concentrations above soil-to-sediment screening levels.

Groundwater and surface water samples collected in the central wetland area downstream of the former First Avenue Bridge landfill location also exceeded the MTCA Method B groundwater cleanup levels for arsenic, and exceeded the groundwater-to-sediment screening levels for lead and zinc (Table 14). No samples have been collected since 1993.

Arsenic was not identified as a sediment COC for the 1st Avenue S SD source control area (Section 2.2.3); however, it is a considered a sediment COC for the larger LDW Superfund Site. Arsenic and other contaminants in soil and groundwater, if present, may be transported through the wetlands to LDW sediments near RM 2.1 West.

5.7.6 Data Gaps

Additional information is needed to assess current concentrations of arsenic and other contaminants in soil, groundwater, and surface water in this area.

5.8 Seaport Petroleum

Facility Summary: Seaport Petroleum	
Address	7746 Detroit Avenue SW 98106 (West Coast Equipment 2) 7800 Detroit Avenue SW 98106 (Seaport Petroleum)
Tax Parcel No.	3024049166 (7800 Detroit Avenue SW) 3024049181 (No address listed)
Property Owner	9166: Seaport WE4ST LLC 9181: DJP Enterprise Inc
Parcel Size	9166: 2.72 acres (118,293 sq ft) 9181: 0.72 acre (31,200 sq ft)
Facility/Site ID	12494 (West Coast Equipment 2) 4982711 (Seaport Petroleum Detroit Ave)
Alternate Names	Collins Oil Co DBA Seaport Petroleum Co Detroit; Seaport Petroleum; Seaport Petroleum Co Detroit; Seaport Food Mart; Shell Gas Station and Minimart; Christensen West LLC
SIC Code	4925: Gas Production and/or Distribution; 5172: Petroleum Products NEC
EPA ID No.	WAH000003590 (inactive)
NPDES Permit No.	WAR125959
UST/LUST ID No.	424567 (Seaport Food Mart)

The Seaport Petroleum property is comprised of parcels 9166 and 9181 (Figure 9). The property is bordered by Eastern Supply to the north, Detroit Avenue SW on the west, 1st Avenue S on the east, and SW Kenyon Street to the south (Figure 11).

Parcel 9166 is owned by Seaport WE4ST LLC, who purchased the property from Port Industrial Marine Properties in November 2010. Port Industrial Marine Properties/Thomas Randall purchased the property from Robert and Donald Cash in July 1996. There is one 17,257-sq ft building located on the property; this masonry building was constructed in 1997.

Parcel 9181 is owned by DJP Enterprise Inc, who purchased the property in June 2008 from Eternity Parks Inc, who purchased it from Port Industrial Marine Properties in February 2006. A Shell gas station and minimart are currently located on parcel 9181, including a 3,300-sq ft wood frame building.

The property is relatively level with a slight upward slope to the north; it is approximately 490 feet long by 380 feet wide. Surface drainage appears to be to the east (GeoEngineers 1992).

5.8.1 Current Operations

The current address for this parcel is 7800 Detroit Avenue SW. Christensen West LLC operates a bulk fuel terminal under the name Seaport Petroleum; this facility was operated by Collins Oil Company until 2010. At the time of a February 2011 SPU inspection, the petroleum ASTs, located inside the building within containment, were in the processof being replaced with larger tanks. The tanks are loaded by tanker truck through the wall via multiple hose ports. The unloading area is uncovered, but has a bermed containment area. Petroleum product is distributed in bulk, drums, totes, and pails after repackaging (SPU 2011b).

Three catch basins are location on the property. The property is paved with asphalt. Approximately 10 tankers are washed on a weekly basis; as of February 2011, wash water drained to the storm drain system (SPU 2011b).

A Shell Oil gas station and minimart (Seaport Food Mart, operated by DJP Enterprise, Inc.) are located on parcel 9181, on the south side of the property, at 7801 Detroit Avenue SW. Seven catch basins are located on this parcel (SPU 2010s); as many as six of these drain to the stormwater ditch along 1st Avenue S. Some catch basins have outlet traps.

Three 20,000-gallon fiberglass-reinforced plastic USTs are currently operational at Seaport Food Mart. The tanks were installed in April 1997 and are used to store diesel and unleaded gasoline. The diesel fuel island has an oil/water separator system and drains to the sanitary sewer. According to the 2010 SPU inspection report, the gasoline island drains to a catch basin and then to the 1st Avenue S ditch (SPU 2010s).

5.8.2 Historical Operations

The property was primarily agricultural until approximately 1960. Parcel 9166 was owned by Eastern Supply during the 1960s, which used the 7746 Detroit Avenue SW address. The 7746 Detroit Avenue SW address is currently assigned to parcel 9164, which is located to the north (see Section 5.6, Eastern Supply Company, 7745 1st Avenue SW).

West Coast Equipment leased the property from Eastern Supply Company from about 1964 to 1967, and purchased the property in 1967. West Coast Equipment operated a heavy equipment repair and sales facility to the west, across Detroit Avenue SW, at 7777 Detroit Avenue SW (see Section 5.9). The West Coast Equipment 2 property (currently Seaport Petroleum) was used to store equipment and parts associated with the repair facility until 1971.

CKD was imported to the property in the mid-1960s, when the property was owned by Eastern Supply, and was used as fill material (GeoEngineers 1996). A total of approximately 60,000 cubic yards of CKD was brought to the property. The source of the CKD was unknown. Sand, gravel, and slag (approximately 300 cubic yards) were periodically imported from Birmingham Steel (also known as Salmon Bay Steel, Seattle Steel, and Bethlehem Steel) to the property and placed over the CKD as surfacing material (Cargill 1995). The CKD is located at approximately 4 to 6 feet bgs; slag and gravel are found above the CKD layer. Native silt is found blow the CKD.

Far West Auto Wrecking reportedly operated a wrecking yard at this location in 1980 (Riley 1999b).

In November 1995, representatives from Seaport Petroleum met with Ecology to discuss Seaport's plans to develop the property. Plans included construction of a 40,000 sq ft office building and a Texaco gas station and mini-mart. Most of the property would be paved. Remedial options were discussed, including paving and excavation, solidification of slag onsite, and a stormwater vault for collection of water percolating through plantings (Cargill 1995). Specific details about when and if this development was implemented was not available in the files reviewed during preparation of this Data Gaps Report.

A site characterization was performed in 1996; at that time, the property was vacant and unpaved, and enclosed by a chain link fence (GeoEngineers 1996). A corrugated metal shed with a concrete floor, approximately 80 feet by 30 feet, was located in the southwest portion of the property near the west property line. The surface of the property was covered with sand and gravel fill, and was vegetated with grass, scotch broom, and blackberry bushes.

5.8.3 Regulatory History

West Coast Equipment 2

A Phase I ESA was completed in March 1992. Five test pits were excavated during a site characterization completed in 1995. Slag and CKD were observed in the test pits. A site characterization conducted in 1996 analyzed one sample for Toxicity Characteristic Leaching Procedure (TCLP) metals and pH to determine if the slag or CKD would be classified as dangerous waste; results indicate that the material would not be classified as a dangerous waste.

In a letter to Mr. Robert Cash, dated May 17, 1996, Ecology outlined possible options for cleanup of the property (Ecology 1996d):

- Completion of an independent cleanup and submittal of an Independent Remedial Action Report; if Ecology determines that the cleanup is adequate, an NFA letter would be issued and the site would be removed from Ecology's Hazardous Sites list.
- Negotiation of a Prospective Purchaser Consent Decree, which is a negotiated settlement between the Attorney General and a person not currently liable for remedial action at the facility who proposes to purchase, redevelop, or reuse the facility (Seaport Petroleum).
- Completion of site cleanup under a formal Consent Decree or Agreed Order.

A WARM score of 3 was assigned to West Coast Equipment 2 in July 1996 (Ecology 1996e). A score of 1 represents the highest level of risk and 5 the lowest. The site was added to Ecology's Hazardous Sites Listing in July 1996 due to the confirmed presence of halogenated organics in soil and groundwater.

Early notice letters regarding the addition of the site to the Hazardous Sites Listing were sent to Robert Cash (West Coast Equipment) and Seaport Petroleum on July 20, 1996. In a letter dated

October 28, 1996, Ecology stated that because the site exceeds cleanup standards under MTCA, it must be cleaned up. However, the Attorney General's office did not have available staff to pursue cleanup under a Consent Decree or an Agreed Order, and that it is up to the property owner to decide which cleanup methodologies will work at the site and then proceed (Ecology 1996f). The facility's status is currently listed as "Cleanup Started."

Seaport Petroleum

Seaport Petroleum has operated the property since 1997. According to Ecology's Facility/Site Database, the facility was listed as a hazardous waste generator from October 30, 1997, to December 31, 2003. Currently, the facility operates as a small quantity generator of hazardous waste (Ecology 2009f).

An Urban Waters environmental compliance inspection was conducted at Seaport Petroleum on June 3, 2009 (Ecology 2009f). Outdated or damaged chemical product and leftover process waste from coolant recycling operations were observed at the property. Housekeeping practices and storm drain structure maintenance issues were noted. The following corrective actions were identified:

- Properly designate wastes: Provide documentation that designation of outdated chemical products and coolant wastes was performed.
- Properly dispose of wastes: Dispose of unused product at a properly permitted facility. Take proper precautions to prevent spills, including inspection and containment of storage areas. If quantities exceed the threshold for a small quantity generator, dangerous waste must be sent to a permitted hazardous waste treatment, storage, or disposal (TSD) facility.
- Conduct annual inspections and periodic cleaning of storm drain structure: Inspect stormwater catch basin located on the property.
- Implement proper housekeeping: Practices that should be implemented or improved include increasing the frequency of lot sweeping; regularly checking catch basins for sediment accumulation; cleaning up leaks and spills as they occur; prompt disposal of excess waste and old equipment; checking dumpsters for leaks and drips; repair of leaking equipment and vehicles; and use of absorbent pads to catch drips and spills.

An Ecology telephone record, dated April 13, 2010, indicated that Seaport Petroleum had disposed of all of the 5-gallon buckets of waste observed during the June 2009 inspection (Ecology 2010f).

SPU conducted an initial inspection at 7800 Detroit Avenue SW on February 7, 2011 (SPU 2011b). The inspector noted that the bermed containment around the unloading area has weep holes to that allows oily water to escape to the storm drain system. No large spill kits, which could handle larger spills such as a tanker rupture, were present. Catch basins contained sediment filters; staining was observed around the catch basins, indicating that they may contain oil. At the time of the inspection, a tanker was leaking due to a valve or hose malfunction; there was evidence of extensive petroleum leakage. Granular absorbent was used to contain the leakage; however, it was not picked up before rain washed most of it away (SPU 2011).

Housekeeping in outdoor storage areas was determined to be unacceptable: tanks and containers stored in the yard were leaking, and heavy oil stains were observed throughout the yard and along the fenceline. The following corrective actions were identified:

- Obtain NPDES permit for discharge.
- Storm drain facility needs to be cleaned.
- Implement proper housekeeping.
- Implement proper washing practices.
- Properly store containerized materials.
- Clean and eliminate leaks and spills from storage areas.
- Implement proper fueling operations.
- Implement proper material transfer practices.
- Properly dispose of waste.
- Properly label containers.
- Improve or purchase adequate spill response materials.
- Properly educate employees.

Follow-up inspections were conducted on February 23, 2011, April 6, 2011, and June 3, 2011. SPU indicated that Seaport Petroleum had complied with all corrective actions as of June 3, 2011. Ecology's findings from the April 6, 2011, inspection indicated that the facility needs to improve source control or may need coverage under the ISGP (Ecology 2012b [in preparation]).

Another initial inspection was conducted by SPU on January 26, 2012. The following corrective actions were noted:

- Properly store containerized materials.
- Clean and eliminate leaks and spills from storage areas.
- Implement proper material transfer practices.
- Properly dispose of waste.
- Develop and implement spill response procedures.

Ecology accompanied SPU on the January 2012 inspection to assess stormwater compliance. Based on the amount of petroleum observed on the ground at the facility and the potential for spills to get outside of containment and into storm drain lines, Ecology determined Seaport Petroleum was subject to coverage under the NPDES ISGP as a significant contributor of pollutants to waters of the state (Ecology 2012a). Ecology received an application for coverage in April and granted Seaport Petroleum coverage under NPDES ISGP on July 13, 2012 (Wright 2012).

Several corrective actions from the January 2012 inspection remained unresolved during an SPU inspection on March 8, 2012 (SPU 2012b) and April 24, 2012. On June 26, 2012, SPU and Seaport Petroleum entered into a Voluntary Compliance Agreement (VCA) (City of Seattle 2012c). The agreement established a schedule for Seaport Petroleum to complete a spill control system encompassing the bulk tanker unloading and product transfer area. Seaport Petroleum agreed to update their Spill Prevention and Counter Measure Plan (SPCC) and develop a SWPPP (City of Seattle 2012c).

Seaport Petroleum submitted a preliminary engineering plan on June 28, 2012. The preliminary engineering plan includes covering the transfer area with a roof, sloping the entire concrete fueling pad to the north, and installing a rollover curb on the west and south sides of the pad (SoundEarth 2012).

Seaport Food Mart

SPU conducted an initial inspection at Seaport Food Mart on September 24, 2010 (SPU 2010s). The oil/water separator at the diesel island contained a large amount of sediment and needed cleaning; this oil/water separator drains to the sanitary sewer. The gasoline island drains to the 1st Avenue S ditch. General housekeeping was good. The following corrective actions were identified:

- Storm drain facility needs to be cleaned.
- Missing or damaged components to storm drain facility need replacement/repair.
- Develop and implement spill response procedures.
- Improve or purchase adequate spill response materials.
- Properly educate employees.
- Maintain pretreatment system.

Compliance with the corrective actions was achieved on January 4, 2011 (Ecology 2010s).

5.8.4 Environmental Investigations and Cleanups

Investigations were conducted at West Coast Equipment 2 between 1990 and 1996. Sampling results are presented in Appendix C; Tables 15 and 16 summarizes chemicals detected at concentrations above screening levels in soil and groundwater, respectively.

<u>Eastern Supply Groundwater Monitoring (1990)</u>

A Site Hazard Assessment was prepared by Ecology during October 1990 for the former Eastern Supply Company property, 7745 1st Avenue S, located directly to the north of the Seaport Petroleum/West Coast Equipment 2 property. Monitoring well MW-9 was constructed on the subject property as part of the SHA (Figure 20).

<u>Phase I ESA (1992)</u>

GeoEngineers conducted a Phase I Environmental Site Assessment in March 1992 (GeoEngineers 1992). The property was vacant at that time. The property had been recently cleaned up in preparation for sale, and was generally bare of vegetation with the exception of a small amount of grass and brush in the northeast corner. Trash, debris, and stained surface soil had reportedly been removed from the property. The surface was ripped to facilitate removal of partially buried wood and metal debris, and then was regraded and compacted. At the time of a February 19, 1992 facility visit, minor amounts of wood and metal debris were visible on the surface. Some oil staining was observed on the concrete slab of the shed on the west side of the property. Two 55-gallon drums containing soil and one containing purge water from monitoring well construction near the northwest corner remain onsite.

Site Characterization - Kiln Dust and Molten Metal Process Waste Fill (1995)

A Site Characterization Report was prepared by the James P. Hurley Company for Mr. Tom Lee in February 1995. The Hurley study reported the presence of arsenic, cadmium, chromium, and lead in soil samples at concentrations above the MTCA Method A cleanup levels for industrial soil. Five test pits were excavated on the property. Representative samples of slag and kiln dust were submitted for total metals analysis (KM&S 1995). All four slag samples and all four kiln dust samples contained arsenic, cadmium, chromium, and lead above the MTCA Method A cleanup levels (Table 15). Concentration ranges are listed below:

	Kiln Dust (mg/kg)	Slag (mg/kg)
Arsenic*	200-400	28-64
Cadmium	5.9-12.0	1.9-5.7
Chromium*	17-270	940-2,700
Lead*	1,100-2,400	55-480
Mercury	ND	0.13
Zinc*	690-1,200	100-490

*Data qualified due to problems with matrix spikes/ matrix spike duplicates.

These metals were not detected when subjected to the TCLP. The Hurley Company estimated that approximately 60,000 cubic yards of kiln dust and approximately 300 cubic yards of slag are present on the property (James P. Hurley 1995).

Site Characterization (1996)

GeoEngineers conducted a Site Characterization in 1996 (GeoEngineers 1996). The characterization included excavation of 10 test pits to depths ranging from 6.5 to 12.5 feet bgs; collection of one slag sample, one CKD sample, and one or more native soil samples from each test pit; analysis of samples for TPH and quantification of gasoline-range and diesel- to heavier-oil range hydrocarbons, metals, and pH; analysis of one slag sample and CKD sample for analysis of TCLP metals; drilling of two soil borings to depths of 12.5 and 17.5 feet bgs (MW-2 and MW-3); analysis of three soil samples (slag, CKD and native soil) from each boring for petroleum hydrocarbons and metals; installation of monitoring wells in both borings, and sampling/analysis of groundwater from these two wells and MW-9 for petroleum hydrocarbons, VOCs, metals, and pH; and assessment of the lateral and vertical extent of soil and/or groundwater contamination.

GeoEngineers excavated 10 shallow test pits (TP-1 through TP-10) and advanced two shallow borings (MW-2 and MW-3) were excavated between January 30 and February 2, 1996 (GeoEngineers 1996). Soil samples were collected from the fill material above the CKD, within the CKD layer, and from native soil beneath the CKD layer. Monitoring wells were installed in the two shallow borings.

The surficial soil encountered at the property generally consisted of loose to medium dense brown silty sand with varying amounts of slag, gravel, and organic material. The layer or surficial soil was about 0.5 to 2 feet thick. The surficial silty sand was underlain by dense to very dense white and gray CKD. The CKD layer ranged from 1.5 to 6 feet thick. The CKD was underlain by loose to medium dense gray sand with varying amounts of silt.

Two groundwater monitoring wells (MW-2 and MW-3) were installed near the southwest and northeast corners of the property, respectively (Figure 22). The depth to groundwater beneath the property ranged from 3 feet at MW-2 to 13.5 feet at MW-9. Shallow groundwater flow appeared to be toward the northwest at a gradient between 0.02 and 0.07 feet per foot (GeoEngineers 1996).

A total of 44 soil and three groundwater samples were collected and analyzed. Diesel- and/or heavy oil-range petroleum hydrocarbons were detect at concentrations exceeding the MTCA cleanup level in nine of 12 soil samples collected from the surficial soil layer and in four of 13 soil samples collected within the CKD layer (Table 15). Gasoline-range hydrocarbons were detected in one soil sample from the CKD layer at a concentration above the MTCA cleanup level. Petroleum hydrocarbons were not detected in soil samples collected from beneath the CKD layer. Chromium was detected in four of 12 soil samples collected from surface soil at concentrations above the MTCA cleanup level; it was not detected above the cleanup level in soil samples collected from the CKD and native soil horizons. Lead in one sample each from the surface soil and CKD layers exceeded the MTCA cleanup level (GeoEngineers 1996).

In groundwater, arsenic, chromium, and lead were detected at concentrations above the MTCA groundwater cleanup levels (Table 16).

Offsite treatment was identified as a potential remedial technology for petroleum-contaminated surface soils in the southern portion of the property, near test pits TP-8, TP-9, and TP-10. Isolation and monitoring was proposed for the CKD containing concentrations of metals exceeding the MTCA soil cleanup levels in the southern portion of the property, near test pits TP-4, TP-5, TP-9, and TP-10 (GeoEngineers 1996).

No information about whether any remediation was performed at the property was available in the files reviewed during preparation of this Data Gaps Report.

5.8.5 Potential for Sediment Recontamination

This property was historically occupied by West Coast Equipment and used for storage of equipment and parts. Seaport Petroleum and Seaport Food Mart currently occupy the property. Slag and CKD were used as fill material during the 1960s. The potential for sediment recontamination from this property is summarized below by transport pathway.

Soil and Groundwater

Approximately 60 cubic yards of CKD was imported to the property as fill material in the mid-1960s. Up to 300 cubic yards of slag was imported to the property and placed over the CKD as surfacing material. The following chemicals have been detected at concentrations above MTCA cleanup levels and/or sediment screening levels at the property (Tables 15 and 16):

Chemical	Soil: Maximum Exceedance Factor (MTCA Soil Cleanup Level)	Soil: Maximum Exceedance Factor (Soil-to-Sediment Screening Level)	Groundwater: Maximum Exceedance Factor (MTCA GW Cleanup Level)	Groundwater: Maximum Exceedance Factor (GW-to-Sediment Screening Level)
Arsenic	597	<1	2,586	<1
Barium	11	--	<1	--
Cadmium	6.0	7.1	--	--
Chromium	142	10	6.6	<1
Lead	18	69	6.4	7.4
Mercury	--	5.7	--	--
Silver	--	16	--	--
Benzene	--	--	1.1	--
TPH-Diesel	1.7	--	1.9	--
TPH-Gasoline	7.0	--		
TPH-Oil	2.8	--	1.5	--

Exceedance factor = maximum detected concentration / cleanup level or screening level.
MTCA cleanup level is lower of Method A or Method B values.
Soil-to-sediment screening levels and groundwater-to-sediment screening levels per SAIC 2006.
See Tables 15 and 16 for additional information.

Because of these significant exceedances of MTCA cleanup levels and/or sediment screening levels, and because no remediation has been performed to remove contaminated soils or groundwater from this property, contaminants (particularly metals) associated with historical contamination at the property may be transported to the LDW. However, contaminated groundwater from this property flows toward a series of wetlands and stormwater detention ponds that ultimately discharge to the LDW. Metals have not been detected at concentrations above regulatory criteria in LDW sediments near this discharge point. Therefore, while there is a potential for adverse impacts to surface water and sediments in the wetlands, the potential for LDW sediment recontamination is believed to be low to moderate.

Stormwater

Facility inspections conducted between June 2009 and April 2012 identified numerous corrective actions related to housekeeping, improper storage/handling of unused product and waste materials, and cleaning of storm drain structures. Based on available information, current practices at this facility may result in discharges of contaminants to stormwater and ultimately to the LDW. Contaminants associated with this facility are petroleum hydrocarbons, which contain PAHs. Acenaphthene (a PAH compound) is a COC for sediments near RM 2.1 West, and cPAHs are COCs for LDW sediments. Stormwater is transported from this facility to the central wetland area via the 1st Avenue S ditch. The potential for LDW sediment recontamination associated with stormwater discharges from this facility is therefore believed to be low.

In June 2012, SPU and Seaport Petroleum entered into a VCA to address stormwater source control noncompliance. After the completion of source control structures, the potential for sediment recontamination associated with stormwater discharges from this facility will be greatly reduced.

5.8.6 Data Gaps

Additional information about remediation activities that have been performed at this property, if any, is needed to assess the potential for metals in soil and groundwater to be transported to the storm drain system or the nearby wetland area, and subsequently to LDW sediments.

Additional information regarding compliance with the VCA and implementation of the preliminary engineering plan is needed to determine the potential for sediment recontamination via the stormwater pathway.

5.9 Former West Coast Equipment

Facility Summary: Former West Coast Equipment	
Address	7777 Detroit Avenue SW 98106
Tax Parcel No.	3024049158
Property Owner	Thidwick Management Co
Parcel Size	1.52 acres (66,085 sq ft)
Facility/Site ID	2262 (West Coast Equipment Inc)
Alternate Names	Contractors Equipment Co.; Meyers Bros Roofing Inc; Walsh Construction
SIC Code	5015: Motor Vehicle Parts, Used
EPA ID No.	None
NPDES Permit No.	None
UST/LUST ID No.	None

West Coast Equipment was a heavy equipment repair and sales facility located at 7777 Detroit Avenue SW from 1963 to September 1991. The property consists of a single 1.52-acre parcel located on the west side of Detroit Avenue SW, just north of SW Kenyon Street (Figure 11). To the west and north of this parcel is the MacDonald Miller Company. The company stored equipment and parts associated with the repair facility at West Coast Equipment 2, located directly across Detroit Avenue SW at 7800 Detroit Avenue SW (previously known as 7746 Detroit Avenue SW).

According to King County Tax Assessor records, there are two buildings located on the property: a 6,000-sq ft prefabricated steel industrial building, constructed in 1962, and 1,600-sq ft steel storage shed, constructed in 1990. The property is owned by Thidwick Management Company, who purchased it in December 2007 from Eugene and Theresa Meyer.

5.9.1 Current Operations

Current operations at this property are unclear; the property may be occupied by multiple tenants. An environmental compliance inspection was conducted by Ecology on May 25, 2010, at Contractors Equipment Company, 7777 Detroit Avenue S (Ecology 2010h). SPU's December 2010 Source Control Status Report indicates that a spill kit was provided to Walsh Construction at this address on June 28, 2010 (SPU 2010z).

According to the May 2010 inspection at Contractors Equipment Company, activities at the property include storage of liquid hazardous waste and truck washing. Stormwater catch basins at the facility discharge to a ditch located on the bottom of the hillside, west of the facility boundary.

No other information about current operations at this property was available at the time this Data Gaps Report was prepared.

5.9.2 Historical Operations

West Coast Equipment was located at 7777 Detroit Avenue SW from 1963 to September 1991. The site was used for steam cleaning and repairs of heavy equipment. According to Tom Cash, the facility operator, no hazardous materials were stored at the facility. Commercial sand and gravel fill were placed on the property periodically

Meyers Brothers Roofing was located on this parcel from late 1991 until 2007 (Huff 2007). When Meyers Brothers acquired the property, it was mostly gravel; West Coast Equipment had reportedly removed localized areas of petroleum-contaminated soil before vacating the facility. During a 2007 facility visit, Farallon Consulting observed several scrap metal laydown areas throughout the facility and the adjacent hillside. The laydown areas were not covered and/or contained, and surface water runoff from these areas was directed into the stormwater catch basins (Huff 2007).

According to Farallon Consulting (Huff 2007), there is a 1996 permit for the installation of a gasoline UST and fuel pump on the property; however, the tank was never located.

5.9.3 Regulatory History

West Coast Equipment

An Ecology ERTS Initial Report was filed on April 24, 1990 for the West Coast Equipment property at 7777 Detroit Avenue SW. The report identified oil/petroleum contamination of soil from an unspecified source, and indicated that the company was planning to move without remediation of contaminated soil. The report further indicated that a backhoe at the site encountered oily sediment at approximately 4 feet bgs (Ecology 1990b).

Subsequently, an SHA was performed for this site, and it was place on Ecology's list of known or suspected contaminated sites in July 1990 for confirmed petroleum contamination of soil, and suspected contamination of soil, surface water, and groundwater with halogenated organics (Ecology 1990c, 1996d). Current site status is listed as "Awaiting Cleanup."

Contractors Equipment Company

An Urban Waters environmental compliance inspection was conducted at Contractors Equipment Company on May 25, 2010 (Ecology 2010h). Inspectors noted that small quantities of liquid hazardous waste were being stored without secondary containment near a catch basin that may connect to the storm drain system. The operator occasionally washes trucks on the paved lot in an area that slopes toward a catch basin; the inspector was not able to determine whether this catch basin drains to the storm drain system or the sanitary sewer. Oil stains were observed on the lot under heavy equipment, and some of the stains were near catch basins that may drain to the stormwater system. The following corrective actions were identified:

- Properly store liquid fuels and hazardous materials.
- Contain all wash water, or provide evidence that the catch basins are not connected to the storm drain system.
- Improve or create spill response procedures.
- Clean and eliminate leaks and spills from storage areas.

A notice that compliance had been achieved was sent by Ecology to Contractors Equipment Company on August 17, 2010 (Ecology 2010j).

5.9.4 Environmental Investigations and Cleanups

A Phase I ESA was prepared for this site by CS&A in May 1991, and a Phase II ESA was prepared by GeoEngineers in August 1991 (GeoEngineers 1992). These reports were not available in the files reviewed during preparation of this Data Gaps Report.

Surface staining, debris, and trash were noted at the site during the 1991 Phase I ESA prepared by CS&A. In August 1991, GeoEngineers prepared a Phase II ESA for this property. During this study, a minor amount of petroleum contamination was found in the area of the site, which had previously contained a UST. The stained surface soils noted in the Phase I study and contaminated subsurface materials in the vicinity of the tank were removed from the site. Test results indicated that concentrations of petroleum hydrocarbons remaining onsite were below MTCA cleanup guidelines (GeoEngineers 1992).

During a site reconnaissance in 2007 conducted by Farallon Consulting, more than 100 55-gallon drums were observed throughout the site (Huff 2007). Several of the drums were located on the boundaries of the site and were overgrown with blackberry bushes. Not all of the drums were labeled and some of them appeared to be in poor condition with extensive rusting. After discussions with the property owner and inspection of several of the labeled drums, it was concluded that the drums contained asphalt products that may include petroleum products, mineral spirits, solvents, and methyl ethyl ketone (MEK). Farallon also observed extensive surface staining in and around the former steam cleaning building (Huff 2007).

5.9.5 Potential for Sediment Recontamination

West Coast Equipment, which operated at 7777 Detroit Avenue SW between 1963 and 1991, is listed on Ecology's CSCSL for confirmed contamination of soil with petroleum hydrocarbons, suspected contamination of soil with halogenated and non-halogenated organic compounds, and suspected contamination of groundwater and surface water with halogenated and non-halogenated organics. Current operators include Contractors Equipment Company and Walsh Construction. The potential for sediment recontamination associated with this property is summarized below by transport pathway.

Soil and Groundwater

While some stained surface soils and contaminated subsurface soil near a former UST location were removed in 1991, the site is listed as "awaiting cleanup." Contaminants present in soil and groundwater, if present, could represent a source of contaminants to the wetlands near the site, which ultimately discharge to the LDW. However, petroleum hydrocarbons and solvents are not considered COCs for LDW sediments; while contaminants in soil and groundwater at this site may pose a risk of adverse environmental impact to the wetland, they are unlikely to result in LDW sediment recontamination.

Stormwater

Current activities at the site were evaluated during a May 2010 environmental compliance inspection; as of August 2010, the facility had implemented or was working towards implementation of all corrective actions. Therefore, current activities at the site are not likely to impact LDW sediments.

5.9.6 Data Gaps

No data gaps were identified for the West Coast Equipment property with respect to the potential for LDW sediment recontamination.

5.10 MacDonald Miller Company

Facility Summary: MacDonald Miller Company	
Address	7707 Detroit Avenue SW 98106 7717 Detroit Avenue SW 98106
Tax Parcel No.	3024049075 (7707 Detroit Ave SW) 3024049026 (7717 Detroit Ave SW)
Property Owner	F&V Investments LLC
Parcel Size	Parcel 9075: 2.59 acres Parcel 9026: 13.89 acres
Facility/Site ID	36776588 (MacDonald Miller Service Inc; 7707 Detroit Ave SW) 21626 (MacDonald Miller Co Inc; 7717 Detroit Ave SW)
SIC Code	1711: Plumbing, heating, air-conditioning 7349: Building maintenance services, NEC 7623: Refrigeration service and repair
EPA ID No.	WAD982820995
NPDES Permit No.	None
UST/LUST ID No.	101253

5.10.1 Current Operations

MacDonald Miller Company (MacDonald Miller) is a tenant on two parcels owned by F&V Investments LLC. The property is bordered by Seattle Parks Department property to north and west, by Detroit Avenue SW and other industrial properties to the east, and by residential and other industrial properties to the south (Figure 11).

The facility consists of an upper area (Parcel 9026), on a hill and surrounded by woods, which overlooks a lower area at street level (Parcel 9075).

According to King County Property Tax Assessor records, there are three buildings present on Parcel 9075: an 8,000-square foot masonry storage warehouse built in 1988; a 4,000-square foot prefabricated steel machine shop built in 1997, and a 3,375-square foot masonry material storage shed built in 1995. In addition, Parcel 9026 contains a 30,660-square foot masonry storage warehouse built in 1988, and a 4,000-square foot prefabricated steel material storage shed built in 1999.

MacDonald Miller (currently known as MacDonald Miller Facility Solutions) provides mechanical engineering, design-build construction, custom metal fabrication, building system service and maintenance, and energy management program services. The company's corporate headquarters is located at 7717 Detroit Avenue SW; it employs approximately 100 staff and has been at this location since 1989 (SPU 2010k).

The facility generates the following wastes/materials that are shipped offsite for disposal: antifreeze (55 gallons/year), batteries, fluorescent light tubes, metals, aerosol cans of paints/coatings, petroleum/oils (55 gallons/year), solvent rags/uniforms (SPU 2010k). Pollution-generating activities include vehicle washing, loading or unloading of liquid or solid materials, outside portable container storage of products and equipment/materials awaiting disposal or recycling, and repair/maintenance of vehicles outside.

In May 2010, SPU and Ecology inspectors noted that ditches and/or French drains had been installed to prevent slope failures; these are believed to connect to the storm drain system.

5.10.2 Historical Operations

Six single-wall USTs were reportedly installed in 1988, and were used by the property's previous owner (a general construction contractor) for storage of gasoline, No. 2 diesel, and supply oil to service company vehicles (MacDonald Miller 1992). No secondary containment system was present. The following tanks were present:

UST #	Capacity	Product
1	2,000 gallon	Waste oil
2	1,000 gallon	30W oil
3	1,000 gallon	10W oil
4	10,000 gallon	Diesel
5	10,000 gallon	Diesel
6	6,000 gallon	Unleaded gasoline

The tanks were filled with an inert concrete mix and permanently closed in place by Marine Vacuum Service in March 1992 (MacDonald Miller 1992).

5.10.3 Regulatory History

MacDonald Miller was listed as a small quantity generator of hazardous waste from December 1995 through March 1996. At that time, MacDonald Miller indicated that wastes (oil and glycol mixtures) were recycled through an outside contractor (Ecology 2010b).

SPU and Ecology conducted a source control inspection at MacDonald Miller on May 24, 2010. The following corrective actions were requested (SPU 2010n):

- Implement source control, including housekeeping measures, for pollution-generating activities, including inspection of garbage compactor and storage areas for leaks and spills; frequent sweeping of surfaces to remove accumulated debris; placement of drip pans in areas where leaks or spills may occur; no washing or hosing down of areas that drain to the storm drain system; and removal of excess waste and old equipment.
- Develop a plan and implement a procedure to prevent spills and other accidental releases of materials that may contaminate drainage water.
- Provide necessary containment and spill response equipment on site, in both upper and lower portion of the facility. Train employees on the spill plan and the location/use of spill response equipment.
- Manage wastes appropriately, including providing secondary containment and cover for all dangerous waste stored outside, including the five drums of antifreeze that were being stored without cover or containment at the time of the inspection; keeping containers tightly closed except when in use; keeping waste containers away from storm drains and under cover; keeping emergency information near waste storage areas; cleaning up leaks and spills promptly; and inspecting waste containers regularly for leaks or damage. Properly label containers.

On May 27, SPU staff returned to the facility to conduct dye testing of the wash pad. SPU confirmed that the wash pad drains to an oil/water separator that discharges to the sanitary sewer (SPU 2010m).

A follow-up inspection was conducted on July 29, 2010 (SPU 2010q). All corrections had been made and the facility was in compliance with source control best management practices at that time (SPU 2010r).

5.10.4 Environmental Investigations and Cleanups

The James P. Hurley Co. conducted a site investigation in March and April 1992, prior to closure in place of the six USTs (MacDonald Miller 1992). The purpose of the investigation was to confirm the presence or absence of significant petroleum contamination in soil and groundwater near the USTs. The investigation included a visual inspection of the surrounding soil and groundwater on March 16 and April 3, 1992; collection of soil and groundwater samples for analysis of TPH (Methods WTPH-G, WTPH-D, and EPA 418.1); and preparation of site closure checklists.

Four groundwater samples were collected from three monitoring wells in the vicinity of the UST excavation, and representative soil samples were collected from beneath the dispenser pump island. TPH was not detected with the exception of one soil sample, which contained diesel-range hydrocarbons at 1,100 mg/kg (below the current MTCA Method A cleanup level for TPH-diesel). Based on visual observations, a small quantity (less than five cubic yards) of petroleum-contaminated soil was present in the vicinity of the pump island. The contaminated soil was removed from the excavation and set aside for on-site remediation or disposal.

5.10.5 Potential for Sediment Recontamination

MacDonald Miller has operated at this location since 1989. The potential for sediment recontamination associated with this property is summarized below by pathway.

Soil and Groundwater

Six USTs were installed by a previous owner at this property; these were closed in place in 1992, and little or no soil contamination was identified at that time. There is no other information to indicate that there may be soil or groundwater contamination at this facility. The potential for sediment recontamination associated with the groundwater pathway is therefore low.

Stormwater

Based on a source control follow-up inspection conducted on July 29, 2010, this facility is in compliance with source control best management practices, and has applied for coverage under the ISGP; therefore, the potential for sediment recontamination associated with the stormwater pathway is believed to be low.

5.10.6 Data Gaps

No data gaps were identified for this property.

5.11 Kenyon Street Property

Property Summary: Kenyon Street Property	
Address	149 SW Kenyon Street 98106 8111 1st Avenue SW 98106
Tax Parcel No.	3124049004, 3124049009
Property Owner	Kenyon Street Partners
Parcel Size	9004: 2.9 acres (126,456 sq ft) 9009: 0.14 acres (5,882 sq ft)
Facility/Site ID	4504516 (Dr Concrete Recycle) 4709 (Waste Management CNG Upgrades)
Alternate Names	Kenyon Street Property, Autoclave Building “D” (Parcel 9004); Waste Management Fleet Operations (Parcel 9009)
SIC Code	5093: Scrap and Waste Materials; 4212: Local Trucking without Storage
EPA ID No.	NA
NPDES Permit No.	SO3005621 (Dr Concrete Recycle; inactive) WAR011357 (Waste Management CNG Upgrades; inactive) WAR000582 (Waste Management 1st Ave; active)
UST/LUST ID No.	NA

The Kenyon Street Property is located at 149 SW Kenyon Street (Figure 12). To the north of the property is SW Kenyon Street and Seaport Petroleum, to the east is Intermountain Supply (formerly Recycle America), and to the south and southeast are parcels operated by Waste Management. To the west is a residential property and a series of parcels owned by Prentice Holdings LLC (parcels 3124049148, 3124049149, 3120409150). Parcel 3124049148, identified in King County Tax Assessor records as a vacant property at 8100 Detroit Avenue SW, appears to be used for outdoor storage of lumber, pipe, and other construction materials. A hill and greenbelt area rises upwards to the west.

According to King County Tax Assessor records, there is one 4,800-sq ft prefabricated steel manufacturing building, constructed in 1981, present at the property. Other features include a wash pad, a fuel dispenser island, and a paved parking area. The property was purchased by Kenyon Street Partners LLC on April 17, 2008, from Kenyon Company LLC. Previously, the property was owned by various members of the Kidd family; they had acquired the property in 1979 from M.F. Yousoofian, who had purchased it from Ben Arnold in January 1968. Mr. Arnold purchased the property in August 1964 from Delbert Kilgove, who had owned it since December 1926.

The general soil profile at the property consists of fill (CKD, crushed glass, or other materials) to depths of 2 to 10 feet bgs, a thin layer of black organic silt underlying the fill material in parts of the facility, and native, tan to black silty sand to a total depth of 16 feet bgs (SES 2007). A surficial layer of CKD was observed over the northwest portion of the site. The organic layer is believed to be a remnant of a wetland that existed prior to original filling and development of the property. Groundwater was typically encountered at 6 to 13 feet bgs, and generally flows in an easterly direction (SES 2007).

5.11.1 Current Operations

Based on a September 2011 SPU inspection, this property is currently occupied by WM – Healthcare Solutions, Inc., a subsidiary of Waste Management. This is a treatment facility for disinfection of international wastes, including produce confiscated at border crossings and trash from international terminals at airports and docks. The facility has recently begun autoclaving of biomedical waste (SPU 2011f). The facility currently uses Waste Management's 8111 1st Avenue S address. Activities at Waste Management 1st Avenue S are discussed in Section 5.13.

The autoclave uses about 600 gallons per cycle; about 540 gallons are recaptured in a closed loop system. About 60 gallons per cycle (or approximately 500 gallons per day) are pretreated through an oil/water separator prior to discharge to the sanitary sewer. Medical waste totes/bins are cleaned out at an outdoor covered wash rack using a dilute bleach solution. The wash rack discharges to the sanitary sewer. Treated waste from the autoclaves are transported by rail to a landfill in Arlington or to the Waste Management landfill in Wenatchee.

Seven storm drain catch basins are located on the property. Stormwater is treated through two coalescing oil/water separators, and is discharged to a biofiltration swale on the north end of the property (SPU 2011g).

As of April 2011, a Clean N' Green fueling station was located on the northern end of this property. The southern portion of the parcel is used for parking of Waste Management trucks.

5.11.2 Historical Operations

Prior to the early 1960s, three residences were located on this property: one constructed in 1896, and two constructed in 1951. All were reportedly removed in 1967.

Seattle Department of Planning and Development records included a 1957 permit (No. 457059) to establish use as a wrecking yard and to occupy the existing warehouse building as an office; a

1958 permit (No. 469603) to construct a storage building; a 1972 permit (No. 543293) to alter the existing building; and a 1981 permit application to construct an all-steel open storage building. A 1958 facility plan indicated the presence of an auto wrecking yard on the project site (SES 2007). The property was identified as Sittner Auto Wrecking (143 ½ SW Kenyon Street) in 1953; South End Auto & Truck Wrecking (123 SW Kenyon Street) in 1954; and as Newton Auto Parts & Wrecking (121 SW Kenyon Street) in 1967 (SES 2007).

In a 1974 aerial photo, the Kenyon Street Property and parcels to the east appeared to have increased surface elevation than in earlier photos, and portions of both parcels were covered with a white material, believed to be CKD fill (SES 2007). By 1980, most of the parcel had been covered with asphalt, and a large warehouse had been constructed to the east; the property was used for storage of trailers and conex boxes.

The Seattle City Directory listed Eastern Supply Company at 122 S Kenyon Street between 1970 and 1975 (Riley 1999b). No other information indicating that Eastern Supply operated at this location was identified.

A 1999 Phase I ESA at the adjoining property to the east indicated that Recycle America leased and managed this property and used it to store stockpiles of unsorted recyclable materials; Recycle America reportedly had a waste discharge permit to discharge stormwater that drained through the stockpile to the sanitary sewer (Riley 1999b).

At the time of a 2007 environmental assessment, the property was covered by crushed rock and asphalt. One building and a small surface detention pond were present at the northern portion of the property (SES 2007). CKD material was observed at the surface on the northwest corner of the project site. A stormwater drainage ditch flowed eastward along the northern property boundary (along SW Kenyon Street). Surface water was observed to be present in the ditch throughout the year, even when no significant rainfall occurred (SES 2007). Stormwater and groundwater from the project site and from the higher-elevation parcels to the west of the property appeared to flow into the drainage ditch.

Dr Concrete Recycle reportedly operated at this property between 2004 and 2008; exact dates were not identified. A building permit was issued by the City of Seattle in December 2008 for the construction of an addition to the maintenance building, a site retaining wall, and a new 5,698-sq ft structure for a recycling facility. In addition, the project included a 7,304-sq ft addition to an existing automotive retail sales and service facility at the property.

5.11.3 Regulatory History

Soil and Groundwater Contamination

In 2006 to 2007, as part of a planned redevelopment of the property, an assessment of environmental conditions was conducted for GPH-AHF, LLC (SES 2007). Results of the subsurface investigation conducted at the property indicate that CKD was used as fill material at this location in the early 1970s. The CKD fill layer contains arsenic, cadmium, and lead concentrations typical of the CKD material found at other locations in the LDW basin.

Facility improvements, including capping of exposed CKD with asphalt and modification of the drainage system to include an underground detention vault, catch basins, and buried stormwater conveyance pipelines, were proposed as a remedial plan for the property. A covenant or general deed restriction that limits the property to non-residential use was also proposed (SES 2007).

Kenyon Street Partners LLC applied to Ecology's VCP (NW1841) in September 2007 as a future property owner (Kenyon Street Partners 2007). The current property owner was listed as Kenyon Company LLC, and the current business owner was identified as Waste Management (8111 1st Avenue S). The source of releases was listed in the application as area-wide lead and arsenic soil contamination due to the use of CKD as fill material beneath the property.

In 2007, after a preliminary review of the subsurface investigation conducted at the facility (Section 5.11.4), Ecology expressed concern about other types of contaminants that may be present at the site but which were not included in the investigation. Specifically, past use of the property as an auto wrecking yard was identified as a concern; auto wrecking yards are sometimes associated with hydrocarbon contamination and potentially high levels of PAHs, PCBs, volatile organics, and other metals (Adams 2008). In addition, the spacing and location of monitoring wells did not appear to adequately characterize the central and southern portions of the property; additional site characterization was needed.

On February 1, 2008, SES requested that Ecology remove the site from the VCP program, and indicated that additional investigations would be performed at the property (Funderburk 2008). No information about future investigations at this property was present in the files reviewed during preparation of this Data Gaps Report.

Dr Concrete Recycle is currently listed on Ecology's CSCSL for confirmed contamination of soil and surface water with priority pollutant metals, and confirmed contamination of soil with arsenic. The current status is listed as "Cleanup Started."

Stormwater

An ISGP (SO3005621) was issued to Dr Concrete Recycle, 149 SW Kenyon Street, in May 2004; the permit expired in December 2008. This property was previously included in the stormwater general permit for Waste Management at 7901 1st Avenue S (Ecology 2000b), and is currently included with ISGP No. WAR000582 (Waste Management of Seattle 1st Ave; see Section 5.13).

According to the Facility/Site Database, a construction stormwater general permit (WAR011357) was issued by Ecology in December 2008 for "Waste Management CNG Upgrades" (FSID 4709), located at 149 SW Kenyon Street and 8111 1st Avenue S. The permit expired in September 2010.

Dr Concrete Recycle

A stormwater compliance inspection was conducted by Ecology in May 2007 (Ecology 2007f). During the inspection, stormwater was observed to be discharging from the facility into a ditch along the west side of the driveway between the Kenyon Street Property and the Waste Management property to the east. The discharged stormwater appeared turbid and was collecting in a low point in the ditch; it appeared to originate from the facility's gravel/mud lot. The ditch was stabilized with vegetation and led north to a pipe, which discharged into a detention pond. Inspectors observed dirt being tracked out from the Dr Concrete site onto the driveway, and several containers of oil, hydraulic oil, and other unidentifiable chemicals were observed outside with no cover or secondary containment. The facility had not been sampling stormwater and submitting quarterly DMRs to Ecology.

The following corrective actions were identified (Ecology 2007f):

- Develop and implement a SWPPP.
- Collect quarterly stormwater samples and submit DMRs as required by the permit.
- Do not discharge stormwater with a pH outside of the 5 to 10 range.
- Implement proper chemical handling BMPs, such as cover and containment, for all chemicals at the facility.
- Increase sweeping and cleaning frequencies in the roads, or install a tire wash to prevent discharges of turbid water to the drainage ditch and stormwater pond.

A non-compliance warning letter was sent by Ecology to Dr Concrete Recycle on May 16, 2007 (Ecology 2007g). No information on follow-up inspections, if any, was available in the files reviewed during preparation of this Data Gaps Report.

<u>WM – Healthcare Solutions</u>

A source control inspection was conducted by SPU and Ecology on September 20, 2011, at this and the adjacent Waste Management properties (see Section 5.13). This facility disinfects international wastes and processes biomedical waste. General housekeeping was observed to be good, and no corrective actions were identified (SPU 2011f).

5.11.4 Environmental Investigations and Cleanups

Sampling results for chemicals detected in soil and groundwater at this facility are provided in Appendix C. Results for chemicals that exceed screening levels in soil and groundwater are listed in Tables 17 and 18, respectively.

Phase I Environmental Site Assessment

A Phase I ESA was reportedly prepared by MDE, Inc.; this report was not available in the files reviewed during preparation of this Data Gaps Report. According to SES 2007, the ESA did not identify any recognized environmental conditions associated with current or former use of the property. According to Mr. Dan Bridges, the district manager for Waste Management, Waste Management had conducted a remediation at the northern portion of this property, but this information could not be verified (SES 2007).

Subsurface Site Investigation (2006 to 2007)

Based on a review of historical information and the Phase I ESA findings, heavy metals associated with the CKD fill were identified as the COCs at this property (SES 2007). Three subsurface investigations were conducted at the property, in September 2006, February 2007, and June 2007. A total of six push-probe soil borings (B-01 to B-06) and 10 hollow-stem auger borings (B-07 to B-16) were drilled to approximately 16 feet bgs. Eight of the borings were completed as monitoring wells as follows (Figure 23): B-01 became MW-01; B-02 became MW-02; B-06 became MW-03; B-07 became MW-04; B-08 became MW-05; B-14 became MW-06; B-15 became MW-07; and B-16 became MW-08 (SES 2007).

During the three investigations, 14 soil samples were collected from boreholes and 13 filtered groundwater samples were collected using low-flow sampling techniques. In addition, three surface water samples (SW-E, SW-C, and SW-W) were collected from the drainage ditch that runs along SW Kenyon Street during a seasonal rainfall event on February 22, 2007 (SES 2007).

One sample of CKD from borings B-01 through B-06, one soil sample collected immediately below the CKD, and one sample of native soil were collected and analyzed for Resource Conservation and Recovery Act (RCRA) metals (arsenic, barium, cadmium, chromium, lead, silver, copper, nickel, and zinc). One CKD sample was analyzed according to the TCLP. One soil sample was collected from immediately below the CKD layer in borings B-07 through B-12, and analyzed for RCRA metals. One soil sample, from boring B-12, was analyzed for PCBs. Surface water and filtered groundwater samples from MW-01 through MW-05 were analyzed for dissolved metals (arsenic, barium, cadmium, chromium, lead, silver, copper, nickel, zinc, and mercury).

Arsenic (3.0 to 327 mg/kg), cadmium (1.9 to 9.1 mg/kg), and lead (3.5 to 2,550 mg/kg) exceeded MTCA cleanup levels in some or all soil samples (Table 17). In addition, silver (1.2 to 4.8 mg/kg) exceeded the soil-to-sediment screening level in six samples. All of the representative CKD fill samples contained arsenic, lead, and/or cadmium above MTCA Method A cleanup levels. Soil sample collected immediately beneath the CKD layer contained lower concentrations of metals, and no petroleum hydrocarbon contamination was observed. The vertical and lateral extent of the metal contamination at the project site appeared to be limited to the distribution of the CKD fill. PCBs were not detected. Results for detected chemicals are listed in Appendix C, and screening level exceedances are summarized in Table 17.

Monitoring wells MW-01, MW-02, MW-03, MW-06, and MW-07 were screened below the CKD layer, while well MW-04 was screened within the CKD layer. CKD was not encountered during the installation of MW-05 or MW-08. Depth to groundwater was measured in July 2007, and ranged from 4.8 feet bgs in MW-08 to 8.0 feet in MW-06 (SES 2007).

Groundwater sampling and testing was conducted between September 2006 and September 2007 (SES 2007). MW-03 was damaged by activities conducted by Dr Concrete Recycle, the concrete crushing facility operating on the property after the first round of sampling in September 2006. In addition, access to many of the wells was limited by the facility's operations. Arsenic exceeded the MTCA groundwater cleanup level (0.058 ug/L) in all groundwater samples, with concentrations from 1.4 to 100 ug/L; the highest concentrations were detected in MW-02, MW-04, and MW-07, located at the northern property boundary (Figure 23). Lead exceeded the groundwater-to-sediment screening level and MTCA groundwater cleanup level in samples from MW-01 and MW-02. Chromium exceeded the MTCA groundwater cleanup level in a sample from MW-03. Results are listed in Appendix C, and screening level exceedances are listed in Table 18.

Quarterly Groundwater Monitoring (2007 to 2008)

Groundwater sampling was conducted in November 2007 (SES 2008). Samples were collected from six of the eight monitoring wells (MW-01, MW-2, and MW-05 through MW-08). MW-03 had been damaged by onsite activities and could not be sampled; MW-04 was screened in the CKD layer and was not sampled. Samples were analyzed for RCRA dissolved metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). Depth to groundwater ranged from 4.7 to 7.9 feet bgs; groundwater flow was to the northwest, with a gradient of 0.0007 feet/foot. Concentrations of arsenic ranged from 12.9 mg/kg (MW-08) to 84.6 mg/kg (MW-04). In general, concentrations of metals in groundwater were lower than in the July 2007 samples, with the exception of MW-04, where concentrations of arsenic and chromium had increased, and MW-02 and MW-07, where concentrations of lead had increased.

Another round of groundwater sampling was planned for February 2008; however, these data were not present in the files reviewed during preparation of this Data Gaps Report.

5.11.5 Potential for Sediment Recontamination

Dr Concrete Recycle is listed on Ecology's CSCSL for confirmed contamination of soil and surface water with priority pollutant metals, and confirmed contamination of soil with arsenic. Ecology has expressed concern about potential contaminant releases associated with the historical use of this property as an auto wrecking yard. Waste Management currently operates a biomedical waste treatment facility at this location. The potential for sediment recontamination associated with this property is summarized below by transport pathway.

Soil and Groundwater

CKD was used as fill material at this property. Results of a 2006/2007 subsurface investigation and subsequent groundwater monitoring found lead (soil and groundwater), cadmium (soil), and silver (soil) at concentrations above soil-to-sediment or groundwater-to-sediment screening levels (Tables 17 and 18). Chemicals also exceeded MTCA cleanup levels for arsenic (soil, groundwater, and surface water), cadmium (soil), chromium (groundwater), and lead (soil, groundwater). The groundwater flow direction is toward a drainage ditch and culvert that drains to the 1st Avenue S SD and ultimately to the LDW. While these metals are not considered COCs for sediments associated with RM 2.1 West, there is a potential that metals associated with this property could be transported to LDW sediments.

This property was the site of an auto wrecking yard during the 1950s and 1960s. Wrecking yard activities may represent a source of petroleum hydrocarbons, PAHs, PCBs, volatile organics, and metals. No investigations have been conducted to evaluate whether these activities may have contaminated soil or groundwater at the property. The potential for sediment recontamination associated with auto wrecking yard activities at 149 SW Kenyon Street is unknown.

Stormwater

A September 2011 environmental compliance inspection conducted at this property did not identify any issues associated with releases of contaminants to stormwater. The potential for sediment recontamination associated with ongoing stormwater discharges is believed to be low.

5.11.6 Data Gaps

Data from February 2008 and subsequent groundwater monitoring, if any, are needed to assess the potential that contaminated groundwater at this property may be a source of LDW sediment recontamination.

According to a February 2008 email from John Funderburk (SES) to Mark Adams (Ecology), additional investigations were planned to be conducted at the property. Information about these additional investigations, if any, is needed (Funderburk 2008).

Additional information is needed regarding potential releases to soil and/or groundwater from historical auto wrecking yard operations at this property, particularly for chemicals other than metals.

5.12 Intermountain Supply/Former Recycle America

Property Summary: Intermountain Supply/Former Recycle America	
Address	7901 1st Avenue S
Tax Parcel No.	3124049001
Property Owner	LMN, LLC
Parcel Size	3.09 acres (134,650 sq ft)
Facility/Site ID	95878752 (Waste Management of Seattle 1st Ave) 55695661 (Recycle America) 47666565 (TW Express)
Alternate Names	AVL Freight Svc, Intermountain Supply Inc., Waste Management First Ave, Waste Management of Seattle UST 10291, Waste Management Sea Recycle AM
SIC Code	4212: Local Trucking, without Storage 5093: Scrap and Waste Materials
EPA ID No.	WAD981767221 (Waste Management; inactive) WAD988470365 (Recycle America; inactive) WAD980974588 (TW Express; inactive)
NPDES Permit No.	None
UST/LUST ID No.	10291

Intermountain Supply currently occupies parcel 3124049001 at 7901 1st Avenue S. This property is located south of Seaport Petroleum and S Kenyon Street, east of the Kenyon Street Property, north of several parcels currently operated by Waste Management, and east of 1st Avenue S and SR 509 (Figure 12). Recycle America is a former tenant at the property. This property is about one-half mile west of the LDW.

According to King County Tax Assessor records, one building is located on the property, a 42,900-sq ft masonry warehouse building constructed in 1979. The property was acquired by LMN, LLC from Professional Exchange Properties, LLC in February 2009, who purchased it from WS Junction Building LLC in June 2005. The property was previously owned by Holert Family Trust (Richard Sutterlin, trustee). A June 1992 permit application identifies the property owner at that time as Frank Holert.

A December 2006 site investigation report states that the Holert Family Trust sold this property to Intermountain Supply in 2006 (EPI 2006); however, this is inconsistent with the information listed by King County.

The facility is almost entirely paved with asphalt. CKD fill material is present across the property from near the surface to about 5 feet below grade (EPI 2006). The CKD extends beyond the property boundary. Dark gray silt was generally observed underlying the CKD to a depth of about 11 feet bgs. The silt was underlain by dark gray, well-graded sand from a depth of about 11 to 15 feet bgs. Depth to water is about 4 to 9 feet bgs, depending on the time of year. Shallow groundwater flows generally toward the northeast, with a hydraulic gradient from 0.004 feet/foot to 0.011 feet/foot (EPI 2006).

5.12.1 Current Operations

Intermountain Supply, Inc., a roofing and building products wholesale distributor, is the current tenant at 7901 1st Avenue S. In December 2011, Intermountain Supply, Inc. was acquired by Roofing Supply Group, LC, a portfolio company of The Sterling Group, L.P. A May 2010 stormwater inspection identified Washington Waste Hauling (i.e., Waste Management) as the property manager/owner at this location.

Drainage on the west side of the warehouse building is to the storm drain system; drainage on the east side of the warehouse building is to the sanitary sewer (SPU 2010l). A 36-inch detention pipe under the asphalt yard on the west side of the warehouse building was identified during a May 2010 inspection; SPU had no record of this installation (SPU 2010i).

The facility generates approximately 100 pounds per month of waste adhesives (SPU 2010j). Outdoor pollution-generating activities include: washing of passenger vehicles and trucks; truck loading or unloading of liquid or solid materials; outside storage of containerized products, new equipment, and equipment/materials awaiting disposal/recycling; and parking or storage of vehicles and equipment (SPU 2010j). Storage and parking areas are paved with asphalt. At the time of a May 2010 inspection, adhesives, thinners, rolls of membrane roofing, and asphaltic tile, kegs, and rolls were stored outdoors. Vehicle washing occurs approximately two times per month.

5.12.2 Historical Operations

Prior to 1955, this property was vacant. Between 1955 and 1966, a gasoline station occupied the northeast corner of the property (Riley 1999b). The gasoline storage and dispensing equipment (three gasoline or diesel USTs, one waste-oil UST, one heating oil UST) were removed in 1966 (Riley 1999b). The service station building was occupied by various retail businesses from the late 1960s to the mid-1970s; it was demolished in the late 1970s.

The property was redeveloped in the mid- to late 1970s. In 1979/1980, a 43,000-square foot office/warehouse building and an asphalt parking lot were constructed by Frank Holert, who operated Global Moving and Storage Company at the site (SKCDPH 1992c). Also in 1979, a 6,000-gallon gasoline UST and an 8,000-gallon diesel UST were installed along the western property boundary. Global Moving and Storage (also known as Global Van Lines) operated at this property from 1979 to 1985. The USTs were used to store diesel fuel for the company's predominantly diesel truck and van fleet (Riley 1999b).

From 1979 to 1988, the property was also used as a freight warehouse for various trucking companies, including TW Express and AVL Freight (Riley 1999b).

A June 1988 design drawing identifies Bayside Recyclers as the occupant or prospective occupant of this property (McHugh 1988). Bayside Recyclers was purchased by Waste Management of Seattle in 1987.

In June of 1988, Waste Management of Seattle, Inc., began leasing the building and property from Mr. Holert, and began operating the Recycle America Facility in September 1988. Recycle America (a division of Waste Management of Seattle) was a collection, sorting, and packaging center for approximately 250 tons per day of recyclable materials such as glass, plastic, cardboard, paper, tin, and aluminum (Riley 2005i). Approximately 65 Recycle America trucks per day unloaded unsorted tin, aluminum, glass, and plastic in the facility yard, adjacent to the head of the facility's sorting line (SKCDPH 1992c). The unsorted material was then loaded onto a conveyer belt and carried inside the Recycle America facility to be sorted. Sorted glass, tin, and aluminum were stored outside prior to being shipped to market; sorted plastic was stored inside. The paper processing operation was conducted entirely inside the facility (Waste Management 1992a).

Precipitation percolating through the piles of material could be contaminated by container residues. Three dry wells were located at the property for infiltration of roof and surface water runoff (Riley 1999b): one on the west side of the building, one on the east side of the building, and one near the southwest corner of the building (Figure 24). A drainage map of the facility shows surface drainage flowing toward these dry wells (Waste Management 1992a). The gravel filters in the dry wells were reportedly clogged, rendering them inoperable (SKCDPH 1992d). In a letter dated October 8, 1992, SKCDPH requested that the dry wells be sealed to prevent any further percolation of water into the ground (SKCDPH 1992d). No information on whether the dry wells were sealed was available in the files reviewed during preparation of this Data Gaps Report.

According to the State Environmental Policy Act (SEPA) Checklist completed for the site, stormwater was the only source of runoff. The runoff was either (a) routed by site topography to low points on the property, possibly the "dry wells" identified on the site drainage map, and then pumped into the sanitary sewer system, under Metro Waste Discharge Authorization No. 281; or (b) stormwater runoff entered the Seattle storm drain system and was eventually discharged to the LDW (SKCDPH 1992c). Leachate from the recyclable material pile was prevented from reaching the dry wells by a berm (SKCDPH 1992d).

Three catch basins, connected to the sanitary sewer, were located at the site. These were equipped with screens to prevent solid materials from entering (SKCDPH 1992c).

In 1997, the fuel system was removed, and approximately 400 cubic yards (600 tons) of petroleum-contaminated soils were excavated and transported offsite for disposal (Ecology 2005a). Apparent CKD fill material was encountered during the tank removals. Phase II site investigations were conducted from 1998 to 2000; these indicated groundwater contamination with TPH-gasoline (to 16,000 ug/L), TPH-diesel (to 5,000 ug/L), and benzene (to 13,000 ug/L). During 2001 to 2002, an groundwater remediation system was installed and operated. The system was shut down in December 2002, and quarterly groundwater monitoring was conducted until 2005.

Recycle America ceased operations in approximately 2005 (Riley 2005h).

5.12.3 Regulatory History

TW Express (FSID 47666565) was identified as a hazardous waste generator at this location between August 1984 and March 1987, under EPA ID number WAD980974588. Activities included highway transportation of caustic soda and liquid cleaning compounds. In addition, ammonium hydroxide solution was stored at the facility (Riley 1999b).

Waste Management was identified as a hazardous waste generator at this location between June 1987 and December 1989.

Recycle America

Recycle America (FSID 55695661) was identified as a hazardous waste generator at this location between March 1990 and December 1991, under EPA ID number WAD988470365.

USTs were registered at this location beginning in June 1983, and the site was listed on Ecology's LUST list (ID 10291) from December 1997 to May 2004.

Recycle America was issued Metro Waste Discharge Authorization No. 281 on March 30, 1991 for discharge to the sanitary sewer of rinse water from post-consumer milk and juice cartons prior to shredding. In March 1992, the discharge authorization was revised to cover up to 5,000 gallons per day of contaminated stormwater runoff (METRO 1992). The discharge authorization expiration date was listed as March 30, 1996.

A March 1992 letter from the Seattle-King County Department of Public Health informed Recycle America that a solid waste permit was required due to the regular accumulation of recyclable waste in outdoor piles prior to processing (SKCDPH 1992a). A permit application was submitted in June 1992, and a SEPA checklist and Determination of Nonsignificance was issued by Seattle-King County Department of Public Health in August 1992 (SKCDPH 1992c). In October 1992, the Department requested Waste Management to seal the three dry wells at the property, and to amend the permit application to include the glass pile located on the north side of the facility (SKCDPH 1992d).

Stormwater permit SO3000582 was first issued in January 1993 (Ecology 1993a, and was renewed in January 1996 (Ecology 1996c), 2000 (Ecology 2000c), and 2004 (Ecology 2004h). The 1993 permit application listed discharges of stormwater to the Seattle storm drain system, indirectly to surface water, and directly to groundwater via dry well (Ecology 1993a). The 2000 stormwater permit renewal added coverage of Waste Management's activities at 8105 1st Avenue S to this permit (Ecology 2000b).

Waste Management submitted a SWPPP to Ecology in September 2001 (Waste Management 2001a). The SWPPP identified the following potential pollutants: litter, antifreeze, detergents, paints, solvents, and petroleum products such as oil, hydraulic fluid, and diesel fuel.

In March 2004, the site was enrolled in Ecology's VCP in an attempt to obtain an NFA determination (Riley 2004b). After review of the VCP application and reports provided by Riley, Ecology identified several critical data gaps, including information about the location of soil samples collected during the 1997 UST removal, the extent of soil contamination remaining after the tank removal, and the rationale for the monitoring well screening intervals (Ecology 2004d).

After a series of communications and meetings between Ecology and Riley (for Holert Trust, the property owner) regarding data gaps (Ecology 2004e; Riley 2004c,d), Riley prepared a draft soil sampling work plan to address Ecology's concerns regarding soils that may have been impacted by the USTs (Riley 2004e). Based on Ecology review comments (Ecology 2004f; Kuntz 2004), a final soil sampling work plan was prepared (Riley 2004g). Ecology concurred with the sampling methodology but expressed continuing concerns regarding the conditions under which an NFA determination would be made (Ecology 2004g).

In October 2004, Riley prepared a conceptual work plan to characterize the CKD fill material at the Recycle America facility. Ecology expressed concerns about the proposed analytes and cleanup standards (Ecology 2004j, 2005b). In February 2005, Ecology recommended that Recycle America investigate the potential for petroleum hydrocarbons to elevate arsenic concentrations in groundwater (Ecology 2005c). Riley submitted a revised CKD investigation work plan in February 2005 (Riley 2005e).

After additional discussions during 2005-2006 (Ecology 2005d,e,f,g; Riley 2005f,g), Ecology determined, in January 2007, that the independent remedial actions performed at the site to remediate TPH-diesel, TPH-oil, and TPH-gasoline in soil, and groundwater were sufficient to meet the substantive requirements of MTCA and its implementing regulations (Ecology 2007a). However, Ecology determined that the independent remedial actions were not sufficient to meet MTCA's substantive requirements for characterizing and addressing metals associated with CKD, specifically arsenic, mercury, and lead in soil and groundwater. Ecology indicated that further remedial action is needed for metals associated with the CKD fill material (Ecology 2007a).

The former Recycle America facility was subsequently closed out of the VCP, since the PLP did not wish to conduct additional cleanup to address contaminants in the CKD fill material.

The property was listed on Ecology's CSCSL in January 2007 for confirmed contamination of soil and groundwater with gasoline-range and diesel-range petroleum hydrocarbons, benzene, and non-halogenated solvents. Current status is listed as "Cleanup Started."

Waste Management

Ecology conducted a stormwater compliance inspection at Waste Management – Sea Recycle on June 28, 2007 (Ecology 2007h). The address was listed as 8101 1st Avenue S. The inspector indicated that quarterly DMRs had not been submitted since the second quarter of 2005. Visible petroleum sheens were observed entering the storm drains. The following corrective actions were identified:

- Submit the missing DMRs for 2005 through 2007.
- Implement oil control BMPs to eliminate petroleum discharges to the storm drains.
- Cover or move inside any equipment and/or materials exposed to the elements, to limit or prevent pollutants from entering the facility's storm drains.
- Determine if the facility has the necessary permit to discharge wash water to the sanitary sewer system.

A follow-up inspection was conducted in January 2008 (Ecology 2008a). The missing DMRs had been submitted, and an application was submitted to King County for a waste discharge authorization for wash water to the sanitary sewer. The inspectors observed an oily residue in the truck parking area near the shop. Storage containers were not labeled or stored properly, and the cleaning solution tank was not stored properly. The following corrective actions were identified:

- Implement BMPs for container storage of liquids.
- Clean up the oily residue in the truck parking area near the shop.

No information about additional follow-up inspections was available at the time this Data Gaps Report was prepared.

Intermountain Supply

A stormwater inspection was conducted at Intermountain Supply, Inc. by SPU on May 11, 2010 (SPU 2010i). The inspector noted that vehicles appeared to be washed on the west side of the warehouse building, in an area that drains to the stormwater system. The following corrective actions were identified (SPU 2010l):

- Develop and implement a spill prevention plan.
- Provide necessary containment and spill response equipment.
- Train employees on the spill plan and location and use of spill response equipment.
- Clean storm drains; remove accumulated material within 18 inches of the bottom of the lowest pipe entering or existing the drain.
- Remove and properly dispose of accumulated sediments in your stormwater detention pipe.
- Implement the following housekeeping measures: frequently sweep lot and storage areas to remove accumulated debris; place drip pans in areas where leaks or spills may occur; do not wash or hose down areas that drain to the storm drain system; remove excess waste and old equipment; and inspect storage areas for leaks and spills.
- Employ a mobile washer that is capable of capturing and properly disposing of wash water, or move vehicle washing operations to the east side of the building so that wash water drains to the sanitary sewer system.
- Implement minimum source control requirements for portable container storage: store containers on a paved surface under cover or in a building, wherever possible; locate activities as far as possible from surface drainage paths; use containers that are leak proof and have a tight-fitting lid, and that are properly labeled to identify contents; inspect containers for leaks and spills on a regular basis; secure drums to prevent vehicle damage, spillage, or pilferage.

As of July 13, 2010, all corrective actions had been implemented (SPU 2010p).

5.12.4 Environmental Investigations and Cleanups

Sampling results for chemicals detected in soil and groundwater at this location are provided in Appendix C. Results for chemicals that exceed screening levels in soil and groundwater are listed in Tables 19 and 20, respectively. Sampling locations are shown in Figure 24.

Site Assessment, Tank Removal, and Independent Cleanup Action (1997)

In May 1997, an initial investigation was conducted by Riley in the vicinity of the two USTs located along the western property boundary. Results identified the presence of petroleum hydrocarbons in soil and groundwater (EPI 2006).

The two USTs, which included a 6,000-gallon gasoline tank and an 8,000-gallon diesel fuel tank, the fuel pump island, and associated underground product piping were removed in early September 1997 (Riley 1998a; EPI 2006). Field screening results indicated that the UST system had released petroleum hydrocarbons to subsurface soils and groundwater. Several pin-sized holes were observed in the tank sidewalls and bottom (Riley 1998b). Site soils exposed along the tank excavation sidewalls indicated several episodes of artificial fill placement; tires, construction debris, and a “white ash” horizon were observed; the “white ash” had a discontinuous thickness of 8 feet and an ammonia odor. Groundwater was encountered at about 11 feet bgs. Approximately 300 to 400 cubic yards of petroleum-contaminated soils were removed as an independent cleanup action; soils were transported offsite to Waste Management, Inc. for landfill cover (Riley 1998b).

A total of 24 discrete soil samples were collected from stockpiled soil and the excavation floor and sidewalls; 10 of these were submitted for chemical analysis on the basis of field screening results (Riley 1998b). Laboratory results from soil samples collected from the bottom and sidewalls of the removal excavation indicated the presence of petroleum hydrocarbons at concentrations above MTCA Method A and B soil cleanup levels (Riley 1998b; EPI 2006).

Phase II Groundwater Investigation (February 1999)

In February 1999, Riley installed four monitoring wells (MW-1 through MW-4) in the vicinity of the former USTs (Riley 1999a). Well MW-1 was installed in the assumed upgradient groundwater flow direction, and wells MW-2, MW-3, and MW-4 were completed downgradient of the former USTs. Wells were installed to depths of 15 to 17 feet bgs. Depth to groundwater ranged from 4.6 to 7.1 feet bgs. Groundwater flow direction was to the east with a gradient of 0.01 feet per foot; however, fill material (tires, construction debris, CKD) may affect flow direction.

Samples were collected from each well on March 23, 1999. TPH-gasoline concentrations ranged from 68 ug/L to 5,400 ug/L; TPH-diesel ranged from 320 ug/L to 1,400 ug/L (Riley 1999a). The highest concentrations were found in well MW2, about 70 feet to the north of the former USTs. Concentrations were above MTCA groundwater cleanup levels.

Phase I Environmental Site Assessment (August 1999)

In 1999, Riley conducted a Phase I ESA at the 7901 1st Avenue S property. The study included recommendations to assess soil and/or groundwater quality beneath the site’s former gasoline service station; determine whether subsurface soil and/or groundwater has been adversely affected by former wrecking yards located north-northwest of the site; and define the extent and magnitude of soil and groundwater contamination resulting from the petroleum release from the UST fuel system removed in 1997 (Riley 1999b).

Supplemental Phase II Subsurface Investigation (October/November 1999)

A supplemental Phase II investigation was conducted in late 1999 to better define the extent of gasoline and diesel contamination in groundwater associated with the USTs that were removed from the site in 1997, to evaluate whether former gasoline service station operations on the northeast corner of the property had adversely impacted soil or groundwater, and to evaluate the potential for offsite migration of contaminants.

Four new monitoring wells (MW-5 through MW-8) were installed; these and the four existing monitoring wells were sampled in November 1999. Monitoring well MW-6 and three additional soil borings were located in the northeast corner of the site, near the former location of a gasoline service station. Petroleum hydrocarbons were not detected in these samples (Riley 2000a).

Gasoline-range hydrocarbons were detected at concentrations above MTCA cleanup levels in wells MW-1 and MW-4, while diesel-range petroleum hydrocarbons exceeded the MTCA cleanup levels in wells MW-1, MW-2, MW-4, MW-5, and MW-7). The highest concentrations (16,000 ug/L TPH-gasoline, 13,000 ug/L benzene, 2,900 ug/L TPH-diesel) were found in monitoring well MW-1 (Riley 2000a).

In-Situ Groundwater Remediation (2000 to 2002)

In June 2000, three vapor extraction test wells were installed to depths of approximately 8 feet bgs. One air sparge well was also installed. A pilot study was performed to evaluate the potential success of air sparge/soil vapor extraction (AS/SVE) remediation at this site (Riley 2000b).

Based on the pilot test results, an AS/SVE system to treat petroleum-contaminated soil and groundwater was installed in December 2000/January 2001, and full operation of the treatment system commenced on May 18, 2001. The AS/SVE system consisted of four soil vapor extraction wells, five air sparge wells, associated piping, pumps, carbon filters, and ancillary equipment (Riley 2004b).

During the last quarter of 2002, monitoring of the SVE air emissions indicated that the treatment system was no longer recovering any detectable concentrations of petroleum hydrocarbons from the subsurface environment. In December 2002, the treatment system was turned off to allow subsurface conditions to equilibrate and to commence groundwater compliance monitoring to determine the overall effectiveness of the in-situ remediation effort (Riley 2004a). A total of approximately 11 pounds of benzene and 80 pounds of gasoline were extracted during this period (Riley 2004b).

Groundwater Monitoring (2000 to 2005)

Groundwater monitoring wells were sampled in March 2000 (Riley 2000b), May and July 2001 (Riley 2005i), June 2002 (Riley 2005i), January and June 2003 (Riley 2004a, and January, September, and December 2004 (Riley 2004f, 2005a). Contaminant concentrations collected after December 2002, when the treatment system was turned off, were significantly lower than before treatment. Samples collected in 2003/2004 exceeded current MTCA groundwater cleanup levels in MW-1 (benzene at 1.1 to 8.6 mg/kg in four samples), MW-2 (benzene at 2.8 mg/kg in one sample), MW-4 (benzene at 1.4 to 6.8 mg/kg in four samples, TPH-oil at 810 to 1,300 mg/kg in two samples), and MW-7 (TPH-diesel at 1,000 mg/kg in one sample, TPH-oil at 1,700 to

17,000 mg/kg in four samples). Sample results are provided in Appendix C, and screening level exceedances are summarized in Table 20.

Because the integrity of the well seal at MW-7 was suspect, the well was abandoned and replaced with well MW7-R in January 2005. Four additional quarterly samples were collected from MW-7R in 2005 (Riley 2005i). Samples were analyzed for gasoline-range, diesel-range, and heavy oil-range petroleum hydrocarbons, and benzene, toluene, ethylbenzene, and xylenes (BTEX). These analytes were not detected in the first and second quarterly samples (Riley 2005i). Results of the third and fourth quarterly sampling of MW-7R were not found in the files reviewed during preparation of this Data Gaps Report.

Subsurface Soil Sampling (2004)

In October 2004, Riley prepared a *Confirmation Soil Sampling Final Work Plan* (Riley 2004g). The soil sampling was intended to address Ecology concerns regarding the extent of soil contamination near and beneath the former USTs (removed in 1997). In December 2004, Riley collected soil samples within and surrounding the excavation limits of the 1997 remedial action. Seven soil samples collected from 13 to 17 feet bgs within the limits of the original excavation were analyzed for petroleum hydrocarbons. Soil samples were also collected at 6 feet bgs and 13 feet bgs at 3 to 5 feet from each excavation sidewall, except along the west side where samples were collected at the property boundary, and analyzed for petroleum hydrocarbons. Samples collected outside the UST excavation limits consisted of CKD fills at the 6-foot sampling depth interval. Seven of the 15 soil samples contained trace concentrations of TPH-diesel and TPH-oil, ranging from 97 mg/kg to 170 mg/kg, and benzene ranging from 0.032 mg/kg to 0.12 mg/kg.

Results indicated the presence of TPH-diesel, TPH-gasoline, benzene, and xylenes at concentrations above the MTCA soil cleanup level at one location at 13 feet bgs, below the excavation floor (B2); additional samples in this immediate area did not exceed cleanup levels (Riley 2005d). The residual volume of contaminated soil was estimated to be about one cubic yard (EPI 2006). Several other locations (B3, B5, B8, B10) contained benzene at slightly above the MTCA cleanup level (Table 19).

Supplemental CKD Investigations (2005/2006)

In 2004, on behalf of a prospective purchaser of the property, GeoEngineers drilled five test probes for sampling of CKD and underlying native soils (Riley 2005c). CKD samples contained total arsenic and total lead at concentrations of 37 to 143 mg/kg and 423 to 2,210 mg/kg, respectively. Concentrations in native soils underlying the CKD contained 1.3 to 7.1 mg/kg and 0.93 to 52 mg/kg, respectively.

In response to Ecology concerns, Riley advanced 11 soil probes across the property in January 2005 to better define the lateral and vertical extent of CKD fill. In general, CKD was first encountered at depths of 2 to 3 feet beneath the asphalt pavement, extending to depths of 5 to 7.5 feet bgs (Riley 2005b).

In January 2006, Riley advanced 13 soil probes to evaluate the lateral and vertical limits of CKD, which was reportedly used as a source of fill material at the property. Results indicated that the CKD material occurred at depths ranging from about 1 to 7 feet bgs; approximately 20,000 cubic yards of CKD were estimated to be present. Total arsenic and total lead were present at concentrations above the MTCA Method A soil cleanup levels.

Ecology requested that additional wells be installed to demonstrate the extent of CKD and to assess the impact of CKD on groundwater quality at the property. Ecology further requested that the Holert Family Trust request access to sample the upgradient property to establish a regional presence of CKD. This request was denied (EPI 2006).

In response to Ecology's requests, EPI installed two additional shallow groundwater monitoring wells (MW-10 and MW-11), in the southwestern and southeastern corners of the property, to further evaluate the lateral impacts to groundwater from the CKD material; conducted four rounds of groundwater sampling from the onsite monitoring wells; analyzed groundwater samples for VOCs, SVOCs, and PCBs; and assessed temporal changes in metals concentrations in groundwater during an annual cycle (EPI 2006). Samples were analyzed for dissolved metals and total metals (May 2005 and November 2005 only), turbidity, and pH. During the first round of sampling in May 2005, samples from wells MW-2, MW-6, MW-10, and MW-11 were also analyzed for VOCs, SVOCs, and PCBs. No organics were detected in these samples, with the exception of TCE at MW-11; therefore organic analytes were not included in subsequent sampling rounds. The TCE concentration in MW-11 (3.0 ug/L) was below the MTCA groundwater cleanup level at the time, but exceeds the current MTCA cleanup level of 2.4 ug/L. No petroleum hydrocarbons or aromatic fuel compounds were detected in any of the groundwater samples.

Antimony (9.0 ug/L, MW-11), arsenic (5.0 to 91 ug/L, all sampling locations), cadmium (31 ug/L, MW-6), lead (15 to 28 ug/L in MW-3, MW-7R, and MW-10), mercury (0.2 to 3.2 ug/L in MW-2, MW-10, and MW-11), and TCE (3.0 ug/L, MW-11) exceeded MTCA groundwater cleanup levels in at least one sample. In addition, cadmium, lead, and mercury also exceeded groundwater-to-sediment cleanup levels. The most frequent exceedances were for arsenic and lead. Exceedances are summarized in Table 20.

5.12.5 Potential for Sediment Recontamination

Soil and groundwater contamination has been documented at this property. This property was occupied by Recycle America/Waste Management between 1988 and 2007. The site is listed on Ecology's CSCSL for confirmed contamination of soil and groundwater with gasoline-range and diesel-range petroleum hydrocarbons, benzene, and non-halogenated solvents. In addition, metals associated with CKD fill are present in soils at concentrations above screening levels. The current operator at this property is Intermountain Supply. The potential for sediment recontamination from this property is summarized below by transport pathway.

Soil and Groundwater

Historical activities at this property have resulted in contamination of soil with BTEX compounds, TPH, and metals (arsenic, cadmium, lead) at concentrations above the MTCA cleanup level or soil-to-sediment screening level (Table 19). In groundwater, antimony, arsenic, benzene, cadmium, lead, mercury, TPH-diesel, TPH-oil, and TCE were detected at concentrations above MTCA cleanup levels; in addition, cadmium, lead, and mercury are present at concentrations above groundwater-to-sediment screening levels. Mercury is a COC for sediments near the 1st Avenue S SD outfall, and arsenic is a risk driver for the LDW Superfund Site.

Groundwater at the property flows toward the 1st Avenue S ditch, the central wetland area, and ultimately the LDW. The potential for sediment recontamination associated with groundwater contamination at this property is believed to be moderate.

Stormwater

Corrective actions associated with a May 2010 source control inspection at Intermountain Supply were implemented and the facility was in compliance with environmental regulations and stormwater BMPs in July 2010. Therefore, the potential for sediment recontamination associated with current stormwater discharges from this property are believed to be low.

5.12.6 Data Gaps

Additional information on current concentrations of metals in soil and groundwater at this property is needed to assess the potential for sediment recontamination

5.13 Waste Management 1st Avenue S

Property Summary: Waste Management 1st Avenue S	
Address	8101 1st Avenue S 98106 8105 1st Avenue S 98106 8111 1st Avenue S 98106
Tax Parcel No.	3124049007; 3124049008; 3124049151; 3124049156; 3124049158
Property Owner	First Avenue Industries LLC (9007, 9156, 9158) Oak Classics Company (9008) Waste Management Inc (9151)
Parcel Size	9007: 0.85 acres (37,095 sq ft) 9008: 0.87 acres (38,005 sq ft) 9151: 2.20 acres (95,760 sq ft) 9156: 1.44 acres (62,726 sq ft) 9158: 2.12 acres (92,170 sq ft)
Facility/Site ID	2536 (Northwest Enviroservice 2); 2537 (Northwest Enviroservice 2W); 4709 (Waste Management CNG Upgrades); 15161 (Can Do Services); 74491434 (NW Enviroservice 1st Ave Site); 79459683 (Patent Construction Systems)
Alternate Names	Waste Management of Seattle, Can Do Services, Northwest Enviroservice 2, Northwest Enviroservice 2W
SIC Code	4212: Local Trucking Without Storage, 4213: Trucking, Except Local, 4953: Refuse Systems
EPA ID No.	WAD988519831 (NW Enviroservice 1st Ave Site; inactive) WA0000181958 (Patent Construction Systems; inactive)
NPDES Permit No.	SO3-001114 (terminated October 10, 2000) WAR000582 (active)
UST/LUST ID No.	None

For purposes of this Data Gaps Report, parcels located at 8101 to 8111 1st Avenue S have been grouped into a single 7.5-acre property (Waste Management 1st Avenue S); these parcels are all currently occupied by Waste Management (Figure 9).

The Waste Management 1st Avenue S property consists of five parcels, as identified in King County tax records:

- Parcel 9007: Waste Management Fleet Services Facility, 8105 1st Avenue S. This 0.85-acre parcel was purchased by First Avenue Industries LLC in February 2008 from Anthony and Tanya Rosso. No buildings are listed on this parcel.
- Parcel 9008: Waste Management Operations Office, Building C, 8101 1st Avenue S. This 0.87-acre parcel is owned by Oak Classics Company. One 10,692-sq ft prefabricated steel building is located on this parcel. The structure was building in 1989; it was converted to office space in 2008.
- Parcel 9151: Waste Management Maintenance Shed, Building A, 8111 1st Avenue S. The current taxpayer on this 2.2-acre parcel is Waste Management, Inc. One 26,232-sq ft prefabricated steel building, originally constructed in 1971, is located on this parcel. It comprises primarily garage and vehicle service/repair areas, with some office space, and includes an industrial car wash and a crane/welding bay.
- Parcels 9156 and 9158: Waste Management Fueling Facility, 8105 1st Avenue S. These parcels (1.44 and 2.12 acres, respectively) were purchased by First Avenue Industries LLC in February 2008 from Anthony and Tanya Rosso. The parcels are used for fueling and parking of Waste Management fleet vehicles. No buildings are located on these parcels.

The Waste Management 1st Avenue S property is bordered on the north by the Intermountain Supply (former Recycle America) and Kenyon Street property (formerly Dr. Concrete Recycle) to the north, a densely vegetated hillside owned by the City of Seattle Department of Parks and Recreation to the west, MAPSCO and a Lion Trucking parking area to the south, and 1st Avenue S and SR 509 to the east (Figure 12).

Can Do Services, a commercial trash can and dumpster repair facility, previously operated at 8101 1st Avenue S. Ecology's Facility/Site Database lists this property under the Can Do Services name. The currently occupant of the property, however, is Waste Management.

5.13.1 Current Operations

Waste Management currently conducts fleet maintenance and fueling activities at this property. The facility is mostly paved with asphalt.

A truck wash at the facility generates 5000 gallons per day (gpd) of wash water, which is discharged to the sanitary sewer. Wash water is treated through an oil/water separator prior to discharge.

Wastes generated at the facility include general vehicle repair fluids from 170 trucks, solvent from the parts washer, and sludge from the caustic jet cabinet washer. Quantities generated are listed below:

- Antifreeze (200 gallons per year)
- Vehicle batteries (40 per year)
- Fluorescent light tubes (40 per quarter)
- Waste petroleum/oils (2,000 gallons per year)
- Solvents (30 gallons per year)
- Sludges and residues (10 gallons per year)

These wastes are disposed of offsite at an appropriately licensed treatment, storage, disposal, or recycling facility. Containerized products and used equipment are stored outdoors on asphalt pavement. Antifreeze and petroleum/oils are stored outdoors within secondary containment (SPU 2011).

Vehicle fueling operations currently are conducted primarily with compressed natural gas. A wash bay was recently installed and connected to the sanitary sewer (SPU 2011g). Oils and antifreeze are stored outdoors in tanks. Stormwater treatment systems and detention tanks were also recently installed, including two coalescing plate oil/water separators, a media filter, and two detention systems (SPU 2011g). Catch basins onsite are inspected weekly and cleaned as needed. The asphalt parking lot is swept twice weekly.

5.13.2 Historical Operations

The following information on historical operations at this property was identified:

- Oak Classic Company, a cabinet make and the current owner of parcel 9008, operated at 8101 1st Avenue S between at least June 1992 and August 1999 (Riley 1999b).
- Can Do Services, a commercial trash can and dumpster repair facility, previously operated at 8101 1st Avenue S. Dates of operation are unknown.
- Tansco is a former operator at 8105 1st Avenue S. Prior to June 1992, the property was used as an overseas container storage yard (Riley 1999b).
- Northwest Enviroservice (NWES) operated at this address from January 1993 to August 1995.
- Patent Construction Systems is a former operator at 8111 1st Avenue S, between 1986 and at least 1999 (Riley 1999b). This company was also known as Patent Scaffolding (Waste Management 1992a).
- Waste Management upgraded this property, along with the 149 SW Kenyon Street site, during 2009/2010, under Ecology FSID 4709 (Waste Management CNG Upgrades).

The former Northwest Enviroservice 1st Avenue S transfer facility operated on parcels 9008, 9007, and 9158 (Figure 9). The transfer facility was used by NWES to stage hazardous materials and waste petroleum, oils, and lubricants awaiting transportation to landfills, cement kilns, incinerators, recyclers, and energy recovery facilities (CH2M Hill 1997). The transfer facility operated from January 1993 to August 1995. During that period, materials were typically stored within tanker trucks and Bulktainers.

The transfer facility occupied approximately 2 acres of land, including four buildings. Over 90 percent of the facility was paved with asphalt. The site topography was predominantly level, bounded on the east by a hillside and on the west by a drainage ditch. Soil encountered during excavations (see Section 5.13.4 below) included poorly-graded sands, silt and miscellaneous random fill such as concrete pieces and natural organic debris. Depth to groundwater was measured as approximately 4.5 feet from the top of the monitoring well casing (CH2M Hill 1997).

NWES is listed in Ecology's facility/site database under three numbers: 2536 (Northwest Enviroservice 2), 2537 (Northwest Enviroservice 2W), and 74491434 (NW Enviroservice 1st Ave Site). Numbers 2536 and 74491434 both pertain to the 8105 1st Avenue location, while number 2537 pertains to a spill location (see Section 5.13.3 below).

5.13.3 Regulatory History

Patent Construction Systems was identified as a hazardous waste generator at 8111 1st Avenue S between March 18, 1994 and December 31, 1994. NWES was identified as a hazardous waste generator at 8105 1st Avenue S between April 16, 1993 and December 31, 1997.

Waste Management 1st Avenue S

Stormwater compliance inspections for permit SO3000582 were conducted on June 28, 2007, and January 2008 (Ecology 2007h, 2008a). The address was listed as 8101 1st Avenue S, and covered both this property and the former Recycle America property to the north. As described in Section 4.12, quarterly DMRs had not been submitted since the second quarter of 2005. Visible petroleum sheens were observed entering the storm drains during the June 2007 inspection. The following corrective actions were identified:

- Submit the missing DMRs for 2005 through 2007.
- Implement oil control BMPs to eliminate petroleum discharges to the storm drains.
- Cover or move inside any equipment and/or materials exposed to the elements, to limit or prevent pollutants from entering the facility's storm drains.
- Determine if the facility has the necessary permit to discharge wash water to the sanitary sewer system.

At the time of the January 2008 follow-up inspection (Ecology 2008a), the missing DMRs had been submitted, and an application had been submitted to King County for a waste discharge authorization for wash water to the sanitary sewer. The inspectors observed an oily residue in the truck parking area near the shop. Storage containers were not labeled or stored properly, and the cleaning solution tank was not stored properly. The following corrective actions were identified:

- Implement BMPs for container storage of liquids.
- Clean up the oily residue in the truck parking area near the shop.

According to Ecology's facility/site database, a source control inspection was conducted at this property on March 24, 2011, under the Revised Site Visit Program. No other information about this inspection was available at the time this Data Gaps Report was prepared.

A source control inspection was conducted by SPU and Ecology on September 28, 2011 (SPU 2011g). Many leaking trucks (oils and leachate) and pavement stains were observed. No corrective actions were identified.

The facility is currently covered under an Industrial Stormwater General Permit (WAR000582), a KCIW Discharge Authorization (DA 785-02, issued April 15, 2010), and an air permit (SPU 2011g).

Northwest Enviroservice

On February 15, 1994, approximately 5,500 gallons of a blended fuel product (composed of petroleum products, hydraulic fluid, and non-halogenated paint solvent) and water were released from a 6,000-gallon capacity Bulktainer (a cylindrical fiberglass container mounted on a chassis trailer to be trucked to the rail loading yard) into the environment (Ecology 1994a,b; CH2M Hill 1997). The cause of the accident was attributed to vandalism, although no one was ever apprehended or charged. The Bulktainer was awaiting rail transfer from NWES to Salt Lake City, Utah, where it was to be burned for energy recovery. Chemical analysis of the blended fuel product before the spill indicated that it contained approximately 1,650 gallons water, 3,850 gallons petroleum products and hydraulic fluid, and 550 gallons of non-halogenated paint solvents. Approximately 3,095 gallons of spilled product were recovered during the initial spill cleanup activities (NWES 1994a).

The Bulktainer's valve was opened, and its contents were released on the NWES property. It subsequently entered a storm drain that carried the spill into the central wetlands area located between 2nd Avenue SW, West Marginal Way SW, and SR 509 (Figure 25). At the time of the spill, these wetlands provided storm drainage detention for the City of Seattle before they discharged through the city storm drains into the LDW at the Highland Way SW storm drain outfall (within the Terminal 115 source control area), as confirmed by dye tests conducted by Ecology on February 16, 1994 (CH2M Hill 1997). This wetland area currently discharges to the LDW through a surface channel that enters the waterway under the 1st Avenue S Bridge.

Based on emergency response actions and follow-up site inspections, it was determined that soil, possibly groundwater at the property, and sediments in the wetlands were affected by the spill (CH2M Hill 1997). The spilled material traveled through Wetland No. 1 before entering a city storm drain, and affected areas of Wetland No. 5 and Wetland No. 1 that were planned to be filled as part of the 1st Avenue S bridge construction (WSDOT 1994b). WSDOT indicated that these areas would be remediated prior to construction.

On February 24, 1994, Ecology notified NWES of its intent to initiate the natural resource damage assessment process (Ecology 1994c). In February and March, 1994, meetings were held with Ecology and other agencies regarding how to address the spill and remediate the site. In September 1994, Ecology expressed concern that no sampling plans or cleanup information had been received almost seven months after occurrence of the spill (Ecology 1994d).

NWES provided a status report in October 1994, including a sampling plan (NWES 1994b), and submitted an Independent Remedial Action Report and a request for a "No Further Action" determination in November 1994 for offsite areas affected by the spill (NWES 1994c). NWES identified the spilled material as a dangerous waste fuel, as defined by WAC 173-303-510(2)(a)

(CH2M Hill 1994c). Ecology expressed concern about the residual concentrations of heavy oil in Wetland No. 1 (Ecology 1994e).

An independent cleanup action for onsite contamination was conducted by NWES in 1995-1996 (CH2M Hill 1997).

On March 6, 1997, NWES reached a monetary settlement with Ecology for natural resource damages resulting from the spill (WSDOT 1997). According to WSDOT, NWES was to monitor the wetland for the progress of bioremediation, in coordination with Ecology. Once the site met cleanup standards, NWES was to request an NFA determination from Ecology for offsite impacts. It is unclear whether monitoring occurred.

According to Ecology's ISIS database, both the 8105 1st Avenue S site (listed in the Facility/Site Database as Northwest Enviroservice 2, FSID 2536) and the spill location (1st Avenue SW and West Marginal Way SW, listed in the Facility/Site Database as Northwest Enviroservice 2W, FSID 2537) were entered into Ecology's CSCSL based on a release report received on February 15, 1994. An independent cleanup action (Cleanup ID 1305 at the 8105 1st Avenue site, Cleanup ID 11303 for sediments associated with the spill, and Cleanup ID 11440 for the spill-related area upland of the sediments) is listed in ISIS. Both sites are listed as having suspected contamination of surface water and soil with halogenated organics, priority pollutant metals, non-halogenated solvents, and unspecified petroleum products. In addition, the spill site (Northwest Enviroservice 2W) is listed as having confirmed contamination of sediments with these same compounds. As of April 2012, both sites were "awaiting cleanup."

5.13.4 Environmental Investigations and Cleanups

Cleanup of the February 15, 1994 spill consisted of emergency containment and removal of spilled material; excavation and offsite disposal of contaminated soils, water, and related spill cleanup debris; completion of groundwater monitoring wells to determine if groundwater contamination resulted from the release; and completion of an offsite investigation to evaluate impacts from the release to offsite areas including the wetlands (CH2M Hill 1997). Spill response and cleanup activities were coordinated with Ecology, WSDOT, City of Seattle, King County METRO, and the U.S. Coast Guard (CH2M Hill 1994a).

Samples of waste fuel product, including samples of the solvent fraction and water fraction were collected on February 11, 1994, prior to the spill (CH2M Hill 1994b). Results indicate the presence of elevated concentrations of acetone, acrylonitrile, carbon tetrachloride, chloroform, MEK, 1,1,1-TCA, and barium in the waste fuel product. Other constituents in the samples were consistent with fuels known to be in the fuel mixtures (CH2M Hill 1994b).

Based on a recreation of the spill scenario, NWES determined that a small amount of product traveled 5 to 6 feet to the edge of the asphalt and onto the adjacent hillside, into a drainage ditch. The majority of the product flowed over the surface of the paved parking area, where it entered the storm drain system via a series of catch basins and piping. The material passed through a series of pipes and was discharged into an open-channel path through Wetlands No. 5, No. 1, and No. 3, in that order (CH2M Hill 1994c). According to a U.S. Coast Guard Pollution Investigator, approximately 100 gallons of product ultimately entered the LDW via the 72-inch Highland Park Way SW storm drain outfall near Terminal 115. The City of Seattle conducted dye testing to confirm the route of the spill. Tidal fluctuations caused spreading of the spilled product in the wetland area.

The spill site was divided into four areas:

- Onsite spill location;
- Offsite storm drain structures, including pipes and structures through which the spilled fuel product travelled between the spill location and the LDW, most within the City of Seattle storm drain system;
- Offsite wetlands, including Wetland Nos. 1, 3, and 5, located within the WSDOT right-of-way; and
- LDW outfall at Terminal 115.

Separate investigations were conducted for onsite and offsite spill areas. Figure 25 shows the onsite spill area and offsite spill pathway.

Offsite Spill Investigation (1994)

During the confirmatory investigation and sampling phase, 27 sediment samples were collected. Solids samples were collected at location MH-1, at the eastern edge of the NWES transfer facility at the point where the storm drain system leaves the property; at location MH-2, at Terminal 115, and at two locations where the storm drain system enters and exits Wetland No. 1 via 48-inch-diameter culverts (C-1 and C-5). Metals, PAHs, phthalates, VOCs, and petroleum hydrocarbons were detected (CH2M Hill 1994c). No analytes exceeded the SQS in sample MH-1 solids. In sample C-1, located at the entrance to Wetland No. 1, BBP, BEHP, fluoranthene, phenanthrene, and total HPAH exceeded the SQS. In sample C-5, located at the exit of Wetland No. 1, BEHP, total HPAH, and TPH exceeded the SQS.

A total of 19 sediment samples were collected at randomly selected locations in Wetlands No. 1, No. 3, No. 4, and No. 5 at a depth of 0 to 6 inches below ground surface. An additional sediment sample was collected from 6 to 12 inches bgs at location W1-7 because visible contamination was present. Metals, PAHs, phthalates, other SVOCs (pentachlorophenol), chlorinated VOCs, BTEX compounds, and petroleum hydrocarbons were detected. Results were compared to MTCA Method B soil cleanup levels. The following exceedances were noted: arsenic, cadmium, lead, PAHs, and TPH in Wetland No. 1; arsenic, cadmium, and TPH in Wetland No. 3; arsenic, cadmium, lead, and TPH in Wetland No. 5; and cadmium in Wetland No. 4, which was designated as the background sampling location. Samples collected in Wetland No. 1 exceeded the SQS for lead, mercury, BEHP, and total high molecular weight polycyclic aromatic hydrocarbons (HPAH); samples collected in Wetland No. 5 exceeded the SQS for lead, BEHP, and total HPAH. Two surface water samples collected from Wetland No. 1 contained zinc at 390 ug/L, above the state surface water criterion (CH2M Hill 1994c).

Three sediment samples were collected along the LDW shoreline, near the Highland Park Way SW storm drain outfall. Samples exceeded the SQS for zinc, fluoranthene, and total HPAH (CH2M Hill 1994c).

The study concluded that contaminants present above regulatory thresholds may be attributed to industrial roadside and adjacent industrial sources, and are not related to the February 1994 NWES spill. Based on this information, an NFA designation was requested for the storm drain structures, Wetlands No. 1, 3, and 5, and the LDW shoreline at Terminal 115 (CH2M Hill 1994c).

Samples results for the offsite spill investigation are included in Tables 13 and 14 as part of the central wetlands area.

Onsite Soil Investigation (1995-1996)

An onsite soil investigation and cleanup was completed in 1995. A spill simulation exercise and subsequent investigations indicated that the spill extended approximately 5 to 6 feet east of the Bulktainer, onto the parking lot, and over the unpaved slope that borders the eastern boundary of the facility. Approximately 300 cubic yards of soil was excavated from an area that measured approximately 12 feet by 80 feet, and extended to 10 feet below the ground surface (CH2M Hill 1997). A portion of the excavation extended onto the 8111 1st Avenue S property, occupied at that time by Patent Construction Systems. Verification samples confirmed that all remaining TPH concentrations were below the target cleanup level of 200 mg/kg. Chemicals detected at concentrations above screening levels in verification soil samples are listed in Table 21.

In addition, four groundwater monitoring wells were installed in the vicinity of the spill to determine the possible presence of petroleum-related product in site groundwater. A groundwater monitoring program was implemented because the soil affected by the spill event was in contact with the groundwater. Groundwater samples were collected in January 1996 and June 1996; samples were analyzed for VOCs, TPH, naphthalene, and 2-methylnaphthalene. Benzene (3 ug/L) and TPH (1,500 ug/L) were detected above MTCA Method B groundwater cleanup levels in January 1996; no samples exceeded the MTCA Method groundwater cleanup levels in June 1996 (CH2M Hill 1997).

5.13.5 Potential for Sediment Recontamination

A spill of blended fuel product occurred at the NWES facility in 1994; the spilled material flowed through a storm drain to the central wetlands area and subsequently to the Highland Way SW SD outfall at Terminal 115. This property is on Ecology's CSCSL for both the onsite spill area and the offsite spill pathway. Currently, Waste Management operates a fleet services and fueling facility at this location. The potential for sediment recontamination associated with historical or ongoing activities at this property is summarized by transport pathway below.

Soil and Groundwater

Contamination of soil, groundwater, and sediments with petroleum hydrocarbons and chlorinated solvents occurred in 1994 as a result of a spill at the NWES facility. Because the spill occurred almost 20 years ago, and because the chemicals are not considered sediment COCs for the 1st Avenue S SD source control area, the potential for sediment recontamination associated with the groundwater pathway is considered to be low.

Stormwater

No corrective actions were identified at this property during a September 2011 SPU source control inspection. The potential for sediment recontamination associated with the stormwater pathway is believed to be low.

5.13.6 Data Gaps

No data gaps were identified for this property.

5.14 Magnetic & Penetrant Services (MAPSCO)

Facility Summary: MAPSCO	
Address	8135 1st Avenue S 98106
Tax Parcel No.	3124049134
Property Owner	Promise Land Enterprise LLC
Parcel Size	0.91 acre (39,600 square feet)
Facility/Site ID	46338473
Alternate Names	Magnetic & Penetrant Services Co Inc; MAPSCO
SIC Code	3471: Plating and polishing
EPA ID No.	WAD988482659
NPDES Permit No.	WAR011078
KCIW Permit No.	7167
UST/LUST ID No.	None
Air Quality ID	C_033_11575

Magnetic & Penetrant Services Co., Inc. (MAPSCO) operates on a parcel owned by Promise Land Enterprise. The property is bordered to the north by Waste Management Inc., to the east by 1st Avenue S, to the south by Standard Steel Fabricating, and to the west by a property owned by First Avenue Industries LLC (Figure 12). King County's Tax Assessor records indicate that one 20,640-square foot prefabricated steel building, constructed in 1966 and used as a warehouse, is present on site. The facility has been at this location since February 1992 (MAPSCO 1996).

5.14.1 Current Operations

MAPSCO conducts metal surface finishing and magnetic and dye penetrant services for machined metal parts. The company services customers in the aerospace and commercial industries with conversion coating, painting, dye penetration inspection, and magnetic penetration inspection. Parts (aluminum or stainless steel) that are processed or inspected are generally associated with the aircraft industry, and range in size from small washers to pieces as large as 70 inches in length (AET 1991). Specific processes conducted at MAPSCO include: anodizing, chem-treating (Alodine), titanium etching, phosphate fluoride coating, passivation of stainless steels, application of primers and topcoat, application of dry film lubricants, magnetic particle inspection, vapor degreasing, and emulsion cleaning.[16]

Chemicals used at the facility include (MAPSCO 1996):

[16] http://www.mapscofinishing.com

Product	Chemical Name	Purpose	Average Daily Quantity
Alodine 1200	Chromic acid	Chemical conversion coating of aluminum	0.8 pounds
Nitric acid	Nitric acid	Passivation of stainless steel	12 ounces
Sodium dichromate	Sodium dichromate	Passivation of stainless steel	0.75 ounce
Sulfuric acid	Sulfuric acid	Anodizing of aluminum	32 ounces
FP-903	Dye penetrant inspection fluid	Inspection of small aircraft parts	56 ounces
Oakite 160	Sodium hydroxide	Etch cleaning of aluminum	1.0 pound
Oakite LNC	Nitric acid	De-smutting after etch	1.0 gallon
Oakite 61B	Sodium carbonate	Hot soap cleaner	1.5 ounce
NA	Sodium hydroxide	pH adjustment	0.5 gallon
Brulin 815-GD	Emulsion cleaner	Light duty parts cleaner	1.0 gallon

The facility also uses paint strippers and other solvents (methylene chloride, acetone), and operates a distillation unit for solvent recycling (Ecology 2004i).

Wastewater streams include non-metal bearing wastewater from dye penetrant testing, which is pH adjusted in a flow-through system; and metal-bearing wastewater, which is batch treated prior to discharge. The facility's wastewater treatment process treats and discharges approximately 10,000 gallons of process water per day to the sanitary sewer (King County 1996b). The following waste streams are discharged to the sanitary sewer (MAPSCO 1996):

Process	Substances Discharged	Type of Pretreatment	Average Daily Quantity
Chemical conversion coating of aluminum	Chromium	Chemical precipitation	25 gallons
Passivation of stainless steel	Chromium, lead, nickel	Chemical precipitation	25 gallons
Sulfuric acid anodizing	Copper, zinc	pH neutralization	220 gallons
Dye penetrant rinsing	Wetting agent (detergent)	pH adjustment	600 gallons
Alum deoxidizer	Copper, zinc	pH adjustment	1,100 gallons
Alkaline etching	Sodium hydroxide	pH adjustment	900 gallons
Emulsion cleaning	Dilute emulsion	pH adjustment	500 gallons
Alkaline cleaning	Sodium carbonate	pH adjustment	500 gallons

According to the facility's 1991 waste discharge permit application, metal-bearing wastewater is produced when processed parts are removed from any of several treatment baths (AET 1991). The treatment baths typically contain an acid and a metal salt, such as sodium dichromate. Potassium ferricyanide (Alodine 1200) is used in one chemical bath. Parts are dipped in successive countercurrent flowing rinse tanks until the final concentration of contaminants is reduced to acceptable levels. This countercurrent flow process reduces the quantity of rinse water needed.

As of 1996, approximately 1,500 pounds of sludge from the chrome reduction process and 2,200 pounds of waste paint were generated each quarter (6,000 pounds per year and 8,800 pounds per year, respectively). These were transported to a licensed treatment, storage, and disposal facility (MAPSCO 1996). A filter press has since been installed to reduce the volume of sludge for disposal. As of December 2009, an average of 2,000 pounds of filter cake was being shipped offsite for disposal approximately three times per year (Ecology 2009k).

The floor in the process and waste treatment area is bermed to provide secondary containment. Three adjacent areas are bermed separately: the Alodine tank line; the filter press area; and the waste/chemical storage area (Ecology 2005k). Spills, drips, and leaks are collected in a floor sump and pumped into the batch treatment tank. The floor, slab joints, and berm joints are sealed with a chemical-resistant coating. Painting is conducted in dry paint booths. A small building added in 2004 includes a bag house.

5.14.2 Historical Operations

MAPSCO operated at 309 S Cloverdale Street (within the Riverside Drive source control area) prior to December 1991 (AET 1991).

According to the Seattle City Directory, Van Dal Distributors reportedly operated at this location between 1970 and 1975, and Treasure Imports operated at this location between 1980 and 1994 (Riley 1999b).

No other information about historical operations at this property was available.

5.14.3 Regulatory History

<u>Wastewater Discharges</u>

METRO issued a wastewater discharge permit (No. 7617) to MAPSCO on December 20, 1991 (METRO 1991). The permit authorizes discharge of 2,200 gallons per day. The permitted discharge volume was increased to 4,100 gallons per day in June 1995 (METRO 1995).

In October 1996, Permit No. 7617 was cancelled, and a new permit (No. 7681) was issued to MAPSCO (King County 1996a,b). The new permit authorized a discharge of 10,000 gallons per day. The permit was reissued in October 2001 (KCIW 2001) and October 2006 (KCIW 2006). This permit expired on October 29, 2011.

<u>Hazardous Waste Compliance Inspections</u>

MAPSCO is a large quantity generator of hazardous waste.

Ecology conducted a Dangerous Waste Compliance Inspection at MAPSCO on November 2 and 9, 2004 (Ecology 2004i). Areas of non-compliance included: improper labeling of product and dangerous waste containers; dangerous waste containers were not kept closed; and improper management of wastes in satellite accumulation areas, including improper labeling. MAPSCO submitted a compliance certificate, and Ecology confirmed that the requested actions were satisfactorily completed (Ecology 2004k; MAPSCO 2004).

Another Dangerous Waste Compliance Inspection was conducted at MAPSCO on November 22, 2005 (Ecology 2005k). During this inspection, the floor sump was observed to be full of liquid. In addition, there was an accumulation of sludge and water on the floor under the tank line. Ecology inspectors noted that the secondary containment area was being operated as a dangerous waste accumulation tank; as such, it must comply with Washington state tank regulations, or MAPSCO must stop accumulating hazardous wastes in this area by keeping it clean and dry. Ecology inspectors also recommended that the epoxy coating on the secondary containment system had been applied in 1994, and needed to be inspected and possibly replaced. Additional areas of non-compliance included: improper labeling of dangerous waste containers; and dangerous waste containers were not kept closed. MAPSCO submitted a compliance certificate in January 2006 with updated procedures to eliminate accumulation of hazardous wastes in the secondary containment area (Reese 2006).

Ecology conducted a Dangerous Waste Compliance Inspection at MAPSCO on December 22, 2009 (Ecology 2009k). Several violations were identified, including: improper labeling of hazardous waste containers; hazardous waste containers were not closed when not in use; waste accumulation for greater than 90 days; improper storage of universal waste bulbs; and inadequate aisle space in the distillation area. In addition, MAPSCO had not yet obtained a waste clearance to dispose of shot peen dust (see August 2008 Urban Waters Environmental Compliance inspection below). MAPSCO submitted a compliance certificate in January 2010 in response to the violations/recommendations noted in Ecology's inspection report (Reese 2010a,b), and Ecology determined that the actions had been satisfactorily completed (Ecology 2010a).

Urban Waters Environmental Compliance Inspections

Ecology conducted an environmental compliance inspection at MAPSCO on June 26, 2008 (Ecology 2008c). Numerous corrective actions were identified, as summarized below:

- Complete a written spill plan and post at appropriate locations (near the waste storage area, loading/unloading area, paint/solvent still, vapor degreaser).
- Obtain spill containment and clean-up materials, and place in easily accessible locations.
- Implement proper housekeeping, including sweeping of the lot and loading area, regular checks of catch basins for sediment accumulation, maintenance of catch basins as needed, cleanup of spills and leaks as they occur; and proper disposal of excess waste and old equipment.
- Properly store containerized materials, including covering and providing secondary containment for hazardous waste, solvents, and hazardous materials. Keep containers covered when not in use.
- Clean and eliminate leaks and spills from storage areas. Spills of chromate primer dust were observed around the waste accumulation area.
- Implement proper material transfer practices, such as the process of adding painting dusts and debris to waste accumulation boxes.
- Properly store product/waste, including providing adequate aisle space between rows of waste containers.
- Properly label containers.
- Submit accurate Dangerous Waste Annual Reports. Errors were noted in the facility's 2007 submittal.

- Evaluate whether a waste clearance is needed from King County Solid Waste to dispose of shot peen dust[17] in the dumpster.
- Properly store materials located outdoors, including cover and containment. Specific items mentioned by the Ecology inspector include painting racks coated in chromate primer, CRT and E-waste items destined for recycling.
- Evaluate whether the facility must apply for coverage under Ecology's ISGP.

Ecology conducted a follow-up inspection on August 12, 2008 (Ecology 2008d). Most of the corrective actions identified during the June 26 inspection had been completed. Three remaining issues were identified:

- Obtain a waste clearance through the King County Waste Characterization Program, authorizing solid waste disposal of the shot peen dust.
- Complete an ISGP application and a SWPPP, and submit these to Ecology.
- Determine the status of the chromate treatment process and treated water reuse, to assess whether this is part of the plating process, treatment-by-generator, permit-by-rule, or some combination of the three. Provide proper documentation in the next Dangerous Waste Annual Report.

The permit application and SWPPP were not included in the files reviewed during preparation of this Data Gaps Report[18]; however, MAPSCO was issued ISGP No. WAR011078 on October 27, 2008.[19]

5.14.4 Environmental Investigations and Cleanups

According to the 1991 Metro waste discharge permit application, soil samples were collected at the site prior to MAPSCO's move to this location. No evidence of metals or toxic organic contamination was identified (AET 1991).

Following the June 26, 2008 Urban Waters Environmental Compliance Inspection, Ecology coordinated with SPU to conduct dye testing on July 10, 2008, to confirm that MAPSCO catch basins are connected to the storm drain system, and therefore discharge to surface water (Jeffers 2008). No drainage maps were available to show locations of catch basins or associated piping. Ecology also requested SPU to collect catch basin solids samples to identify potential impacts of paint residues or other materials on the storm drain system.

No information was available in the files reviewed during preparation of this Data Gaps Report to indicate whether the dye testing and sampling took place. However, MAPSCO subsequently applied for and received coverage under the ISGP (No. WAR011078) in October 2008.

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[17] Shot peening is a cold working process in which the surface of a metal part is bombarded with small spherical media called shot. This process reduces fatigue and stress corrosion failures, and significantly increases part life.
[18] An updated SWPPP was received by Ecology on April 2012; information from the updated SWPPP will be included in the final Data Gaps Report.
[19] Ecology Facility/Site Database: http://www.ecy.wa.gov/fs/

5.14.5 Potential for Sediment Recontamination

MAPSCO has operated a metal surface finishing and dye penetrant testing operation at this location since 1992. The potential for sediment recontamination is summarized by pathway below.

Soil and Groundwater

No information on soil or groundwater contamination associated with historical or current operations at this property was identified. The potential for sediment recontamination associated with the groundwater pathway is considered low.

Stormwater

Dangerous waste and Urban Waters environmental compliance inspections have identified areas of non-compliance, including general housekeeping practices, waste handling practices, and improper storage of materials located outdoors. There is therefore a potential that chemicals of concern for LDW sediments may be released to the storm drain system. MAPSCO applied for and received coverage under the ISGP in October 2008. Stormwater is transported to a wetland near the 1st Avenue S bridge prior to discharge to the waterway, and the facility is located over a mile from the LDW. Therefore, the potential for LDW sediment recontamination associated with the stormwater pathway is considered low.

5.14.6 Data Gaps

A map showing the current facility layout, including catch basins and storm drains on the property, is needed. This may be present in the SWPPP that was prepared in support of the facility's stormwater permit.

Given the facility's regulatory history, continued inspections are needed to assess compliance with regulations and BMPs related to discharge of contaminants to the storm drain system and the potential for subsequent transport to the LDW.

5.15 Standard Steel Fabricating

Facility Summary: Standard Steel Fabricating	
Address	8155 1st Avenue S 98106
Tax Parcel No.	3124049160; 3124049157
Property Owner	9160: Standard Steel Fabricating 9157: IVMG LLC
Parcel Size	9160: 1.99 acres (86,630 sq ft) 9157: 0.57 acre (24,829 sq ft)
Facility/Site ID	42718345
Alternate Names	None
SIC Code	3441: Fabricated structural metal
EPA ID No.	WA0000016154
NPDES Permit No.	WAR000617
UST/LUST ID No.	UST: 1527

Standard Steel Fabricating Co., Inc. (Standard Steel Fabricating) is bordered by MAPSCO to the north, 1st Avenue S to the east, Lion Trucking to the south, and a Lion Trucking parking area and a parcel owned by First Avenue Industries to the west (Figure 12). According to King County's Property Tax Assessor, the facility includes a 16,000-square foot prefabricated steel light manufacturing building constructed in 1951 and a 1,572-square foot wood frame office building constructed in 1949. The property is mostly paved except for a vegetated hillside on the west and southwest edges of the property.

The company has been in business since 1936 (Standard Steel 2012) and has been operating at this location since at least 1955 (Riley 1999b).

5.15.1 Current Operations

Standard Steel Fabricating conducts welding, grinding, and metal work operations inside an enclosed warehouse (Ecology 2007d). Portions of the property are paved; the remainder is gravel. The facility operates a paint spray booth. Stormwater runoff from galvanized roofing is treated to remove zinc.

Offsite water runs onto the property from the hillside on the west side of the property. The flow and velocity of the water coming from the hillside is uncontrolled, and may carry sediment and dirt during heavy storms (Ecology 2007d). This water is diverted via a ditch, and is routed around the perimeter of the property to a piped conveyance system.

Standard Steel Fabrication is covered under the ISGP (WAR000617).

5.15.2 Historical Operations

According to Ecology's UST database, a small steel leaded gasoline UST (less than 1,100 gallons) was installed at this property in 1964; as of August 1996, it was listed as "Removed."

No other information on historical operations was available.

5.15.3 Regulatory History

Ecology conducted an unannounced stormwater compliance inspection on April 26, 2007 (Ecology 2007d). DMRs reviewed during the inspection indicated that benchmark levels for zinc in stormwater were consistently exceeded; concentrations ranged from 160 to 440 ug/L during 2004 to 2007, above the benchmark of 117 ug/L. In addition, DMRs for three calendar quarters were missing.

At the time of the 2007 inspection, the facility appeared orderly, with minor storage of non-ferrous metalwork outdoors. Red oxide primer and grinding grit were observed to have been tracked out of the facility doors (Ecology 2007d). The ditch carrying stormwater around the perimeter of the facility appeared clear. Dirt from the gravel areas of the facility had been tracked onto the paved lot.

The following compliance actions/recommendations were identified (Ecology 2007d):

- Submit a Level One response for exceedance of the zinc benchmark with the next DMR (first quarter 2007), and submit Level One responses with each DMR that documents a benchmark exceedance of a sampled parameter.

- Regularly sweep the paved lot to ensure that dirt tracked onto the lot is not discharged to the stormwater conveyance system.
- Regularly (possibly daily) sweep all entrances and exits into the warehouse where paint and grinding debris is tracked out of the building, to prevent metal and paint contamination of the stormwater runoff.

Ecology conducted an environmental compliance inspection at this facility on April 22, 2009. The inspector noted that the facility's efforts to minimize pollution impacts to stormwater were "exceptional" (Ecology 2009d). Specifically, the inspector noted Standard Steel Fabricating's treatment of stormwater runoff from galvanized roofing to remove zinc, frequent parking lot sweeping, and installation/maintenance of a stormwater drainage system around the property.

The only concern noted during the inspection was related to air pollution activities from the paint spray process, and suggested the facility contact PSCAA to determine whether formal notification of activities is required (Ecology 2009d). Standard Steel Fabricating agreed in May 2009 to investigate the applicability of air regulations to the company's activities (Davis Wright 2009). No further information was available.

5.15.4 Potential for Sediment Recontamination

Standard Steel Fabricating has operated at this property since at least 1955. The potential for sediment recontamination is summarized by pathway below.

Soil and Groundwater

No information on soil or groundwater contamination associated with historical or current operations at this property was identified. The potential for sediment recontamination associated with the groundwater pathway is considered low.

Stormwater

The facility has been inspected by Ecology, and was determined to be in compliance with applicable regulations and BMPs as of April 2009. The potential for sediment recontamination associated with the stormwater pathway is considered low.

5.15.5 Data Gaps

No data gaps were identified for this property.

5.16 Former Global Diving & Salvage

Facility Summary: Former Global Diving & Salvage	
Tax Parcel No.	3124049157
Address	8165 1st Avenue S
Property Owner	IVMG LLC
Parcel Size	0.57 acre (24,829 sq ft)
Facility/Site ID	NA
SIC Code	NA

Facility Summary: Former Global Diving & Salvage	
EPA ID No.	NA
NPDES Permit No.	NA
UST/LUST ID No.	NA

The former Global Diving & Salvage Inc. (Global Diving & Salvage) facility historically operated at parcel 9157 (Figure 9), which is bordered by Lion Trucking to the south and west, 1st Avenue S to the east, and Standard Steel Fabricating to the north. An 8,048 sq ft machine shop, built in 1952, is present on parcel 9157 (Figure 12).

Global Diving & Salvage's corporate offices are located at 3840 West Marginal Way SW, within the Trotsky Inlet source control area (EAA-2).

5.16.1 Current Operations

King County tax assessor records lists the property name as Aviation Ventures. No additional information regarding current operations at the property was available for review.

5.16.2 Historical Operations

Global Diving & Salvage operated at the property between 2009 and 2010. The company shared the northern portion of the building with a machine shop. Global Diving & Salvage manufactured and sold spill curtains for marine spill containment. The facility stored used equipment outdoors on paved surfaces (SPU 2010b).

One catch basin is located on the property; however, the location of the catch basin is unknown. Stormwater at the facility drains to the 1st Avenue S SD system. There is a small floor drain near the front garage door and a floor drain in the back room of the facility. The company indicated the drains are connected to the sanitary sewer during an inspection in January 2010 (SPU 2010b).

5.16.3 Regulatory History

SPU and Ecology inspected Global Diving & Salvage on January 25, 2010. The inspectors identified the following corrective actions (SPU 2010c):

- Complete a written spill plan and post at appropriate locations at the facility.
- Educate employees about the spill plan and spill kit.
- Properly manage all waste and recyclables.

Inspectors smelled PCBs in the back room of the facility but were unable to determine the source of the smell (SPU 2010b).

SPU re-inspected the facility on March 4, 2010. Waste was stored on a secondary containment spill pallet and was labeled properly. The facility had a spill plan in place. The floor drain at the front of the building was plugged and inspectors confirmed the floor drain at the rear of the building was connected to the sanitary sewer (SPU 2010g). SPU determined the facility was in compliance during the follow-up inspection (SPU 2010h).

5.16.4 Potential for Sediment Recontamination

The potential for sediment recontamination via this property is summarized below by transport pathway.

Soil and Groundwater

No information on soil or groundwater contamination associated with historical or current operations at this property was identified. The potential for sediment recontamination associated with the groundwater pathway is considered low.

Stormwater

The former Global Diving & Salvage facility complied with corrective actions identified by SPU in 2010, and the facility is no longer present at this location. No information is available about current operations at this property. The potential for sediment recontamination associated with this property is unknown.

5.16.5 Data Gaps

Information regarding current industrial activities at this property, if any, is needed to verify that these activities are in compliance with all applicable regulations and BMPs.

5.17 Lion Trucking

Facility Summary: Lion Trucking	
Address	8425 1st Avenue S 98108
Tax Parcel No.	3124049172; 3124049173; 3124049014
Property Owner	D&Z Lion Properties LLC
Parcel Size	9172: 1.5 acres (65,447 sq ft) 9173: 0.28 acres (12,160 sq ft) 9014: 1.57 acres (68,389 sq ft)
Facility/Site ID	16981594 (Lion Trucking Inc) 17445 (Old Dominion Freight Line Inc)
Alternate Names	Old Dominion Freight Line Inc; 1st Ave S Waste Oil; Iverson Property
SIC Code	9999: Nonclassifiable establishments
EPA ID No.	WAD988486411 (inactive)
NPDES Permit No.	none
UST/LUST ID No.	UST: 510118

Lion Trucking, Inc. and Old Dominion Freight Lines operate on Parcels 9172 and 9173 (Figure 9). The parcel is owned by D&Z Lion Properties LLC. The property is bordered by Standard Steel Fabricating (parcel 9160) and IVMG LLC (parcel 9157) to the north; 1st Avenue S to the east; a private residence to the south; and property owned by City of Seattle Parks to the west (Figure 12). According to King County Tax Assessor records, parcel 9172 contains two buildings a 5,253-square foot masonry office building, constructed in 1959; and a 2,400-square foot prefabricated steel structure, built in 1979 and used as a service repair garage.

5.17.1 Current Operations

Lion Trucking is a hauler for extra-heavy containers; the company has been in business since 1969.[20] Lion Trucking's service territory includes Washington, Oregon, Idaho, Montana, and British Columbia. In 2007, parcel 9014 was paved and retaining structures were constructed as part of an expansion of the storage yard. This parcel is currently used for truck parking.

Old Dominion Freight Lines leases space from Lion Trucking at this location, including a maintenance building and small parking lot. No other information on operations by Old Dominion Freight Lines was available.

5.17.2 Historical Operations

D&Z Lion Properties LLC purchased the property from Jerry Warfield on December 30, 2005; Jerry Warfield had purchased it from Craig Dennis et al. in December of 1995.

Alternate names for this property, as listed in Ecology's Facility/Site Database, include Iverson Property and 1st Avenue S Waste Oil. According to Ecology UST database, three USTs were present at the Iverson Property; no specific information about these tanks was available, and their status is unknown.

No additional information on historical operations at this location was identified during the preparation of this Data Gaps Report.

5.17.3 Regulatory History

Lion Trucking

On December 15, 2006, an estimated 10 gallons of diesel fuel was spilled from a truck saddle tank to a ditch at the Lion Trucking property (Ecology 2006f). The tank was reportedly damaged by debris on the roadway, and the damage was not observed by employees until the truck was parked. The diesel fuel migrated through a wetland area on Lion Trucking property, and was discharged to the combined sewer (Ecology 2006g).

Ecology conducted an environmental compliance inspection at the Lion Trucking property on April 15, 2010 (Ecology 2010g). The following issues were noted:

- A mixture of leaked product and rainwater was observed under the back of a mobile maintenance truck. The liquid had spilled out of the truck and dripped to the parking lot near a stormwater catch basin.
- Many stains were observed on the parking lot; these appeared to be a result of leaks from cars and trucks. The parking lot was large and contained several stormwater catch basins.
- A spill kit was locked away in a container and no key was available. The spill preparedness was inadequate, as the spill kit was not easily accessible.

[20] http://www.liontruckingusa.com/about.html

Ecology directed Lion Trucking, Inc. to comply with the following corrective actions (Ecology 2010g):

- Clean up all spills as soon as possible to prevent contents from reaching storm drains.
- Properly store any products/waste.
- Properly dispose of spent fluorescent lamps.
- Clean and eliminate leaks and spills from parking and storage areas.
- Improve spill response procedures by staging spill control products within easy access for employees to use; post the State of Washington Spill reporting emergency telephone number, as well as internal emergency contacts and telephone numbers by the phone; train staff to manage a spill safely; and create and implement an annual refresher training program.
- Apply for coverage under the general stormwater permit, or apply for a Conditional No Exposure exemption, as the work being performed at the shop is an industrial activity and must be evaluated under the ISGP.

Ecology conducted a follow-up inspection, and notified Lion Trucking on June 18, 2010, that corrective actions had been implemented and that environmental compliance had been achieved (Ecology 2010i).

Old Dominion Freight Lines

Ecology conducted an environmental compliance inspection Old Dominion Freight Lines in April 2010. Minor housekeeping issues were identified. Oil leak spots were present in the parking lot and nearby storm drain. Approximately 40 old rusty drums were observed in the bushes uphill from the property; these appear to have been dumped long ago and rusted through (Ecology 2011a). No other information about this or follow-up inspections, if any, was available.

5.17.4 Potential for Sediment Recontamination

The Lion Trucking property is located over a mile from the LDW. There is no documentation of soil or groundwater contamination, although rusty drums were observed in the bushes uphill of the property. The potential for sediment recontamination is summarized by pathway below.

Soil and Groundwater

No information on soil or groundwater contamination associated with historical or current operations at this property was identified. No information on the contents or source of the rusty drums uphill of the property was available. The potential for sediment recontamination associated with the groundwater pathway is unknown.

Stormwater

Both facilities have been inspected by Ecology. Lion Trucking was determined to be in compliance with applicable regulations and BMPs as of June 2010. No information on follow-up inspections, if any, at Old Dominion Freight Lines was available.

5.17.5 Data Gaps

Additional information is needed about the source and contents of rusty drums observed near this property, in order to assess the potential for sediment recontamination via the groundwater pathway.

Information on follow-up inspections, if any, at Old Dominion Freight Lines is needed to assess the potential for LDW sediment recontamination associated with current activities at this property.

5.18 Urban Hardwoods Sawmill

Facility Summary: Urban Hardwoods Sawmill	
Tax Parcel No.	3124049125
Address	8427 1st Avenue S
Property Owner	South Park 45 LLC
Parcel Size	2.58 acres
Facility/Site ID	14193: Urban Hardwoods Sawmill
SIC Code	NA
EPA ID No.	NA
NPDES Permit No.	NA
UST/LUST ID No.	NA

Urban Hardwoods Sawmill (Urban Hardwoods) operates at parcel 9125 (Figure 9). The facility is bordered to the south and west by Westcrest Park and Stables, and to the east by 1st Avenue S, and to the north by a residential property (Figure 12). According to King County tax assessor records, the facility consists of the following:

- A 310 sq ft storage shed built in 1930, and
- A 380 sq ft office building built in 2994.

5.18.1 Current Operations

Urban Hardwoods is a woodworking operation that has operated on parcel in 9125 since 1998. Urban Hardwoods hauls salvaged timber to the facility's sawmill at 8427 1st Avenue S and converts the material to finished furniture products (Nehring 2011).

No information was available regarding stormwater drainage from this property. According to the drainage map in Figure 8, stormwater may be discharging to the sanitary sewer or the 1st Avenue S ditch.

5.18.2 Historical Operations

No information regarding historical operations at this property was available for review.

5.18.3 Regulatory History

Ecology inspected Urban Hardwoods on June 9, 2009. Ecology identified the following issues (Jeffers 2009d):

- Complete a written spill plan and post at appropriate locations at the facility.
- Evaluate the need for coverage under the ISGP or a CNE certificate.

No additional information regarding compliance with issues identified during the June 2009 inspection was available for review. No ISGP or CNE certificate has been issued for this facility.

5.18.4 Potential for Sediment Recontamination

The potential for sediment recontamination via this property is summarized below by transport pathway.

Soil and Groundwater

There is no information available that indicates soil or groundwater contamination is present at this property. The property is located over a mile from the LDW; therefore the potential for sediment recontamination via the groundwater pathway is considered low.

Stormwater

Ecology has directed the facility to evaluate the need for coverage under the ISGP; it is not clear if operations at the facility require coverage under the ISGP. However, no significant compliance issues were identified during a 2009 inspection, and the facility is located over a mile from the LDW. Therefore, the potential for sediment recontamination via the stormwater/spill pathway is considered low.

5.18.5 Data Gaps

Additional information is needed to assess whether current activities at this facility have the potential for sediment recontamination via stormwater discharge. Coverage under the ISGP or a CNE certificate may be required (Wright 2012).

5.19 South Transfer Station/Former S Kenyon Street Bus Yard

Facility Summary: City of Seattle South Transfer Station	
Tax Parcel No.	2924049104; 2924049006; 2924049099; 7328401175
Address	9104: 110 S Kenyon Street 9006: 130 S Kenyon Street 9099:150 S Kenyon Street 1175: 200 S Kenyon Street
Property Owner	City of Seattle
Parcel Size	9104: 2.39 acres 9006: 4.26 acres 9099: 1.82 acres 1175: 0.65 acre Total: 9.12 acres

Facility Summary: City of Seattle South Transfer Station	
Facility/Site ID	3453 (South Transfer Station) 3329 (Bus Yard Site Preparation CSWGP) 29892767 (Kenyon Drum) 3388037 (South Kenyon Street) 47374256 (We Painters Inc.) 63293426 (Ryder Student Transportation Services) 90247719 (First Student) 96838255 (Tacoma & Seattle Trailer Repair)
SIC Code	1799: Special Trade Contractors, NEC (We Painters Inc.) 4111: Local and Suburban Transit (First Student) 7513: Truck Rental And Leasing, No Drivers (First Student) 9999: Nonclassifiable Establishments (First Student)
EPA ID No.	WAR000008755 (We Painters Inc.) WAD075124800 (First Student)
NPDES Permit No.	WAR124626 (Construction SW General Permit) WAR125583 (Industrial SW General Permit) SO3002329 (First Student; inactive)
UST/LUST ID No.	UST: 6109 (Tacoma Seattle Trailer Repair) LUST: 519164 (Tacoma Seattle Trailer Repair) LUST/UST: 425723 (Ryder Student Transportation Services)

Contiguous parcels 9104, 9006, 9099, and 1175 (Figure 9) are owned by the City of Seattle/SPU. The 9.12 acres property is being developed into SPU's South Transfer Station. The facility is bordered to the south by S Kenyon Street, to the west by SR 509, and to the east by SR 99 (Figure 13).

The property is also referred to as the Former S Kenyon Street Bus Yard.

5.19.1 Current Operations

SPU acquired the property in 2007 to construct a new South Transfer Station. Existing buildings on the property were demolished in late 2009. Construction of the South Transfer Station began in 2010 (SPU 2009a). The property contains four parcels located at 110, 130, 150, and 200 S Kenyon Street. The facility will become the primary recycling, re-use, and hazardous waste facility for south Seattle (SPU 2009a). The property will consist of a new transfer station building, scales, access roads, operations yard, office and other associated structures. According to SPU's website, the facility will open in the summer of 2012 (SPU 2012d).

SPU currently operates the South Recycling and Disposal Station (SRDS) at 8100 2nd Avenue S, located southeast of the South Transfer Station. Historical documents also referred to the SRDS as the South Transfer Station. Information and data gaps pertaining to the SRDS are discussed in Section 5.23 (South Recycling and Disposal Station).

5.19.2 Historical Operations

The property was used for agriculture between the early 1940s and mid 1950s. The parcels have been use for industrial operations since the 1960s. Limited information was available for historical operators at the property between 1960 and 2002. Historical operations include a bronze foundry, auto wrecking, truck trailer storage and repair, a painting operation, and bus maintenance and storage. The following companies conducted operations at the property (G-Logics 2007; AMEC 2009b):

Facility Name	Tax Parcel	Address	Years of Operation	Facility/Site ID	Operations
Elliott Bronze Company	7328401175	200 S Kenyon	Mid-1960s to late-1970s	None Identified	Bronze foundry
Newton Auto Parts & Wrecking	2924049104	110 S Kenyon	1975	None Identified	Wrecking yard
AAA Transfer	2924049099	150 S Kenyon	1975	None Identified	Unknown
B&G Auto Wrecking	2924049104	110 S Kenyon	1980-1996	None Identified	Wrecking yard
Tacoma & Seattle Trailer Repair	2924049099	150 S Kenyon	1982-1996	96838255	Trailer storage and repair
We Painters	2924049104	110 S Kenyon	1996	47374256	Painting
CT Express	2924049099	150 S Kenyon	1996	None Identified	Unknown
Emerald Lines	2924049099	150 S Kenyon	1996	None Identified	Unknown
Bry's Auto Wrecking	2924049104	110 S Kenyon	2002	None Identified	Auto parts, service, and wrecking yard
Ryder Corporation	2924049006	130 S Kenyon	1982-2002	63293426	Truck rental, fueling, servicing, container storage, and management of school buses
First Student	2924049006	130 S Kenyon	2002-2009	90247719	Maintenance, storage, and fueling of buses
Starline	2924049099	150 S Kenyon	2009	None Identified	Coach bus operations
Curtis Transportation	2924049099	150 S Kenyon	2009	None Identified	Office operations

The Ryder Corporation (Ryder) began bus operations on parcel 9006 in 1982. Operations included storage and repair of rental trucks and school buses. Operations on parcel 1175 changed from a bronze foundry to bus storage in 1995. Operations on parcel 9104 changed from auto wrecking to bus storage in 2002. Ryder changed its company name to First Student in January 2002 and continued bus operations at the property (First Student 2002). The company repaired, stored, and fueled buses, and occupied one of two maintenance shops on the property. Starline Luxury Coach Buses and Curtis Transportation occupied parcel 9009. The companies vacated the property in July 2009 (AMEC 2009b).

Three buildings were present on the property including a 500 sq ft office at 110 S Kenyon Street, a 10,340 sq ft maintenance shop/office at 130 S Kenyon Street, and an 8,220 sq ft maintenance shop/office at 150 S Kenyon Street. A fueling area including a fueling canopy, pump island with dispenser, and a 12,000-gallon diesel UST were present on the central portion of the property. Other features on the property included gravel-lined bus parking areas, two concrete-paved bus wash areas, and one oil water separator (AMEC 2009a).

Stormwater runoff from the Former Kenyon Street Bus Yard was conveyed to a drainage ditch on the west, north, and east perimeter of the property. Stormwater from the drainage ditch was conveyed north under S Holden Street to a retention pond. Stormwater from the retention pond was conveyed west under SR 509 to the central wetland area. The wetland is connected by surface hydrology to the LDW (SPU 2009b). Information regarding stormwater drainage for the newly constructed South Transfer Station was not available for review.

5.19.3 Regulatory History

Ecology assigned FSIDs to several historical operators at the property. Regulatory interactions included UST/LUST listings, facility inspections, and stormwater discharge permitting. It is assumed that all historical regulatory issues were resolved when the property was demolished and excavated during construction of the South Transfer Station. Facility specific regulatory history is described below.

Tacoma & Seattle Trailer Repair

Tacoma & Seattle Trailer Repair (parcel 9099) is listed as a LUST facility in Ecology's ISIS database. A release occurred in 1997 during the removal of one 10,000-gallon and two 1,000-gallon USTs used for motor/waste oil and gasoline storage. Approximately 345 tons of petroleum contaminated soil was removed (Ecology 2000a). The facility is listed as "No Further Action Required".

We Painters

According to Ecology's FSID database, We Painters (parcel 9104) was regulated as a large quantity generator from April 1996 to December 1997. Additional information was not available for review.

B&G Auto Wrecking

B&G Auto Wrecking was granted an ISGP in 1995 for discharge of stormwater to the LDW. The property was sold to Bryan Wilson in 2000 (G-Logics 2007). Additional information was not available for review.

Bry's Auto Wrecking

Brys Auto Wrecking (parcel 9104) submitted an application for an ISGP on March 13, 2001. Industrial activities identified at the property include material storage; hazardous waste treatment, storage, and disposal; and vehicle maintenance. Hazardous wastes and scrap metals were used at the property and/or stored outside. Waste management practices included containment, spill prevention, and overhead cover (Brys Auto Wrecking 2001).

Stormwater permit number SO3-004525 was issued to Brys Auto Wrecking on March 8, 2002 (Ecology 2002a). The permit letter was returned as undeliverable, and was reissued on August 16, 2002, with a new permit date (Ecology 2002b). On September 11, 2002, Ecology confirmed that Brys Auto Wrecking was no longer operating at this address (Devitt 2002). The permit was subsequently terminated.

Ryder Corporation

Ryder (parcel 9006) was granted coverage under a NPDES permit in March 1995 (Ecology 1995c). Ecology notified Ryder of the facility's failure to submit a SWPPP in August 1995 (Ecology 1995e). Ryder prepared a SWPPP, covered the fuel island, and graded the area to direct stormwater away from the fuel island (Ryder 1995). Ecology renewed the permit in November 2000 (Ecology 2000d).

Ryder is listed as a LUST facility in Ecology's ISIS database. A release occurred in 1997 during the removal of three 12,000-gallon USTs used for gasoline and diesel storage (AMEC 2009b). Ryder was in Ecology's VCP from 1999 to 2003. Ecology granted a "No Further Action" for the facility in December 1999 with a Restrictive Covenant (Ecology 1999a; G-Logics 2007).

First Student Seattle

Ryder changed names to First Student, Inc. in January 2002 (First Student 2002). Ecology updated the NPDES permit to reflect the name change.

Ecology conducted a stormwater compliance inspection at First Student on April 26, 2007, and made the following observations (Ecology 2007e):

- Cover of the brake bin was needed to prevent pollutants from coming in contact with stormwater.
- Stormwater sampling had only been conducted three of the last ten quarters between January 2005 and April 2007.
- If a spill occurred at the stationary fueling area it would enter the ground and/or possibly the stormwater conveyance system.

Additional information regarding follow up inspections or corrective actions was not available for review.

First Student notified Ecology of an ownership change on January 17, 2009. The company merged with Laidlaw Transit, Inc. and retained the name First Student (Strata Environmental 2009). First Student ceased operations at the property and submitted a Notice of Termination (NOT) of coverage under the ISGP on August 3, 2009 (First Student 2009). Ecology terminated coverage under the permit on August 21, 2009 (Ecology 2009i).

South Transfer Station

SPU acquired the property on S Kenyon Street in 2007 to construct the new South Transfer Station. SPU entered Ecology's VCP in September 2008 (City of Seattle 2008). Ecology assigned the facility Program ID# NW 1997. In July 2009, Ecology reviewed a CAP for proposed cleanup of contaminated soil at the property. Ecology determined no further remedial action would be needed after SPU completed remediation activities included in the CAP (Ecology 2009h). Additional information is provided below.

The facility operated under a construction stormwater general permit between (WAR012053) between October 2009 and October 2009. This permit is currently inactive. The new facility received coverage under the ISGP (WAR125583) in 2012.

5.19.4 Environmental Investigations and Cleanups

Several environmental assessments have been performed at this property. Sample locations from the most recent environmental investigations and cleanups are provided in Figure CHW2 and a summary of chemicals that exceeded soil screening levels is provided in Appendix D.

UST Removal – Tacoma & Seattle Trailer Repair (1997)

In August 1997, one 10,000-gallon UST and two 1,000-gallon USTs of motor oil/waste oil and gasoline were decommissioned and removed from Tacoma & Seattle Trailer Repair. Field screening of soil from the UST excavation indicated that there was TPH contamination above MTCA cleanup levels of 100 ppm for gasoline and 200 ppm for diesel/heavy oil. Approximately 230 cubic yards of petroleum contaminated soil was excavated along with the USTs (CEcon Corporation 1998).

Eleven confirmation soil samples were collected from the bottom and side walls of the excavation and five composite soil samples were collected from the overburden stockpiles. Soil samples were analyzed for TPH, BTEX constituents, and lead. TPH concentrations in soil samples collected from the excavation bottom and side walls were below MTCA cleanup levels. TPH concentrations were detected above the MTCA cleanup levels in soil samples collected from stockpiled material (CEcon Corporation 1998).

Analytical results of confirmation soil samples collected from the excavation indicated that all petroleum contaminated soil was removed from the property. On September 18, the UST excavation was backfilled with imported pea gravel and covered with a concrete slab (CEcon Corporation 1998).

UST Decommissioning Site Characterization Report – Ryder Corporation (1997)

On August 11, 1997, three hand auger soil samples were collected beneath a dispenser island, diesel UST turbine sump and gasoline UST turbine sump at the Ryder property (parcel 9006). Soil samples were analyzed for TPH, BTEX constituents, and lead. Concentrations of gasoline- and diesel- range hydrocarbons, and lead exceeded MTCA Method A cleanup levels in the soil sample collected beneath the diesel dispenser island (Clearwater 1997).

On August 12, 1997, one 12,000-gallon gasoline UST and two 12,000-gallon diesel USTs were decommissioned and removed from the property. Approximately 1,000 tons of soil was excavated from the UST area. Seven soil samples were collected from beneath each UST and the sidewalls of the excavation. Three soil samples were collected from the dispenser island. Additionally, four soil samples were collected from stockpile material. All soil samples were analyzed for TPH, BTEX constituents, and lead. Gasoline- and diesel-range hydrocarbon concentrations exceeded MTCA Method A cleanup levels in three soil samples collected from the center and western portion of the dispenser area. Diesel-range hydrocarbon concentrations exceeded MTCA Method A cleanup levels in one stockpile soil sample. Gasoline- and diesel-range hydrocarbons, BTEX constituents, and lead were not detected or detected below MTCA Method A cleanup levels in the remaining soil samples (Clearwater 1997).

Field personnel observed groundwater seeping into the excavation at approximately 9 feet bgs. Gasoline- and diesel-range hydrocarbons, BTEX constituents, and lead concentrations were not detected or detected below MTCA cleanup levels in a groundwater sample collected from the excavation (Clearwater 1997).

A 12,000-gallon doubled-walled fiberglass diesel fuel UST system was installed in the same excavation immediately following decommissioning and removal of the older fueling system (Clearwater 1997).

Site Assessment and Closure Report – Ryder Corporation (1999)

In September 1998, six soil borings were advanced to 20 feet bgs at the Ryder property. Two soil samples were collected from each borehole at 10 feet and 20 feet bgs. Petroleum contaminated soil was detected in SB-1-5’ and an additional sample was retained and analyzed from 5 feet bgs. Thirteen soil samples were analyzed for TPH and BTEX constituents. A subset of samples was analyzed for volatile petroleum hydrocarbons and one sample was analyzed for extractable petroleum hydrocarbons and PAHs. Chemical concentrations in soil samples were not detected or detected at concentrations below MTCA Method A cleanup levels (Clearwater 1999).

Three of six borings were completed as permanent monitoring wells. Groundwater was encountered at approximately 11.5 feet bgs. Groundwater samples collected from the borings and monitoring wells were analyzed for TPH and BTEX constituents. Diesel was detected in five of the six groundwater samples at concentrations ranging from 263 ug/L to 812 ug/L. Gasoline was detected in one groundwater sample at a concentration of 798 ug/L. Low concentrations of ethylbenzene and xylenes were also detected in one groundwater sample (Clearwater 1999).

Phase I Environmental Site Assessment – South Transfer Station (2007)

In May 2007, a Phase I ESA was completed for tax parcels 9104, 9006, 9099, and 1175. The assessment evaluated the potential for the presence of hazardous substances or petroleum products under conditions that indicate an existing release, a past release, or a material threat of a release into the structures of the property or into the ground, groundwater, or surface water of the property. In addition to what is described above in historical operations, regulatory history, and prior environmental investigations, the Phase I ESA identified the following environmental conditions (G-Logics 2007):

- Contaminated sludge was identified in the 2nd Avenue S drainage ditch in the 1980s. Soil boring samples contained elevated concentrations of TPH at depths ranging from surface to 15 feet bgs. One sample collected at a depth of 9 feet contained a TPH concentration of 12,500 mg/kg. A 1991 settlement decreed that the city would clean the sediments out of the ditch and backfill it with clean material. Additional information regarding cleanup was not available for review.

- A stream formerly ran through parcel 9104. Prior to entering the property, the stream ran though the neighboring South Park Landfill in the 1950s and 1960s. The stream was converted to a culvert and buried. Contaminated soil may exist in the former stream channel.
- The entire property received approximately 11 feet of fill material in the 1930s. Much of the area was filled during this time period with LDW dredge spoils. Therefore some potential exists for contaminated sediments to have been placed on the property.

Remedial Investigation and Feasibility Study Report – South Kenyon Street Bus Yard (2009)

In March 2009, an RI was completed for the property located on parcels 9104, 9006, 9009, and 1175. During February, July, and October 2008, 208 soil samples were collected from 72 boring locations on the property (Appendix D). Soil samples were analyzed for the following: 96 samples for diesel- and heavy oil-range hydrocarbons, 92 samples for gasoline-range hydrocarbons, 102 samples for VOCs, 88 samples for SVOCs, 111 samples for metals, 14 samples for pesticides and herbicides, and three samples for PCBs (Appendix D). Facility specific COCs in soil with concentrations above MTCA Method A or B cleanup levels for Unrestricted Land Use (whichever is more stringent) include: gasoline-, diesel-, and heavy oil-range petroleum hydrocarbons, methyl tertbutyl ether, benzene, total xylenes, methylene chloride, naphthalene, benzo(a)pyrene, cPAHs, arsenic, cadmium, chromium, and lead (AMEC 2009b).

Between February and October 2008, 52 groundwater samples were collected from 20 permanent and temporary monitoring wells developed on the property. Groundwater samples were analyzed for the following: 49 samples for gasoline- and/or diesel- and heavy- oil range hydrocarbons, 44 samples for VOCs, 43 samples for SVOCs, 81 samples for one or more total and dissolved metals, and 29 samples for pesticides and herbicides (Appendix D). Facility specific COCs in groundwater with concentrations above MTCA Method A or Method B cleanup levels and State Maximum Contaminant Levels for groundwater include: gasoline- and diesel-range hydrocarbons, methyl tertbutyl ether, benzene, toluene, total xylenes, 1-methylnapthalene, cPAHs (including benzo(a)anthracene, benzo(b)fluoranthene, and chrysene), arsenic, lead, pesticides, and herbicides (AMEC 2009b).

Detections of COCs in soil and groundwater appeared to be clustered in three areas: First Student Fuel Canopy (Area 1), Starline Maintenance Shop (Area 2), and Former Wrecking Yard (Area 3). Isolated pockets of contaminated soil exist adjacent to the First Student Maintenance Shop and east of the Starline Maintenance Shop building. Contaminants were present at depths ranging from 0.5 to 17 feet. COCs in Area 1 appeared to be limited to immediately south and east of the fuel canopy footprint. COCs in Area 2 appeared to be limited to the northern footprint of the maintenance shop. COCs in Area 3 appeared to extend to most of the parcel 9104 including the stormwater collection ditch.

Subsurface soil in Area 3 consisted of a 6-inch to 11-foot layer of fill material that had high levels of arsenic, cadmium, and lead and was later identified as CKD (AMEC 2009b). The CKD was used to fill a ravine that traversed the southwestern portion of Area 3. Timeframe for the use of CKD was estimated between 1969 and 1974 (AMEC 2009d).

In March 2009, a Focused FS was completed for remediation of contaminated soil at the property. The study recommended removal and disposal of the contaminated soil in Areas 1, 2, and 3 and other isolated areas. Contaminated soil would be excavated to 15 feet bgs and backfilled with imported material (AMEC 2009c).

Cleanup Action Plan – South Kenyon Street Bus Yard (2009)

In March 2009, SPU submitted a Cleanup Action Plan (CAP) to Ecology. The CAP proposed complete removal and disposal of the contaminated soil above 15 feet bgs to the extent practicable. Where impracticable to remove the contaminated soil above 15 feet bgs, clean soil would be placed above the remnant COC-impacted soil and other mitigative measure would be evaluated. All existing structures and foundations on the property would be demolished and disposed of or recycled. Such structures include the First Student Maintenance Shop, the Fueling Station, UST and associated bus wash station, and the office building and interior fence on the Former Wrecking Yard (Area 3). An estimated 27,000 cubic yards, or 40,000 tons of contaminated soil would be excavated from the property and backfilled with clean material. Limited long-term monitoring of groundwater will commence following re-development (AMEC 2009a). Figure 26 presents the estimated area of the excavation.

Ecology reviewed the CAP and determined no further remedial action would be needed after SPU completed clean up of contamination at the property (Ecology 2009h).

Addendum to SEPA Environmental Checklist (2009)

In May 2009, SPU published an addendum to a 2008 State Environmental Policy Act (SEPA) Checklist that addressed excavation and removal of contaminated soil, excavation and fill of a drainage ditch, and realignment of a subsurface storm drain pipe. Information from the March 2009 CAP was included in the addendum regarding excavation and removal of contaminated soil (SPU 2009b).

Additional investigations provided a description of drainage ditches along the west, north, and east perimeters of the property. The ditches carry stormwater runoff from portions of the property to the existing wetland drainage system to the north. A 1,100 sq ft wetland was delineated on portions of the western perimeter drainage ditch. SPU proposed to excavate and fill the internal property drainage ditch, including the area classified as a wetland. The U.S. Army Corps of Engineers reviewed the proposed action and authorized the drainage ditch and wetland to be excavated and filled (SPU 2009b).

Approximately 270 lineal feet of a 30-inch diameter corrugated metal storm drain pipe traverses the western portion of the property. The pipe conveys stormwater runoff from locations south of the property to a detention pond east of SR 509. During construction activities, the pipe was to be decommissioned and replaced with a realigned storm drain pipe. The new pipe would connect to an existing storm drain pipe in S Kenyon Street to the south and an existing storm drain pipe to the northwest of the property (SPU 2009b).

5.19.5 Potential for Sediment Recontamination

This property was the location of the S Kenyon Street Bus Yard. SPU recently conducted soil and groundwater remedial actions and construction activities to convert the bus storage yard into a solid waste transfer facility. The potential for sediment recontamination is summarized below by transport pathway.

Oil and Groundwater

Soil and groundwater contamination was identified at the property. In soil, concentrations of gasoline-, diesel-, and heavy oil-range petroleum hydrocarbons, methyl tertbutyl ether, benzene, total xylenes, methylene chloride, naphthalene, benzo(a)pyrene, cPAHs, arsenic, cadmium, chromium, and lead exceeded MTCA cleanup levels. In groundwater, concentrations of gasoline- and diesel range hydrocarbons, methyl tertbutyl ether, benzene, toluene, total xylenes, 1-methylnapthalene, cPAHs (including benzo(a)anthracene, benzo(b)fluoranthene, and chrysene), arsenic, lead, pesticides, and herbicides exceeded MTCA cleanup levels.

SPU excavated approximately 40,000 tons of contaminated soil at the property. Groundwater monitoring will be conducted to confirm that soil removal is effective in controlling the groundwater transport pathway. Ecology reviewed the CAP and determined no further remedial action would be needed after SPU completed clean up of contamination at the property. The potential for sediment recontamination via the groundwater pathway is low.

Stormwater and Spills

SPU will complete construction of the South Transfer Station in summer 2012. Historically, stormwater was conveyed to an internal drainage ditch and then to a perimeter drainage ditch on the west, north, and east portion of the property. The internal drainage ditch was excavated during soil remediation at the property.

After completion of construction, the stormwater drainage pathways at the property are unknown. It is assumed stormwater will be conveyed to the perimeter ditch and drain to the wetland prior to discharge to the LDW. The facility has been granted coverage under the ISGP. The potential for sediment recontamination via stormwater discharge at the South Transfer Facility is considered low.

5.19.6 Data Gaps

Additional information regarding stormwater drainage at the property after construction is complete is needed to determine if current operations have the potential to recontaminate sediments via stormwater discharge.

5.20 Kenyon Business Park

Facility Summary: Kenyon Business Park	
Address	121 S Kenyon Street
Tax Parcel No.	3224049007
Property Owner	Harsch Investment Properties LLC
Parcel Size	6.49 acres (282,819 sq ft)
Facility/Site ID	10791: Flying Fish Express 72863999: Omnisource Inc 82954349: Omnisource Inc 129

Facility Summary: Kenyon Business Park	
	85495122: Omnisource Inc 121 86979859: Tnemec Co Inc 96897184: Proliance International Inc Seattle 97992431: International Lubricants Inc.
Alternate Names	Daniel Radiator Corp, Go Dan Industries Seattle, Transpro, Vistapro Automotive LLC, Second Use Building Materials
SIC Code	2092: Prepared Fresh or Frozen Fish and Seafoods (Flying Fish Express) 3465: Automotive Stampings (Proliance International) 3714: Motor Vehicle Parts and Accessories (Proliance International) 5087: Service Establishment Equipment (Omnisource)
EPA ID No.	WAD982655201 (Proliance International), WAR000004085 (International Lubricants)
NPDES Permit No.	None
UST/LUST ID No.	None

The Kenyon Business Park, located on parcel 3224049007 (Figure 9), is bordered by the SRDS and the former Formula Corp property to the east, S Kenyon Street to the north, the former South Park Landfill to the south, and SR 509 to the west (Figure 13).

According to King County tax assessor records, the following structures are present on Parcel 9007:

- A 32,000 sq ft warehouse building, constructed in 1966;
- A 44,000 sq ft warehouse building, constructed in 1970;
- A 15,624 sq ft warehouse building, constructed in 1973; and
- A 36,000-sq ft warehouse building, constructed in 1973.

The Kenyon Business Park is also referred to as the Kenyon Industrial Park in historical documents.

5.20.1 Current Operations

Parcel 9007 is owned by Harsch Investment Properties, who purchased the property in February 2008 from Statewide Mortgage Services Co. Statewide Mortgage Services had acquired the property in March 1997 as a result of foreclosure.

There are four warehouse/office spaces with multiple tenants at this property, referred to as the Kenyon Business Park. The property is entirely paved; a facility map, showing addresses, is provided in Figure 27.

A Phase I ESA indicated stormwater runoff from the parking lot is collected by at least six catch basins located in the parking lot and discharged to the LDW. Additional information regarding the stormwater pathway to the LDW was not provided (Herrera 1995). Limited information regarding current operations at the Kenyon Business Park was available for review. Facilities currently operating with Ecology assigned FSIDs or facilities that were recently inspected by SPU are described below.

Flying Fish Express

Flying Fish Express currently operates at 7937 2nd Avenue S. Flying Fish purchases, processes, and sells fish. Indoor floor drains convey process water to the sanitary sewer. Approximately 500 gallons of cleaning and sanitation wastewater are generated in the production area each day (SPU 2009x). Industrial wastewater is discharged to the sanitary sewer under KCIW Waste Authorization 783-01.

International Lubricants Inc.

International Lubricants Inc currently operates at 7930 Occidental Avenue S. The company conducts research/development and manufacturing of synthetic lubricants (International Lubricants 2012). The facility generates 5 to 10 gallons of petroleum oil, vegetable oil, hexane, acetone, and isopropyl alcohol solvents per year. A third party disposes of waste generated at the facility (Jeffers 2009b). Waste is contained in steel cans and drums and disposed of by a third party (International Lubricants 2009).

Second Use Building Materials Inc.

Second Use Building Materials Inc. has operated at 7937 2nd Avenue S since 1996. The facility receives and sells recycled building materials. The facility does not have internal floor drains or generate wastewater. Lumber, metal cabinets, windows, and other building materials are stored in a paved area outdoors. The company sweeps the outdoor storage yard weekly (SPU 2009o). Second Use Building Materials is not listed in Ecology's Facility/Site Database.

According to its website, the company is moving from this location in 2012 (Second Use 2012).

Tnemec Co Inc.

Tnemec Co Inc. (Tnemec), currently operates at 7929 2nd Avenue S. The company specializes in paint and coating applications on water/wastewater processing systems, water tanks, and architectural projects (Tnemec 2012). The floor of the warehouse is concrete and has concrete berms and spill containment systems (Herrera 1995).

Vista-Pro Automotive (formerly Proliance International)

Vista-Pro Automotive operates at 7951 2nd Avenue S. The company was previously known as Proliance International and Transpro. Proliance International filed for bankruptcy in July 2009; its assets were purchased by Centrum Equities, who combined Proliance operations with that of other companies it had purchased, and renamed the combined operations Vista-Pro Automotive. Vista-Pro designs, manufactures, and distributes non-discretionary automotive aftermarket parts including radiators, condensers, heater cores, and air conditioning products for automotive and heavy-duty applications (Vista-Pro 2012).

5.20.2 Historical Operations

Parcel 9007 is within the footprint of the former South Park Landfill. Disposal of mixed municipal waste occurred from the 1940s until the landfill closure in 1966. Aerial photographs from the 1940s indicate the parcel was used for open burning of waste. Aerial photographs from 1956 indicate that the parcel was converted to an auto wrecking yard. A review of tax assessor records and historical aerial photographs indicate Kenyon Business Park construction began in the late 1960s (Herrera 1995). Additional information regarding the former South Park Landfill operations is presented in Section 5.24 (South Park Landfill).

A Phase I ESA conducted in 1995 indicated the following tenants operated at the property (Herrera 1995):

Tenant	Activities
Brownline, Inc.	Sales and distribution of seafood
Chicken and Egg Productions, Inc.	Manufacture of pine furniture
GO/DAN Industries	Manufacture of automobile radiators
John Burns Construction Co.	Unknown (space is vacant)
J.L. Henderson Company	Marine goods supply
International Lubricants, Inc.	Sales and distribution of seed oil products
Omnisource	Sales and distribution of janitorial supplies
Tnemic Company Inc.	Sales and distribution of industrial coatings
American Linen	Sales and distribution of linens and uniforms
Sunfresh Foods, Inc.	Manufacture of fruit jams
Watton Distributing Inc.	Wholesale produce, cold storage
Western Stud Welding	Sales, distribution, and minor repair of welding supplies and equipment

Additional information regarding historical operations at the Kenyon Business Park was not available for review.

5.20.3 Regulatory History

Flying Fish Express

SPU inspected Flying Fish on December 28, 2009 (SPU 2009x). SPU identified the following corrective actions (SPU2010a):

- Prohibit washwater from entering the storm drain system.
- Properly handle, transfer, and dispose of materials to avoid contact with stormwater.

SPU determined the facility was in compliance with corrective actions during a follow-up inspection on February 22, 2010 (SPU 2010f).

International Lubricants, Inc.

Ecology inspected International Lubricants on March 10, 2009. The following corrective actions were identified (Ecology 2009a):

- Complete a written spill plan and post at appropriate locations.
- Properly designate waste.
- Properly dispose of waste.

Ecology advised the facility to review guidance for an ISGP. Ecology provided information on programs to assist with waste disposal, safety and spill supplies (Jeffers 2009a).

International Lubricants submitted a completed compliance certificate and nonhazardous waste manifest on April 14, 2009. The facility ordered steel cans and drums for waste storage and disposal, developed a spill prevention and cleanup plan, and separated incompatible substances in the laboratory (International Lubricants 2009). On May 4, 2009, Ecology determined the facility was in compliance with corrective actions (Ecology 2009c).

Second Use Building Materials Inc.

SPU conducted an initial inspection at Second Use on October 19, 2009. SPU identified the following corrective actions (SPU 2009q):

- Complete a written spill plan and post at appropriate locations at the facility.
- Obtain spill kit materials.
- Educate employees concerning spill plan and spill kit.

SPU determined the facility was in compliance with corrective actions during a follow-up inspection in December 2009 (SPU 2009u).

5.20.4 Environmental Investigations and Cleanups

Several environmental investigations have been performed at this property. Sample locations are shown on Figure 28, and a summary of chemicals that exceeded soil and groundwater screening levels in provided in Tables 22 and 23. A summary of all chemicals in soil detected at the facility is included in Appendix C.

Limited information was available for the following environmental investigations (BBL 1995):

- Property inspections in August 1986 and February 1989 determined several tenants had "potential environmental liability" and further investigations were recommended.
- Groundwater monitoring was conducted in November 1989. Analytical results of groundwater sampling indicated elevated concentrations of chlorobenzene, benzene, and methylene chloride. The survey also indentified concentrations of methane gas in soil.
- An environmental assessment in March 1990 identified several historical operations with the potential for hazardous materials beneath the area associated with the South Park Landfill.

Phase II Environmental Site Assessment (1992)

In March 1992, a Phase II ESA was performed for parcel 9007 to investigate the potential contamination in soil and groundwater. Eight soil borings were drilled to a total depth of 20 feet bgs. Soil samples were collected from each boring at intervals of approximately 3.5 feet, 8.5 feet, and 13.5 feet bgs. Some soil borings contained debris such as glass and metal, which is indicative of landfill material. Five of the soil borings were converted to groundwater monitoring wells. Depth to water ranged from approximately 5 to 10 feet bgs. Twenty soil samples and six groundwater samples were analyzed for TPH and VOCs (DEI 1992).

Concentrations of TPH in eight soil samples at depths between 3.5 to 13.5 feet bgs exceeded MTCA Method A soil cleanup levels. Concentrations of VOCs in soil samples were not detected or detected below MTCA Method A soil cleanup levels. Concentrations of TPH and benzene in groundwater exceeded MTCA Method A groundwater cleanup levels in well MW-2B. Concentrations of TPH and VOCs were not detected or were detected below MTCA Method A groundwater cleanup levels at remaining sampling locations. Groundwater at location MW-5 was impacted by undetermined frothing or surfactant-like compounds. In addition, potentially explosive levels of methane were found in the subsurface of the southeast portion of the property (DEI 1992).

The investigation determined that soils are impacted by TPH over a large area covering the central northern and southeastern portions of the property. The presence of TPH may be related to subsurface conditions indicative of the former landfill (Figure 29). The assessment determined limits of the inactive landfill may include all or most of the eastern two-thirds of the property (DEI 1992).

Phase I Environmental Site Assessment (1995)

In September 1995, a Phase I ESA was completed at Kenyon Business Park to identify existing or potential environmental hazards and resources with natural, cultural, recreational, or scientific values of special significance. The eastern two-thirds of the property overlie the former South Park Landfill. The landfill accepted residential and commercial wastes, and the burn portion of the landfill accepted ignitable material such as wood waste and construction debris (Herrera 1995).

A comprehensive asbestos survey conducted during the assessment identified three asbestos-containing building materials. The materials included non-friable black mastic, non-friable caulking/sealant, and floor tiles. Gypsum wallboard and roofing materials were assumed to contain asbestos. Fluorescent light fixtures were identified throughout the business park. There is potential that the ballasts contain PCBs. The assessment determined the potential for past and present environmental contamination was high (Herrera 1995).

Extended Phase II Environmental Site Assessment (1995)

In September and October 1995, six groundwater monitoring wells were redeveloped and two replacement monitoring wells were installed at the Kenyon Business Park. Six hydropunch locations were installed at the property. Six groundwater samples were collected at hydropunch locations. Depth to water measurements determined that groundwater flow direction was from southwest to northeast towards the LDW. Groundwater samples were analyzed for VOCs, TPH, and metals. Concentrations of TPH in three groundwater samples exceeded Ecology cleanup levels. Concentrations of benzene, vinyl chloride, and total xylenes in groundwater exceeded Ecology cleanup levels in one or more groundwater samples. Concentrations of lead, arsenic, chromium, and cadmium exceeded Ecology cleanup levels in one or more groundwater samples (BBL 1995).

Eight soil samples were collected during the Phase II investigation; two from the replacement wells and six from hydropunch borings. VOC concentrations in soil were either not detected or detected below Ecology cleanup levels. TPH concentrations in soil exceeded Ecology cleanup levels at five locations (BBL 1995).

A soil gas survey and building explosive gas survey were performed to evaluate the accumulation of methane gas on the property, and to determine mitigative measures. Twenty-six soil gas sampling points were installed on the property. Vapor in monitoring wells was also analyzed for concentrations of methane. Seven buildings on the property were inspected for explosive and organic vapors. Four monitoring wells and 13 soil gas samples had concentrations of methane above the lower explosive limit for methane. Trace concentrations of VOCs were also detected in soil gas samples (BBL 1995).

5.20.5 Potential for Sediment Recontamination

The Kenyon Business Park is located within the footprint of the former South Park Landfill. Environmental investigations have indicated. The potential for sediment recontamination is summarized below by transport pathway.

Soil and Groundwater

Soil and groundwater contamination was identified at the property. Concentrations of TPH exceeded Ecology cleanup levels in soil. Concentrations of TPH, VOCs, and metals exceeded Ecology cleanup levels in groundwater. Cadmium, chromium, and lead exceeded the groundwater-to-sediment screening levels. Contaminants detected in soil and groundwater at the Kenyon Business Park were not identified as COCs in sediments near the 1st Avenue S SD source control area. The potential for sediment recontamination via the groundwater pathway is therefore low to moderate.

Stormwater and Spills

The majority of operations at the property are conducted indoors. Floor drains at the facilities inspected by SPU were connected to the sanitary sewer. Information regarding stormwater discharge at the property was not available for review. The potential for sediment recontamination via stormwater discharge is low.

5.20.6 Data Gaps

Additional information regarding stormwater drainage at the property is needed to determine if current operations have the potential to recontaminate sediments via stormwater discharge.

5.21 Former Formula Corp

Facility Summary: Former Formula Corp	
Address	7901 2nd Avenue S, Seattle
Tax Parcel No.	3224049077
Property Owner	7901 2nd Ave S LLC
Parcel Size	0.72 acre (31,303 sq ft)

Facility Summary: Former Formula Corp	
Facility/Site ID	44534539 (Formula Corp)
Alternate Names	Formula Corp, Formula Corp 2nd Ave, T H Seafood
SIC Code	2842: Polishes and Sanitation Goods
EPA ID No.	WAD009245671
NPDES Permit No.	SO3000630 (inactive)
UST/LUST ID No.	None

The former Formula Corporation property is located on Parcel 9077 (Figure 9). It is bordered on the west and south by the Kenyon Business Park, on the east by the SRDS, and on the north by S Kenyon Street and the new South Transfer Station (Figure 13). According to the King County Department of Assessments, a 17,000 sq ft warehouse/office building, constructed in 1965, is present on the property.

5.21.1 Current Operations

The former Formula Corp property is owned by 7901 2nd Ave S LLC (previously identified as John R. Hill), who purchased the property from Janice Farrell in May 2005. The property name is listed in King County records as Formula Corp.

T H Seafood, a seafood processor, currently operates at 7901 2nd Avenue S. The company purchases, processes, and sells salmon, halibut, and other seasonal fish species. Ice is melted over an indoor trench drain at the end of each shift. Wash water from the facility is conveyed to the 1st Avenue S SD. Floor drains inside the building are connected to the sanitary sewer (SPU 2010d).

5.21.2 Historical Operations

Parcel 9077 is within the footprint of the former South Park Landfill. Disposal of mixed municipal waste occurred from the 1940s until landfill closure in 1966. Aerial photographs from the 1940s indicate the parcel was used for open burning of waste; by 1956, the parcel had been converted to an auto wrecking yard. Additional information regarding the former South Park Landfill operations is presented in Section 5.24 (South Park Landfill).

Formula Corp, founded in 1983, formerly operated at 7901 2nd Avenue S. Formula Corp manufactured custom blended chemicals for personal care, sanitary maintenance, and industrial cleaning products. Chemicals used in the blending process included acids and alkalis, glycols, glycol ethers, defoamers, surfactants, emulsifiers, fatty acids, and fragrances. Loading and unloading of bulk liquids was conducted along the east side of the facility, about 180 feet from the nearest catch basin. No outside storage or manufacturing activities were conducted, and there is no record of any spills or releases from this facility (Formula Corp 2001). All discharges associated with industrial activity at the facility were conveyed to the sanitary sewer (Formula Corp 2003).

5.21.3 Regulatory History

Formula Corp

Formula Corp was assigned EPA ID No. WAD009245671 as a small quantity generator of hazardous waste. This EPA ID No. has been inactive since April 10, 1989.

Formula Corp applied for coverage under the ISGP in September 1992 (Formula Corp 1992); Ecology granted Permit No. SO3-000630 in January 1993 (Ecology 1993b). The permit was renewed in 1995 and 2000 (Ecology 1996a, 2000f). In May 2003, Ecology terminated the permit after Formula Corp determined stormwater from the facility discharged to the combined sewer system (Ecology 2003c).

The facility operated under a Major Discharge Authorization (No. 565) from the King County Department of Natural Resources between September 1997 and September 2002. The authorization allowed discharge of a maximum wastewater volume of 2,500 gallons per day. The authorization required Formula Corp to install a batch treatment system capable of neutralizing caustic wash waters. The authorization required Formula Corp to maintain a log book for the treatment system and submit copies to KCIW on a quarterly basis (Formula Corp 2001).

TH Seafood

SPU inspected TH Seafood on February 4, 2010 (SPU 2010d). SPU referred the facility to KCIW to review the need for a discharge authorization for discharge of process water into the sanitary sewer system. SPU identified the following corrective actions (SPU 2010e):

- Prohibit wash water from entering the storm drain system.
- Complete a written spill plan and post at appropriate locations at the facility.
- Obtain spill kit materials.
- Educate employees concerning spill plan and spill kit.

SPU determined the facility was in compliance with corrective actions during a follow-up inspection on June 17, 2010 (SPU 2010o).

5.21.4 Potential for Sediment Recontamination

This property is located within the footprint of the former South Park Landfill. Based on aerial photographs, an auto wrecking yard was located at this property in 1956. The facility currently operating at the property, T H Seafood, was in compliance with environmental regulations and had implemented appropriate source control BMPs as of June 2010. The potential for sediment recontamination via this property is summarized by transport pathway below.

Soil and Groundwater

No soil or groundwater investigations have been conducted at this property. It is located within the footprint of the former South Park Landfill, and was the location of an auto wrecking yard in 1956. Historical activities may have resulted in soil and groundwater contamination. The potential for LDW sediment recontamination associated with this pathway is unknown.

Stormwater

Stormwater generated at the former Formula Corp property is discharged to the 1st Avenue S SD. As of June 2010, the current operator, T H Seafood, was in compliance with environmental regulations and BMPs. The potential for LDW sediment recontamination associated with stormwater discharges from this property is considered low.

5.21.5 Data Gaps

Additional information about historical activities at this property is needed to assess whether there is a potential for LDW sediment recontamination via groundwater transport of contaminants, if present.

5.22 WG Clark Construction

Facility Summary: WG Clark Construction	
Address	7958 Occidental Ave S, Seattle 98108
Tax Parcel No.	3224049068
Property Owner	W G Clark Construction
Parcel Size	0.44 acre (19,150 sq ft)
Facility/Site ID	64488657
Alternate Names	None
SIC Code	None
EPA ID No.	WAH000010975 (inactive)
NPDES Permit No.	None
UST/LUST ID No.	None

WG Clark Construction owns and operates a construction storage yard on Parcel 9068 (Figure 9). To the north and east of this property is the Kenyon Business Park; to the southeast is the former South Park Landfill (Figure 13). Occidental Avenue S and SR 509 are located just to the west. According to the King County Department of Assessments, a 2,204-sq ft garage/storage building, constructed in 1983, is present on the property. According to a 2009 inspection, the facility also includes a metal fabrication shop and two covered storage areas.

5.22.1 Current Operations

WG Clark Construction conducts storage, maintenance, and repair of small equipment at this location. The facility is also used for storage of concrete forms and other construction-related materials. Pollution-generating activities that are conducted at the facility include outdoor washing of vehicles; truck parking; and outdoor storage of containerized products, used equipment, and equipment/materials awaiting disposal or recycling. Storage areas are unpaved, with no protection from stormwater runon or runoff. Vehicles are parked in a gravel/asphalt parking area. No oil staining, visible sheen, or evidence of leakage was observed during an October 2009 site inspection (SPU 2009p).

The following wastes/materials are generated at the facility and are transported offsite for disposal (SPU 2009p):

- Antifreeze (20 gallons/year)
- Batteries (10 per year)
- Fluorescent light tubes (20 per year)
- Paints/coatings (100 gallons/year)
- Petroleum/oils (200 gallons/year)
- Solvents (60 gallons/year)

There is one catch basin located on this property; stormwater drainage discharges to the 1st Avenue S SD.

5.22.2 Historical Operations

WG Clark Construction has operated at this location for approximately 20 years (SPU 2009p). No additional information on historical operations at this property was available in the files reviewed during preparation of this Data Gaps Report.

5.22.3 Regulatory History

A source control compliance inspection was conducted by SPU at the WG Clark Construction facility on October 20, 2009 (SPU 2009p). The following corrective actions were identified (SPU 2009r):

- Prepare and post a written spill plan.
- Educate employees about the spill plan and spill kit.
- Clean catch basin to remove accumulated material within 18 inches of the bottom of the lowest pipe entering or exiting the structure.
- Install an outlet trap in the catch basin.
- Properly label all waste containers and tanks.
- Implement secondary containment for fuel and hazardous material storage areas to contain spills and leaks from tipped, overfilled, or ruptured containers. Cover and contain used oil and contaminated diesel tanks. Close containers when not actively using them.
- Discontinue discharge of wash water to the storm drain. Washing of vehicles must comply with regulatory requirements; this activity should either be conducted inside a building (with discharge to the sanitary sewer) or, if conducted outdoors, wash water should be recycled or discharged to the sanitary sewer. If wash water is to be discharged to the sanitary sewer, a side sewer permit is needed.

A follow-up inspection was conducted on December 7, 2009 (SPU 2009v). All necessary corrective actions had been completed at that time (SPU 2009w).

5.22.4 Potential for Sediment Recontamination

No information was available regarding historical operations at this facility. The facility was in compliance with environmental regulations and had implemented appropriate source control BMPs as of December 2009. The potential for sediment recontamination via this property is summarized by transport pathway below.

Soil and Groundwater

No soil or groundwater investigations have been conducted at this property. It is located adjacent to the former South Park Landfill, but not within the landfill footprint. The potential for LDW sediment recontamination associated with this pathway is considered low.

Stormwater

Stormwater generated at the WG Clark Construction facility is discharged to the 1st Avenue S SD. Numerous corrective actions were implemented at the facility in response to an October 2009 compliance inspection. The potential for LDW sediment recontamination associated with stormwater discharges from this property is considered low.

5.22.5 Data Gaps

No data gaps were identified for the WG Clark Construction property.

5.23 South Recycle & Disposal Station

Facility Summary: South Recycle & Disposal Station	
Address	8100 2nd Avenue S 8105 5th Avenue S
Tax Parcel No.	7328400005
Property Owner	City of Seattle
Parcel Size	10.29 acres (448,078 sq ft)
Facility/Site ID	2175 (Seattle S Transfer Sta) 3665320 (South Recycle & Disposal Station 5th Ave) 89337496 (WA AGR King 2) 91256919 (South Recycle & Disposal Station)
Alternate Names	Seattle S Transfer Sta; Oak Classics Co; Seattle City South Recycling & Dispos; Seattle Solid Waste Div Sts; South Recycle and Disposal Center; South Seattle HHW Facility
SIC Code	2511: Wood Household Furniture; 4212: Local Trucking, Without Storage; 4953: Refuse Systems
EPA ID No.	WAD980833826 (South Recycle & Disposal Station) WAH000012765 (WA AGR King 2)
NPDES Permit No.	WAR000737
UST/LUST ID No.	97437

The South Recycle & Disposal Station (SRDS) is located on Parcel 0005 (Figure 9) and is owned by the City of Seattle. The 10.29-acre property is bordered to the south by the South Park Landfill, to the west by Kenyon Business Park, and to the northeast by SR 99 (Figure 13). According to King County tax assessor records, the following structures were built on parcel 0005 in 1966:

- 38,732 sq ft transfer station building,
- 220 sq ft scale house building,

- 600 sq ft office building, and
- 1,008 sq ft garage and repair building.

The SRDS is sometimes referred to as the South Transfer Station in historical documents.

5.23.1 Current Operations

The SRDS has been in operation since 1966 (AESI 1998). The facility accepts refuse and yard waste from Seattle residents and small businesses. The waste is consolidated at the facility and hauled to a landfill or composting facility. The property also contains a household hazardous waste disposal area, along with a tire, refrigerator, and toilet recycling area (Ecology 2005h). Two fueling systems are located at the SRDS, each consisting of a 3,000- to 5,000-gallon aboveground storage tank used to store diesel (Farallon 2009).

Waste management operations conducted on parcel 0005 will be relocated to the new South Transfer Station recently constructed on the former S Kenyon Street Bus Yard, on the north side of S Kenyon Street (Figure 13). Between 2013 and 2014, the buildings on parcel 0005 will be demolished for construction of administrative offices, a reuse store, a new household hazardous waste facility, new self-haul recycling facilities, and other utility facilities. The new facilities will be an extension of the operations at the new South Transfer Station (SPU 2008).

5.23.2 Historical Operations

The SRDS is located on the footprint of the former South Park Landfill. Aerial photographs from the 1940s and 1950s indicate that the land was used for burning of garbage (Figure X from South Park Landfill section). Disposal of mixed municipal waste occurred at the South Park Landfill from the 1940s until the landfill closure in 1966. The SRDS began operation at its current location in 1966 (AESI 1998).

Oak Classics Company may have operated at this facility in the past. No other information on historical operations at this property was available in the files reviewed during preparation of this Data Gaps Report.

5.23.3 Regulatory History

Seattle Solid Waste Utility submitted a notification of dangerous waste activities to Ecology in July 1986. Seattle Solid Waste Utility acknowledged that the SRDS routinely and unknowingly receives hazardous materials including waste paint, waste flammable solvents, acids, caustics, oil sludges, pesticides, and chlorinated solvents (Seattle Solid Waste 1986).

According to Ecology’s ISIS database, the SRDS was added to the CSCSL on in March 1988 for suspected contamination of soil, groundwater, and surface water with organic and inorganic conventional contaminants. The current status is listed as “awaiting cleanup.”

In July 1988, the Seattle-King County Department of Public Health (SKCDPH) reviewed drainage connections from the parking lot catch basins at the facility. A dye test had been performed in September 1987. SKCDPH concluded that the catch basins were connected to a stormwater drainage system that discharges to a ditch on the north side of the transfer station. SKCDPH staff noted that full trailers of garbage were stored in the parking lot overnight. SKCDPH requested that the facility submit plans for connecting the drainage system to a sanitary sewer system or to use an alternate parking area that is connected to the sanitary sewer (SKCDPH 1988).

SKCDPH reviewed the compliance status of the SRDS in August 1991 and determined that improvements to the drainage system had been made at the facility. Details of improvements were not available for review. SKCDPH separated the household hazardous waste portion of the facility from the existing transfer station permit (SKCDPH 1991). Seattle Solid Waste submitted a General Solid Waste Handling Facility Permit application on September 5, 1991 (Seattle Solid Waste 1991). SKCDPH issued the facility a Solid Waste Handling Permit on March 19, 1992 (SKCDPH 1992b).

Ecology inspected the SRDS on August 28, 1992. The facility was in the process of removing household hazardous waste that was stored in the collection area. Staff at the SRDS had adequate spill containment equipment on hand and placed a plastic liner in the storm drain next to the staging area. Ecology determined the precautions were adequate to protect the drainage system from minor spills (Ecology 1992d). Ecology issued NPDES Permit No. SO3000737 to the SRDS on December 18, 1992; the current permit number is WAR000737.[21]

Two USTs were present at the property at some time in the past; these were used to store unleaded gasoline and diesel fuel. Ecology's ISIS database lists these tanks as "closed in place"; however, no closure date is identified. The permit for these tanks expired in July 1999.

On July 21, 2003, Ecology requested that the SRDS submit hazardous waste annual report verification forms for 1998 to 2002 (Ecology 2003e). The SRDS failed to submit annual solid waste reports for the household hazardous waste facility during 2003 and 2004. SKCDPH recommended updating the facility's plan of operation to assure compliance with applicable regulations (SKCDPH 2005b).

On November 12, 2004, SPU submitted a *Plan of Operation for the City of Seattle Public Utilities Recycle & Disposal Stations.* In January 2005, SKCDPH reviewed the plan and requested the following (SKCDPH 2005a):

- Provide a copy of landfill permits for landfills receiving waste.
- Provide information about the destination of all waste material and recyclables exiting the facility.
- Provide information on facility capacity for all waste streams and surge capacity in case of emergency.
- List and describe use of all equipment at the station.
- Keep disposal records for five years.
- Provide a reference to the facility's other agency permits and compliance requirements.

SPU submitted a revised plan on June 30, 2005. In July 2005, Ecology determined that the open top trailer parking area at the SRDS was still connected to the storm drain system, rather than the sanitary sewer. Leachate entering the stormwater conveyance system from this area would

[21] Note: According to Ecology's Facility/Site Database, facility 2175 (Seattle S Transfer Sta) was covered under ISGP No. SO3000870 between March 1993 and May 2000. No additional information about this permit was available in the files reviewed during preparation of this Data Gaps Report.

violate the facility's stormwater permit. SKCDPH and Ecology determined the plan of operation would not be approved until the SRDS addressed concerns about the stormwater pathway (SKCDPH 2005c).

SPU resubmitted the plan of operation on July 28, 2005. SKCDPH and Ecology identified areas where the plan could be improved, including descriptions of load quantification and acceptable materials, and updated facility plans (SKCDPH 2006a). SPU made appropriate changes and resubmitted the plan of operation in May 2006. SKCDPH approved the plan of operation on July 27, 2006 (SKCDPH 2006b).

Stormwater Compliance

On June 10, 2005, Ecology conducted a stormwater compliance inspection at the SRDS. The facility's temporary trailer parking area stored open top containers of yard waste. Leachate from the containers could be conveyed to the storm drain system. The facility's toilet, refrigerator, and tire recycling area were uncovered and stormwater from this area was conveyed to the storm drain system. Stormwater from the vehicle maintenance, washing station, and household hazardous waste disposal facility was conveyed to the sanitary sewer. Ecology identified the following compliance issues (Ecology 2005h):

- Leachate from the open top trailers of yard waste in the temporary trailer parking area has a significant potential to contaminate stormwater.
- The facility failed to submit DMRs during four out of seven monitoring periods prior to the inspection.
- Total zinc and turbidity values exceeded benchmark values for three out of seven DMRs that were submitted.

A representative from the SRDS noted that the facility was constructed on top of a capped landfill, and reconfiguring the storm drain system was not an option to address facility drainage concerns. King County determined the drainage area of the container storage lot was too large and would not authorize discharge to the sanitary sewer (Ecology 2005h). Additional information about compliance with issues identified during the June 10, 2005, inspection was not available for review.

On December 17, 2009, Ecology conducted a compliance inspection at the SRDS and noted the following (Wright 2012):

- Revise the SWPPP to meet permit requirements as specified in Permit Condition #S3 and submit to Ecology within 30 days.
- Do not discharge process wastewater of any kind to storm drains.
- All electronic wastes must be stored inside or under cover.
- Immediately implement improved housekeeping practices and source control measures for the lower area at the southeast end of the transfer building.
- Provide proper cover and secondary containment for all liquid petroleum and chemical products and wastes that are stored outside.

Additional information about compliance with issues identified during the December 17, 2009, inspection was not available for review. SPU submitted an annual stormwater report on May 13,

2011. The SRDS exceeded benchmarks for zinc and copper during the second quarter of 2010. The facility addressed the exceedances by implementing a biweekly cleaning schedule for catch basins (SPU 2011d).

SPU submitted an annual stormwater report on May 3, 2012. Two small hydraulic oil spills occurred in May 2011 and were contained by absorbent pads. SPU also replaced an absorbent insert in a catch basin at the facility. The SRDS exceeded benchmarks for copper during the first and second quarter of 2011. The facility is in the process of identifying the source and remediation method to reduce contaminants (SPU 2012c).

5.23.4 Potential for Sediment Recontamination

The SRDS facility is located on the footprint of the former South Park Landfill. Past operations at the landfill (see Section 5.24 below) have resulted in contamination of soil, groundwater, and surface water. The SRDS has been in operation since 1966. In 1988, the site was listed on Ecology's CSCSL for suspected contamination of soil, groundwater, and surface water with conventional contaminants (organic and inorganic).

During 2013 and 2014, SPU plans to demolish existing structures on the property to construct administrative offices, a reuse store, a new household hazardous waste facility, and a new self-haul recycling facility. The potential for sediment recontamination via this property is summarized by transport pathway below.

Soil and Groundwater

Soil and groundwater investigations have not been conducted at the SRDS property. The SRDS occupies the foot print of the former South Park Landfill, and is listed on Ecology's CSCSL. The potential for sediment recontamination via the groundwater pathway is unknown.

Stormwater

Stormwater at the facility is conveyed to the 1st Avenue S SD system and the sanitary sewer. According to a 2005 Ecology stormwater inspection report, leachate from open top storage containers had potential to impact stormwater being conveyed to the storm drain system. No information was available in the files reviewed during preparation of this Data Gaps Report regarding any follow-up inspections at this property.

During 2013 and 2014, SPU will construct administrative offices, a reuse store, a new household hazardous waste facility, and a new self-haul recycling facility. Plans for the stormwater drainage system at the property were not available for review. The potential for sediment recontamination via stormwater discharge at the SRDS is unknown.

5.23.5 Data Gaps

Information on follow-up (if any) to the 2005 and 2009 Ecology stormwater inspections is needed to determine whether the SRDS is currently in compliance with applicable regulations and has implemented appropriate BMPs.

In addition, information on proposed handling of stormwater drainage during and after the 2013/2014 construction is needed to assess the potential for sediment recontamination associated with the stormwater pathway.

Information on contaminant concentrations in soil and groundwater, if any, is needed to assess the potential for sediment recontamination via groundwater transport.

5.24 Former South Park Landfill

Facility Summary: Former South Park Landfill	
Address	8100 2nd Avenue S 8200 2nd Avenue S
Tax Parcel No.	3224049005 (current) 7328400005, 3224049007, 3224049077 (historical)
Property Owner	South Park Property Development LLC
Parcel Size	9005: 21.00 acres (914,648 sq ft) 0005: 10.29 acres (448,078 sq ft) 9007: 6.49 acres (282,819 sq ft) 9077: 0.72 acre (31, 303 sq ft)
Facility/Site ID	2180
Alternate Names	Southpark Landfill, South Park Landfill Redevelopment
SIC Code	4953: Landfill 5241: Meat and Fish Markets 7692: Welding Repair
EPA ID No.	None
NPDES Permit No.	WAR125544 (Construction Stormwater General Permit)
UST/LUST ID No.	None

The former South Park Landfill is located on parcel 3224049005, owned by South Park Property Development LLC (SPPD). The property is bordered by 5th Avenue S to the east, the Kenyon Business Park and South Recycle and Disposal Station to the north, S Sullivan Street to the south, and Occidental Avenue S to the west (Figure 13).

There are no buildings or permanent structures located on the property.

5.24.1 Current Operations

SPPD purchased parcel 9005 from King County in 2006. The SPPD property is part of a closed landfill formerly known as the South Park Landfill. Parcel 9005 consists of 19.4 acres of undeveloped land. The property was largely cleared of vegetation in late 2005, and portions of the eastern half of the property are currently used to store heavy equipment. In some areas, a layer of crushed concrete was used to grade the landfill surface. Accessible portions of the perimeter of the SPPD property are fenced. The SPPD property is accessed through two locked gates along 5th Avenue S (Farallon 2009).

The primary drainage feature at the SPPD property is an east-west oriented channel that was constructed in 1967. The channel was developed through solid waste in the middle portion of the property. A large-diameter culvert is present at the western terminus of the channel. Stormwater is conveyed through the western ditch that borders the northwest boundary of the property (Figure 29). Flow at the northern end of the western ditch discharges to a 30-inch culvert that passes beneath the Kenyon Business Park. The private storm drain extends across S Kenyon Street and enters a culvert, which travels northwest beneath SR 509 and discharges to the central wetland area (Farallon 2009).

A RI/FS is being conducted at the facility prior to further industrial development.

5.24.2 Historical Operations

The SPPD property was part of the South Park Landfill that encompassed approximately 40 acres. Historical documents also refer to the property as the King County South Park Custodial Landfill. Parcel 9005 was owned by King County until 2006 (Farallon 2009). The historical footprint of the South Park Landfill extends from parcel 9005 to the present day Kenyon Business Park (parcel 9007) and SRDS (parcel 0005) to the north and east (Figure 9). The northeast portion of the South Park Landfill extended to the east side of 5th Avenue S. The footprint extended south to Emerson Power Products (parcel 9045) and a vacant lot (parcel 9084). Data gaps for current operations on parcels 9045 and 9084 are discussed in the Riverside Drive Data Gaps Report (SAIC 2012). The historical footprint of the South Park Landfill is presented in Figure 29.

The following description refers to the entire historical footprint of the South Park Landfill. The landfill was used to dump solid wastes as early as the 1930s. An aerial photograph from 1936 indicates that the northwest corner and southern portion of the property were used for dumping of residential waste. Between 1941 and 1946, the northwest dumping area (parcel 9007, currently the Kenyon Business Park) started to expand to the southeast, towards the current SRDS. Open refuse burning was a common practice in northern and southern portion of the landfill. Beginning in the 1950s, part of the landfill was also used as an auto wrecking yard; this activity continued into the 1970s. By 1963, the South Park Landfill was used for rubbish disposal only. In 1966, the landfill stopped accepting refuse when the City of Seattle built the SRDS (Parcel 0005). Kenyon Business Park (Parcel 9007, 9077) was constructed during the late 1960s and early 1970s. From 1984 to 1996, King County leased portions of the landfill property for truck and trailer storage. In 1995, the storm drain system along 5th Avenue S was upgraded, and stormwater runoff was no longer discharged to the east-west channel from properties east of 5th Avenue S (Farallon 2009).

5.24.3 Regulatory History

The South Park Landfill was added to Ecology's CSCSL on March 1, 1988. The facility entered into the VCP on October 19, 1999, as an independent cleanup site. On May 5, 2006, the South Park Landfill withdrew from the VCP.

Ecology completed an SHA for the South Park Landfill in February 2007. The SHA reviewed analytical data, and historical and geographical information (including environmental investigations summarized above) to estimate the potential threat to human health and the environment. Ecology determined the hazard ranking for the South Park Landfill was 2, where 1 represents the highest relative risk and 5 the lowest (Ecology 2007b).

On May 4, 2009, Ecology, City of Seattle, and SPPD entered into Agreed Order No. 6706 to perform an RI/FS. The RI/FS is being conducted to determine the nature and extent of contamination associated with the former South Park Landfill and to evaluate any remedial actions necessary for the property (Ecology 2009b). A draft RI/FS Work Plan was submitted to Ecology in September 2009 (Farallon 2009), and a draft RI/FS and CAP are expected to be completed in January 2013.

5.24.4 Environmental Investigations and Cleanups

Several environmental investigations have been performed at this property. Sample locations and a summary of historical soil, groundwater, and surface water data for the facility is provided in Appendix E.

Environmental investigations and cleanups discussed below pertain to tax parcel 9005. Due to the large amount of available data, and because work is actively in progress under an Agreed Order with Ecology, soil and groundwater data have not been tabulated in this Data Gaps Report. A summary table of all investigations conducted at the property is provided in Appendix E. Environmental investigations and cleanups conducted at the Kenyon Business Park and SRDS are presented in Sections 5.20 and 5.23, respectively.

Qualitative Health Risk Assessment: King County Landfills (1986)

In December 1986, the SKCDPH reviewed environmental sampling data for six landfills in King County, including the South Park Landfill. The study was limited to assessing the threat to public health from inhalation, ingestion, or contact with surface water, topsoil, or subsurface air at the property. Heavy metals and PAHs were detected in surface soil samples at concentrations greater than background levels. The assessment determined that the high concentrations were due to the general industrial nature of the area and adjacent highways. The property was not used recreationally and public access was limited, which decreased the potential public health risks (ETI 1986).

EPA Preliminary Assessment and Site Inspection (1988)

In May 1988, E&E conducted a Preliminary Assessment/Site Inspection for EPA to evaluate actual or potential environmental or public health hazards at South Park Landfill. The inspection identified a drainage ditch that bisected the southern portion of the property from east to west. In July 1988, six sediment samples and six surface water samples were collected from the drainage ditch. One background sediment and surface water sample was collected outside the property boundary. Metals, SVOCs, and PCB concentrations in sediment and SVOCs, and PCB concentrations in surface water were detected above background levels in more than one sample (E&E 1988; USEPA 1988).

Subsurface Exploration and Environmental Assessment (1992)

During March and May 1991, soil and groundwater was collected near the 5th Avenue S right-of-way to assess alignment options for a 72-inch storm drain (RZA Agra 1992). A total of 10 soil borings were advanced on the east and west rights-of-way for 5th Avenue S. The borings were advance to a depth of 20 to 25 feet bgs and soil samples were collected from each boring every 5 feet bgs. Landfill debris was encountered during sampling north of the east-west South Park

Landfill drainage ditch and in the west right-of-way. The eight borings on the west right-of-way were completed as groundwater monitoring wells. Groundwater was encountered at depths ranging from 3 to 14.5 feet bgs. Selected soil and groundwater samples were analyzed for TPH, VOCs, and metals (RZA Agra 1992).

TPH concentrations in soil were detected above MTCA Method A cleanup levels at six sample locations ranging in depths from 8 to 13 feet bgs. PCE concentrations exceeded MTCA Method A cleanup levels in one sample (B-6/S-3) at a depth of 13 feet bgs. VOCs and metals were either not detected or detected below MTCA Method A cleanup levels for soil. TPH, PCE, TCE, vinyl chloride, and xylene concentrations in groundwater exceeded MTCA Method A cleanup levels in one or more monitoring wells in the right-of-way southeast of the SRDS. The report recommended installation of the storm drain on the east right-of-way for 5th Avenue S to reduce the cost of disposing of contaminated soil during the excavation (RZA Agra 1992). Sample locations are presented in Appendix E.

South Park Custodial Landfill Environmental Site Investigation/Data Gaps Review (1998)

A review of environmental data for the South Park Landfill was completed in July 1998 (AESI 1998). The information review included regional and property-specific information on groundwater, surface water, landfill gas, and geotechnical conditions. Sixty-five boring logs reviewed during the investigation indicated the presence of waste fill, ranging in thickness from 2 to 21 feet and averaging 11 feet thick. The waste fill was predominantly ash, cinders, slag, rubble, and wood waste, with 26 borings indicating the presence of petroleum, solvent or creosote products. Landfill gas measurements collected within the waste fill ranged from about 0.06 percent methane to 74 percent methane. The investigation determined that stormwater from the landfill area drains to the east-west drainage ditch on the central portion of the property and its extension east of Occidental Avenue S (AESI 1998).

The memorandum recommended additional investigations to determine the extent of groundwater flow and water quality, potential for migration of landfill gas off of the property, and the hydraulic relationship between the drainage ditch and groundwater. Further geotechnical investigations were recommended to understand how subsurface conditions would affect redevelopment and to assess the feasibility of mitigation alternatives (AESI 1998).

South Park Custodial Landfill Cover Soils Investigation (1999)

In May and June 1998, a test pit investigation was conducted at the South Park Landfill to characterize the cover material overlying the landfill and to verify the presence of environmentally impacted soils identified in a previous investigation. A total of 43 exploration test pits were completed to test cover materials at shallow depths ranging from 1.1 feet to 7.5 feet bgs. The thickness of the cover soils ranged from 0 feet to about 4 feet bgs. The general contents of the refuse material encountered included wood debris, scrap metal, concrete, plastic, brick, porcelain, rubber, glass, shingles, wire, cloth, and fiberglass (AESI 1999).

Soil samples were collected and analyzed for TPH, VOCs, SVOCs, PCBs, pesticides, metals, and TCLP metals. Lead, TPH and PCB concentrations were detected above MTCA Method C industrial cleanup levels for soil. TPH, VOCs, SVOCs, and pesticides were not detected or were detected below MTCA Method C industrial cleanup levels for soil (AESI 1999). Sample locations are presented in Appendix E.

During the investigation, soil samples were compared to MTCA Method C industrial cleanup levels for screening purposes only. The RI/FS completed in 2009 compared historical soil data to MTCA Method A and B cleanup levels (whichever is more stringent). A summary of all soil and groundwater data from South Park Landfill investigations is presented in the RI/FS discussion below.

South Park Custodial Landfill Surface Water Evaluation (1999)

In September 1999, RW Beck conducted a surface water evaluation in support of redevelopment of the South Park Landfill site (RW Beck 1999). During a field reconnaissance of the drainage system at the landfill property, a spring was observed on the east edge of Occidental Avenue S. The investigation determined that surface water from the South Park Landfill was no longer conveyed to the drainage system along the 5th Avenue S right-of-way. Surface water enters an east-west drainage ditch that bisects the central portion of parcel 9005. The east-west drainage ditch connects to a south-north drainage ditch along the western property boundary. Surface water is then conveyed to the LDW through the following pathway (RW Beck 1999):

- A 30-inch pipe that extends under the Kenyon Business Park, S Kenyon Street, and under parcel 3224049007;
- A 48-inch pipe system that conveys flows under SR 509;
- An existing wetland on the west side of SR-509;
- A 10-foot by 10-foot box culvert under West Marginal Way SW; and
- A large channel that conveys flows under the ramps of the 1st Avenue S Bridge to the LDW.

The report presented costs of improvements for buried detention tanks, a lined detention pond, or installation of a new pipeline located along Occidental Avenue S. An additional option included continued use of the existing privately owned pipe system through Kenyon Business Park (RW Beck 1999).

South Park Custodial Landfill Monitoring Well and Gas Probe Installation (2000)

Monitoring wells and gas probes were installed at the South Park Landfill during two phases in December 1998 and September 1999 (AESI 2000). The installation consisted of eight alluvial aquifer monitoring wells, 14 gas probes, and two geotechnical borings. Groundwater samples were collected from four wells between March and August 1999. Groundwater samples were collected from 11 wells in October and December 1999. Groundwater samples were collected from 14 wells in March and June 2000. Groundwater samples were analyzed for conventional water quality parameters, VOCs, SVOCs, metals (total and dissolved), pesticides/herbicides, and TPH (AESI 2000).

Vinyl chloride and arsenic were the only constituents to exceed MTCA Method C cleanup levels for groundwater in monitoring wells downgradient from the South Park Landfill. Landfill gas was detected in gas probes completed within the South Park Landfill property boundary installed in refuse material. No subsurface methane gas levels were detected at levels exceeding regulatory limits between the South Park Landfill and the adjacent residential neighborhood to the southeast (AESI 2000).

During the investigation, groundwater samples were compared to MTCA Method C industrial cleanup levels for screening purposes only. The RI/FS completed in 2009 compared historical groundwater data to MTCA Method A and B cleanup levels (whichever is more stringent). A summary of all soil and groundwater data from South Park Landfill investigations is presented in the RI/FS discussion below.

Shallow Groundwater Characterization (2006)

In February 2006, three shallow groundwater monitoring wells were completed down-gradient of the landfill (Aspect 2006). Soil samples were collected at 2.5-foot intervals and submitted for analysis of organic carbon fraction, bulk density, and effective porosity. Groundwater samples were collected from the new monitoring wells along with three historical monitoring wells. Groundwater samples were analyzed for halogenated VOCs, vinyl chloride, ethane, and total and dissolved metals. Concentrations of vinyl chloride and total and dissolved arsenic exceeded MTCA Method B cleanup levels for groundwater collected from monitoring wells on the west side of Occidental Avenue S (MW-12), eastern corner of S Kenyon Street and 5th Avenue S (MW-25), and eastside of SR-99 (MW-27). Concentrations of benzene exceeded MTCA Method B cleanup levels for groundwater at MW-25 (Aspect 2006). Sample locations are presented in Appendix E.

Landfill Cover Soil Sampling and Analysis for PCBs (2007)

Concentrations of PCBs were detected above MTCA Method A cleanup levels in a soil sample collected from a test pit during a soil investigation conducted in May 1998 (AESI 1999). The test pit (TP-39) was completed in the northwestern portion of the South Park Landfill. In April 2007, the location of test pit TP-39 was identified. A total of 25 discrete soil samples were collected from TP-39 at a depth of 0.5 feet bgs. Concentrations of PCBs in soil were either not detected or detected below MTCA Method A cleanup levels (Farallon 2007).

Draft Remedial Investigation/Feasibility Study Work Plan (2009)

A Draft RI/FS Work Plan was completed in September 2009, under Agreed Order No. 6709 (Farallon 2009). As described earlier, previous environmental investigations compared chemicals detected in soil and groundwater to MTCA Method C cleanup levels for industrial use. The RI/FS compared all historical soil, groundwater, and surface water data to MTCA Method A or B cleanup levels (whichever is most stringent). Concentrations of metals, petroleum hydrocarbons, SVOCs, and VOCs exceeded MTCA Method A or B cleanup levels in soil and groundwater. Metals and PCB concentrations exceeded surface water screening levels (Farallon 2009). These exceedances are summarized below:

COC	Soil	Groundwater	Surface Water
Metals			
Aluminum			●
Arsenic	●	●	●
Cadmium	●	●	●
Chromium		●	

COC	Soil	Groundwater	Surface Water
Copper	●		●
Iron			●
Lead	●	●	●
Manganese		●	●
Mercury	●	●	●
Nickel			●
Zinc			●
Petroleum Hydrocarbons			
Diesel-range	●	●	
Gasoline-range		●	
Lube Oil	●	●	
Oil-range		●	
VOCs			
Benzene		●	
Methylene Chloride	●	●	
Styrene		●	
Trichloroethene		●	
Vinyl Chloride		●	
SVOCs			
Benzo(a)pyrene	●		
Naphthalene		●	
Pentachlorophenol	●		
PCBs			
Aroclor 1254	●		
Aroclor 1260			●

The RI/FS Work Plan identified data gaps for groundwater and surface water at the South Park Landfill. Concentrations of arsenic, VOCs, and oil-range hydrocarbons in groundwater have been detected above screening levels in monitoring wells up-gradient of the western boundary of the South Park Landfill. Concentrations of vinyl chloride, TCE, benzene, and arsenic in groundwater have been detected above screening levels in monitoring wells down-gradient of the eastern boundary of the South Park Landfill. The source of the contaminants in groundwater up- and down-gradient of the property is unknown (Farallon 2009).

Discharge from a buried pipe near the southern end of the western drainage ditch may contribute runoff from other properties to surface water on the South Park Landfill. Stormwater and sediments from the unknown discharge source may contribute contaminants to surface water on the South Park Landfill (Farallon 2009).

5.24.5 Potential for Sediment Recontamination

Past operations at the South Park Landfill resulted in contamination of soil, groundwater, and/or surface water with metals, PCBs, VOCs, SVOCs, and petroleum hydrocarbons. An RI/FS is in progress at the site, under an Ecology Agreed Order. The potential for sediment recontamination via this property is summarized by transport pathway below.

Soil and Groundwater

Contaminants identified in soil and groundwater at the South Park Landfill include metals, TPH, VOCs, SVOCs, and PCBs. SPPD and SPU are conducting an RI/FS under Agreed Order No. 6709 and are working closely with Ecology to address soil and groundwater contamination at the property.

Stormwater

Stormwater at the facility is conveyed to an east-west drainage ditch on the central portion of the property. Stormwater is conveyed north under Kenyon Business Park and the South Transfer Station and enters a wetland prior to discharging to the LDW. Contaminants identified in surface water at the South Park Landfill include metals and PCBs. The potential for sediment recontamination via stormwater discharge at the South Park Landfill is low to moderate.

5.24.6 Data Gaps

SPPD is redeveloping the South Park Landfill under Agreed Order No. 6709. Therefore, no data gaps have been identified for the property at this time.

5.25 International Construction Equipment

Facility Summary: International Construction Equipment	
Address	8101 Occidental Avenue S, 98108
Tax Parcel No.	3224049008
Property Owner	International Construction Equipment
Parcel Size	0.52 acre
Facility/Site ID	99142846
Alternate Names	None
SIC Code	7353: Heavy Construction Equipment Rental
EPA ID No.	WAD982821076 (inactive)
NPDES Permit No.	None
UST/LUST ID No.	None

International Construction Equipment (ICE) is located on Parcel 3224049008. The property is bordered by WG Clark Construction and the Kenyon Business Park to the north, by the former South Park Landfill to the east and southeast, by Demolition Man to the south, and by SR 509 and 1st Avenue S to the west (Figure 13). King County Tax Assessor records indicate a 1,296-square foot building used for industrial light manufacturing, built in 1986, is present on the property.

ICE purchased the property from David W and Margaret L McFarland (owners of the adjacent Demolition Man site) in November 1996. Between approximately 1985 and 1996, ICE leased the property from Demolition Man.

5.25.1 Current Operations

ICE manufactures, markets, and leases pile driving and drilling equipment. The 8101 Occidental Avenue S property is the Western Regional Sales Office for the company. Heavy equipment maintenance and repair is also conducted at this property (Alton Geoscience 1992).

An office/maintenance shop and hydraulic test stand were located at the site in 1992 (Alton Geoscience 1992). Wastes generated at the facility include antifreeze, batteries, fluorescent light tubes, petroleum/oils, pretreatment sludges, residues, and filters. Process water overflow was noted. Activities at the facility include fueling, vehicle washing, storage of liquids in tanks and portable containers, vehicle/equipment maintenance and repair, painting/finishing, and parking of vehicles and equipment (SPU 2011j). The stormwater system at the property consists of two catch basins and a maintenance hole; stormwater drains to the 1st Avenue SD.

At the time of a 2011 inspection, the wash pad was connected to a treatment system; after treatment, water passes through overflow hoses that discharge to the ground when it rains. The treatment system was not working property at the time of the inspection, so untreated water could have been transported to the ground. Staining was observed on the ground near the overflow hoses (SPU 2011j). During a follow-up inspection in 2012, ICE placed the overflow hoses into a floor opening near an above ground holding tank and filter. The floor opening goes to a tank/sump that is a storing area for waste water from the pressure wash pad. The wash pad area is a closed system (SPU 2012a).

5.25.2 Historical Operations

Prior to leasing the property to ICE, Demolition Man operated at this location (Ecology 1993c). No other information on historical operations was available in the files reviewed during preparation of this Data Gaps Report.

5.25.3 Regulatory History

According to Ecology's Facility/Site Database, ICE was a hazardous waste generator between August 1989 and December 1994.

Independent Cleanup

An ERTS initial report (No. N6498) was filed on October 15, 1991. The report indicated that oil, antifreeze, and other spots were observed in the yard area at "International Coast Equipment", which repairs heavy construction equipment (Ecology 1991d). A creek runs alongside the property.

A site assessment and an independent cleanup action were conducted at the site in 1992 (B&C Equipment 1992; Alton Geoscience 1992). A total of 40 cubic yards of petroleum-contaminated soil (66.06 tons) was removed from the northern portion of the property, near a concrete pad and hydraulic test stand.

Ecology conducted a site inspection on April 1, 1993 (Ecology 1993c). The concrete pad, which was removed during the cleanup action, had been replaced with a larger pad, and a drain was present at the center of the pad to collect oil and other fluids spilled during equipment repair. A pipe ran from the sump through the cement to a pump housed in a shed; the pump transported the fluids to a holding tank that is regularly emptied by an oil recycling service. The holding tank had no secondary containment, and an overflow pipe appeared to lead directly to the bare earth behind the cement pad and to the embankment of SR 509 beyond (O'Herron 1993).

A new covered drum storage unit had been constructed; it had a cement floor with a 6-inch lip to provide secondary containment. No contamination was present; however, the inspector noted that the slope of the pad towards the drain was very slight; heavy rains or a clogged drain would allow contamination to run off the edge of the concrete pad to the graveled slope beyond (O'Herron 1993). The hydraulic test stand was about 8 inches lower than the main pad, and therefore spills in this area would not reach the drain on the concrete pad. Instead, this area was open to the terraced slope to the east.

On April 21, 1993, Ecology recommended no further action at the site, although some questions remain about the area below the concrete pad and to the east of the hydraulic test stand (Ecology 1993d).

Source Control Inspections

SPU conducted a source control inspection at ICE on November 3, 2011 (SPU 2011j). The following corrective actions were identified:

- Clean and eliminate leaks and spills from storage areas.
- Obtain proper permit for facility discharge.
- Properly label containers.
- Develop and implement spill response procedures.
- Improve or purchase adequate spill response materials.
- Properly educate employees.

SPU worked with ICE to prevent discharge of process water from the wash pad to the public drainage system. ICE's wash pad is a closed system (SPU 2012a). A follow-up inspection was conducted on February 24, 2012, and the facility was in compliance at that time.

5.25.4 Environmental Investigations and Cleanups

Environmental sampling results for detected chemicals are presented in Appendix C. Sampling locations are shown in Figure 30.

Environmental Site Assessment (1992)

During January through March 1992, B&C Equipment conducted an Environmental Site Assessment to identify areas of hydrocarbon-impacted soil (B&C Equipment 1992). A total of six soil borings were drilled and soil samples were collected at depths between 2.5 and 5 feet bgs. Sample locations were selected to represent the most visibly contaminated areas of the facility. Permeable crushed brick debris was observed in all boreholes between approximate 6 inches and 3 feet bgs; activities by Demolition Man were identified as a likely source of the brick rubble (B&C Equipment 1992). Native soils were encountered below 3 feet bgs. Soil samples were analyzed for TPH (EPA Method 418.1), and concentrations ranged from 72 to 720 mg/kg.

In addition, one discrete and three composite surface soil samples were collected in January 1992 from locations near a concrete pad used for equipment storage, at a drum storage area, around a hydraulic test stand, in the storage yard. All locations were selected from the most visibly contaminated locations at the facility. Samples were analyzed for PCBs, halogenated volatile organics, and TCLP metals. All analytes were below detection, with the exception of barium in the TCLP leachate. One additional composite surface soil sample was collected on March 20, 1992 at the north end of the facility; TPH was present in this sample at 86,000 mg/kg, and results indicated the presence of gasoline, diesel, and heavy petroleum oils (B&C Equipment 1992).

Independent Cleanup Action (1992)

In October 1992, Alton Geoscience collected two soil samples (ICE-1 and ICE-2; locations not specified) in areas of visible dark surface staining (Alton Geoscience 1992). Laboratory results indicated hydrocarbon contamination in the heavy oil range, with a lesser concentration of diesel range hydrocarbons.

Hydrocarbon-affected soils were excavated to depths ranging between 6 and 7 feet bgs at locations north of the concrete pad and south of the hydraulic test stand (Figure 30). Subsurface materials encountered included 1 to 2 feet of sandy gravel fill, underlain by 2 to 3 feet of building brick and mortar and metal/wood debris. Silty sands interpreted as Holocene alluvium were present below the fill; groundwater was not observed. Samples were collected from the excavation bottoms to verify vertical removal of hydrocarbon-affected soil.

Additional areas near the concrete pad and around the hydraulic test stand were excavated to depths between 2 and 3.5 feet bgs. Confirmation soil samples were collected from the excavation bottoms and side walls. All concentrations were below the current MTCA soil cleanup level (Appendix C).

A total of 40 cubic yards of petroleum-contaminated soil (66.06 tons) was transported to the Roosevelt Landfill. The excavations were backfilled with imported soil.

5.25.5 Potential for Sediment Recontamination

Past operations at this property resulted in contamination of soil with petroleum hydrocarbons. One composite surface soil samples exceeded the current MTCA cleanup level for petroleum hydrocarbons (Appendix C). An independent cleanup action was conducted in 1992 and Ecology recommended no further action at that time. The potential for sediment recontamination via this property is summarized by transport pathway below.

Soil and Groundwater

Ecology recommended no further action in 1993 for petroleum contamination associated with spills to soil at this property, although potential pathways for future releases were identified. The potential for sediment recontamination associated with this property is considered to be low.

Stormwater

The facility was in compliance with environmental regulations and BMPs as of February 2012. Therefore, the potential for sediment recontamination associated with the stormwater pathway is considered low.

5.25.6 Data Gaps

No data gaps have been identified for this property.

5.26 Demolition Man

Property Summary: Demolition Man	
Address	8129 Occidental Avenue S, Seattle 98108
Tax Parcel No.	3224049102
Property Owner	John M. and Ginny M. McFarland
Parcel Size	0.62 acre (27,050 sq ft)
Facility/Site ID	14413
Alternate Names	Demolition Man Inc
SIC Code	NA
EPA ID No.	NA
NPDES Permit No.	NA
UST/LUST ID No.	NA

Demolition Man is located on Parcel 3224049102, north of North Star Ice Equipment, south of International Construction Equipments, and between SR 509 and Occidental Avenue S (Figure 13). It is southwest of and adjacent to the former South Park Landfill. The King County Department of Assessments list this property as “vacant,” with no structures.

5.26.1 Current Operations

Demolition Man currently occupies this property. The company has provided demolition and salvage services in the Seattle area since 1983. Potential pollution-generating activities at the facility include loading/unloading of materials, outside container storage, and parking of vehicles and equipment. Small quantities of waste fluorescent light tubes, petroleum/oils, and solvents are generated. The ground surface is gravel. Construction-related equipment is stored and/or maintained on the facility. Materials such as batteries, paints, petroleum/oil, solvents, and tires are stored outdoors (SPU 2011h).

There is one catch basin on the property.

5.26.2 Historical Operations

No information on historical operations was available in the files reviewed during preparation of this Data Gaps Report.

5.26.3 Regulatory History

A source control inspection was conducted at this facility by SPU on September 28, 2011 (SPU 2011h). At the time of the inspection, the catch basin was over 60 percent filled with sediment and plants. Leakage was observed from the hydraulic system of a construction crane. Visible staining was observed on the gravel surface, and signs of distressed vegetation were noted. The following corrective actions were identified:

- Clean storm drain facility.
- Properly store containerized materials.
- Properly dispose of waste.
- Properly store product/waste.
- Develop and implement spill response procedures.
- Improve or purchase adequate spill response materials.
- Properly educate employees.

Corrective actions were implemented and compliance was achieved on November 18, 2011 (SPU 2011h).

5.26.4 Potential for Sediment Recontamination

No information on historical operations at this property was available, and there is no information to indicate that soil or groundwater contamination is likely. Current operations include storage of materials and equipment. As of November 2011, this facility was in compliance with environmental regulations and stormwater BMPs. Therefore, the potential for sediment recontamination associated with this property is believed to be low.

5.26.5 Data Gaps

No data gaps were identified for this property.

5.27 North Star Ice Equipment

Property Summary: North Star Ice Equipment	
Address	8151 Occidental Avenue S, Seattle 98108
Tax Parcel No.	3224049010
Property Owner	Rainier Northwest JFK LLC
Parcel Size	2.48 acres (108,233 sq ft)
Facility/Site ID	25963342 (North Star Ice Equipment Inc)
Alternate Names	North Star Ice Equipment Inc, Ocean Terminals Inc Seattle, Demolition Man Inc 8151
SIC Code	3585: Refrigeration and Heating Equipment; 1795: Wrecking and Demolition Work
EPA ID No.	WAD988492302
NPDES Permit No.	NA
UST/LUST ID No.	3729

North Star Ice Equipment is located on Parcel 3224049010, between SR 509 and Occidental Avenue S, southeast of and adjacent to the former South Park Landfill (Figure 13). According to the King County Department of Assessments, there is one 32,000 sq ft masonry warehouse building, constructed in 1974, on the property.

5.27.1 Current Operations

North Star Ice Equipment

North Star Ice Equipment designs and manufactures ice equipment, including flake ice machines, liquid ice generators, automatic ice storage systems, containerized ice plants, ice delivery systems, and auxiliary ice equipment and accessories (North Star Ice 2012). North Star flake ice is used in food-related and industrial cooling processes in over 120 countries. The company has been in operation since 1950; it is not known how long the company has been at the 8151 Occidental Avenue S location.

Demolition Man Storage Yard

Demolition Man uses the southern end of this property as a storage and operations yard; the main offices for Demolition Man are located at 8129 Occidental Avenue S, on the parcel to the north (Figure 13).

A 1,000-gallon double-walled used oil tank is present onsite. Potential pollutant-generating activities conducted at the facility include mobile fueling operations, truck loading/unloading, outdoor repair and maintenance of vehicles, and storage/maintenance of construction-related equipment and large trucks. The parking lot is gravel, and there are no catch basins on the facility. During an inspection in September 2011, the following types of wastes were present at the facility: fluorescent light tubes, PCB-containing materials, sheetrock waste, and lamp ballasts.

5.27.2 Historical Operations

According to the King County Department of Assessments, the property was purchased by Rainier Northwest JFK Associates from Air Van Lines Inc in November 1986.

Ocean Terminals Inc, a freight forwarding company, is a former operator at this location. A small (less than 1,100 gallon) unleaded gasoline UST was present during the time that Ocean Terminals was located here. The tank is listed as “closed in place” in Ecology’s ISIS database; however, no closure date is recorded.

No other information about historical operations at this property was available in the files reviewed during preparation of this Data Gaps Report.

5.27.3 Regulatory History

North Star Ice Equipment

North Star Ice Equipment has been a small quantity generator of hazardous waste at this location since at least 1996 (Ecology 2010c). According to EPA’s ECHO database, a focused hazardous waste compliance inspection was conducted at this facility on August 26, 2008, and no violations or compliance issues were noted.

EPA’s ECHO database also indicates that a water quality inspection was conducted at the North Star Ice Equipment facility on September 30, 2010, and that a warning letter or violation letter was sent to the facility on November 9, 2010. No additional information about this inspection or follow-up was available in the files reviewed during preparation of this Data Gaps Report.

Demolition Man Storage Yard

A source control inspection was conducted by SPU at Demolition Man on September 28, 2011 (SPU 2011i). The inspector noted two open buckets of lamp ballasts without labels, and two 55-gallon drums of ballasts; without additional information, these are considered PCB-containing materials and likely also contain phthalates in the capacitors (SPU 2011i). A large pile of wood debris was covered with a tarp, and a small pile of drywall had been dumped on the ground. SPU identified the following corrective actions:

- Properly store containerized materials.
- Properly store non-containerized materials.
- Develop and implement spill response procedures.
- Improve or purchase adequate spill response materials.
- Properly educate employees.

Corrective actions were implemented and compliance was achieved on November 18, 2011 (SPU 2011i).

5.27.4 Potential for Sediment Recontamination

An unleaded gasoline UST was present at this location; no other information about historical operations was available. Current operations include activities that could result in sediment recontamination if not properly managed.

Soil and Groundwater

No indication of past spills or releases to soil or groundwater was identified. The potential for sediment recontamination via the groundwater pathway is considered low.

Stormwater

Little information about current activities that may result in release of contaminants to stormwater at North Star Ice Equipment was available. North Star Ice Equipment may be required to apply for coverage under an ISGP or a CNE certificate. Demolition Man was in compliance with environmental regulations and stormwater BMPs as of November 2011.

5.27.5 Data Gaps

A water quality inspection was reportedly conducted at North Star Ice Equipment in September 2010, and a warning letter/notice of violation issues. No record of this inspection or any follow-up actions was available in the files reviewed. Additional information regarding this inspection is needed to assess whether current activities at this facility may result in the transport of contaminants of concern to stormwater. Coverage under the ISGP or a CNE certificate may be required (Wright 2012).

5.28 Non-Ferrous Metals

Property Summary: Non-Ferrous Metals	
Address	230 S Chicago Street
Tax Parcel No.	7328401427
Property Owner	McGee Properties Inc
Parcel Size	0.90 acre (39,000 sq ft)
Facility/Site ID	66671686
Alternate Names	Non Ferrous Metals, Nonferrous Metals
SIC Code	3341: Secondary Nonferrous Metals
EPA ID No.	NA
NPDES Permit No.	SO3003239 (canceled)
UST/LUST ID No.	NA

Non-Ferrous Metals is located between S Chicago Street and S Portland Street, on the east side of SR 99 (Figure 13). To the west (across SR 99) is the new South Transfer Station; to the east is Flamespray Northwest, and to the south/southeast is Marine Lumber Service. According to the King County Department of Assessments, there is one 25,292 sq ft masonry light manufacturing building located on the property. This building was constructed in 1998.

5.28.1 Current Operations

Non-Ferrous Metals Inc., established in 1951, is a foundry that specializes in lead casting, lead alloying, and lead recycling. The company moved to the current location in May 1998. The facility uses computer-controlled melting systems with nine different melting stations, and can produce continuous castings to over 50,000 lbs (Non-Ferrous Metals 2012). The facility also has an in-house machine shop for making tools and molds. A dust collection system, which includes hoods and collars at each melting location, removes particulates from the air, passes the air through a bank of filters that trap particulates into a hopper for future recycling.

All loading/unloading, materials storage, and manufacturing activities take place indoors. There is an outdoor paved area for parking and an outdoor covered pallet storage area. The loading area drains to the sanitary sewer.

Stormwater from the property discharges to a grass-lined detention pond on the west side of the building; this pond reportedly supports a high rate of infiltration (Ecology 2003a). Stormwater from the pond flows to a catch basin and is connected by a 2.5-inch diameter pipe to the WSDOT storm drain on SR 99 at approximately milepost 25.95 (Non-Ferrous Metals 2000). Stormwater from the WSDOT storm drain flows to the 1st Avenue S SD and discharges to the LDW.

5.28.2 Historical Operations

According to the King County Department of Assessments, this property was purchased by McGee Properties Inc. from West Coast Wire Rope & Rigging Inc. in April 1997. No other information on historical operations at this property was available in the files reviewed during preparation of this Data Gaps Report.

5.28.3 Regulatory History

Non-Ferrous Metals operated under the ISGP (SO3003239) between 1998 and 2003 (Ecology 1998b, 2000e).

Ecology conducted a stormwater compliance inspection at Non-Ferrous Metals on March 27, 2003 (Ecology 2003a), in response to an application for a CNE certificate submitted by the company. The inspectors expressed concern about the lack of adequate containment around the cooling water recycling tank and associated chemicals. Conditions were met, and the CNE certificate was approved by Ecology for this facility (Ecology 2003g). Coverage under the ISGP was therefore terminated. During 2010, the most recent year for which data are available, EPA's Envirofacts database[22] reports that this facility released 27 pounds of lead as stack or point air emissions, and 4 pounds of lead as fugitive or non-point air emissions.

5.28.4 Environmental Investigations and Cleanups

No environmental investigations or cleanups have been conducted at this property.

5.28.5 Potential for Sediment Recontamination

All industrial activities at this property occur indoors, and the facility has received a CNE certificate from Ecology. No information was available regarding activities at this property prior to 1998. Evaluation of the potential for lead emissions from this property to reach LDW sediments via air deposition is beyond the scope of this Data Gaps Report. The potential for sediment recontamination associated with this property is considered low.

5.28.6 Data Gaps

No additional information regarding inspections or corrective actions since 2003 was available in the files reviewed. Additional information is needed to assess whether current activities at this facility have the potential for sediment recontamination via stormwater discharge. Coverage under the ISGP or a CNE certificate may be required (Wright 2012).

5.29 Flamespray Northwest

Facility Summary: Flamespray Northwest	
Address	250 S Chicago Street, Seattle 98108
Tax Parcel No.	7328401425
Property Owner	FSNW LLC
Parcel Size	0.83 acre (36,000 sq ft)
Facility/Site ID	1736255 (Flamespray Northwest Inc)
Alternate Names	None
SIC Code	None
EPA ID No.	WAH000033142
NPDES Permit No.	None
UST/LUST ID No.	None

[22] http://www.epa.gov/enviro/facts/multisystem.html

This parcel, owned by FSNW LLC, is bordered to the north by S Portland Street, to the east by Gear Works, to the south by S Chicago Street, and to the west by Non-Ferrous Metals and SR 99 (West Marginal Way S) (Figure 13).

5.29.1 Current Operations

Flamespray Northwest Inc. (Flamespray) has operated at the 250 S Chicago Street location (Parcel 1425) at least since 1995. According to King County Department of Assessment records, three buildings are located on the property: a 3,840-square foot prefabricated steel storage warehouse built in 1974, a 1,780-square foot prefabricated steel office building built in 1979, and a 12,000-square foot prefabricated steel light manufacturing building constructed in 2001.

Flamespray repairs industrial machinery components using thermal sprayed coatings and applies coatings to parts for original equipment manufacturers, to create longer lasting and corrosion resistant parts (Flamespray NW 2010). The company also conducts welding and sandblasting.

Metallizing is the process of spraying molten metal onto a surface to form a coating. Pure or alloyed metal is melted in a flame and atomized by a blast of compressed air into a fine spray. This spray builds up onto a previously prepared surface to form a solid metal coating. Because the molten metal is accompanied by a large blast of air, the object being sprayed does not heat up very much; this metalizing process is therefore known as a “cold” process (Flamespray NW 2010).

5.29.2 Historical Operations

No information on activities at this property prior to 1995 was available during preparation of this Data Gaps Report.

5.29.3 Regulatory History

Ecology conducted an Urban Waters environmental compliance inspection at Flamespray on April 23, 2009. The following corrective actions were identified (Ecology 2009e):

- Create a spill response plan, and obtain spill containment, and cleanup materials.
- Educate employees about the spill plan and kit.
- Evaluate the condition of the single-walled fuel oil tank to determine if secondary containment is possible; if secondary containment is not possible at this time, identify how spills from the fuel oil tank will be prevented and controlled.
- Evaluate whether the operations at Flamespray require coverage under the ISGP.

According to a facility representative, stormwater generated at Flamespray is pumped to a dry well and does not discharge to the storm drain system (Jeffers 2009c); therefore coverage under the ISGP is not required. Flamespray developed a spill response plan and obtained a spill kit; however, no information was available to indicate whether secondary containment was achieved for the fuel oil tank.

SPU conducted an initial inspection at this property on May 17, 2012. No information about the results of this inspection was available at the time this draft Data Gaps Report was prepared; information from the inspection report will be incorporated into the final Data Gaps Report or SCAP for the 1st Avenue South SD source control area.

5.29.4 Potential for Sediment Recontamination

Soil and Groundwater

There was no information in the files reviewed during preparation of this Data Gaps Report to indicate that there is soil or groundwater contamination at this property. A 2009 compliance inspection noted that the fuel oil tank has no secondary containment; a tank rupture or spill during filling operations could result in release of fuel oil to soil. However, petroleum hydrocarbons are not LDW sediment COCs and Flamespray Northwest is approximately 0.25 mile from the LDW. Therefore, it is unlikely that releases to soil (if they were to occur) represent a potential for LDW sediment recontamination.

Stormwater

Based on information provided by the facility operator, Flamespray Northwest does not discharge stormwater to the municipal storm drain system, and therefore stormwater is not a potential pathway for sediment recontamination.

5.29.5 Data Gaps

Review of the SPU inspection report from May 17, 2012, is needed to assess the potential for sediment recontamination from ongoing activities at this property.

5.30 Former Custom Roofing

Facility Summary: Former Custom Roofing	
Address	8001 5th Avenue S, Seattle 98108
Tax Parcel No.	7328400445
Property Owner	Rick Larson Enterprises Inc
Parcel Size	0.34 acre (14,750 sq ft)
Facility/Site ID	61231536 (Custom Roofing)
Alternate Names	Custom Roofing; Second Use Building Materials
SIC Code	5211: Lumber and Other Building Materials Dealer
EPA ID No.	None
NPDES Permit No.	None
UST/LUST ID No.	UST: 4900 (removed)

The former Custom Roofing property is owned by Rick Larson Enterprises Inc. The triangular-shaped property is bordered by Alaska Logistics on the north, by West Marginal Way S and SR 99 to the west, and by 5th Avenue S and Modern Machine Company to the east (Figure 13). According to the King County Department of Assessments, one 5,320-square foot masonry machine shop, built in 1979, is present at the facility.

5.30.1 Current Operations

Second Use Building Materials has occupied this property since April 2009. The company uses this facility for storage of metal pallet shelving, framing lumber, and other equipment that can be stored outside, such as metal gym lockers. There is a small wood shop for minor repair of items. Two forklifts and two trucks are parked on the facility, but no maintenance, fueling, or washing are performed.

Three catch basins are located on the property: two in the storage yard and one in the parking lot. Stormwater drains to the WSDOT storm drain along SR 99. The property is paved with asphalt.

Second Use Building Materials also operates a sales facility at 7937 2nd Avenue S. According to the company's website, Second Use planned to move from both locations in 2012 to the former Alaska Copper and Brass location at 3223 6th Avenue S (Second Use 2012).

Second Use Building Materials has not been assigned an Ecology Facility/Site ID.

5.30.2 Historical Operations

Custom Roofing occupied this property between at least 1998 and 2004. The limited information available on historical operations in the files reviewed during preparation of this Data Gaps Report focused on two unleaded gasoline USTs that were present at Custom Roofing; Ecology's ISIS database identifies the current status of these tanks as "removed."

5.30.3 Regulatory History

Ecology conducted a UST inspection of the two single-wall steel tanks at Custom Roofing on April 22, 1998 (Ecology 1998a). The tanks were in compliance at that time. The tanks were retrofitted for cathodic protection in June 1998 (Tank Liners 1998).

Another UST inspection was conducted by Ecology on March 4, 2004 (Ecology 2004b), and a Notice of Non-Compliance was issued on March 6, 2004 (Ecology 2004c). The cathodic corrosion protection system had not been tested since its installation in 1998. Custom Roofing had not performed monthly release detection testing due to insufficient fuel in the tanks during testing periods, and had not performed periodic maintenance on the automatic tank gauges. Ecology recommended that a thorough servicing be performed on the entire tank system. Testing was subsequently performed on March 15, 2004, and September 17, 2004 (Northwest Tank 2004).

In May 2004, Custom Roofing installed tank liners, splash/spill overfill, leak detectors, and associated equipment in both USTs (Custom Roofing 2004). Ecology's files included correspondence between Ecology and Northwest Tank & Environmental Services related to the adequacy of the cathodic protection testing methodology. There are no records in the files of any additional inspections or correspondence, and Ecology's UST database indicates that these tanks were permanently closed as of June 3, 2009.[23]

SPU conducted an environmental compliance inspection at Second Use Building Materials on September 11, 2009 (SPU 2009i). Several corrective actions were identified (SPU 2009k):

[23] https://fortress.wa.gov/ecy/tcpwebreporting/reports.aspx

- Improve the level of housekeeping at the facility to reduce the frequency that catch basin maintenance is needed, and to reduce the potential for leaks and spills.
- Clean the catch basins with accumulated material within 18 inches of the bottom of the lowest pipe entering or exiting the structure.
- Complete a written spill plan and post it at appropriate locations at the facility.
- Obtain spill containment and cleanup materials, and put them in an easily accessible location.
- Educate employees about the spill plan and spill kit.

Second Use Building Materials arranged with the property owner for cleanout of the catch basins, since the company had recently moved onto the property and were not responsible for the accumulated sediment (Wassink 2009a). The catch basins were cleaned out by Emerald Services on November 3, 2009 (Wassink 2009b). SPU approved completion of the corrective actions on November 6, 2009 (SPU 2009s).

5.30.4 Potential for Sediment Recontamination

Two underground tanks were present during Custom Roofing's occupancy of this property; these have been identified as "removed" in Ecology's ISIS database. Currently, this property is used by Second Use Building Materials to store used building materials. Second Use Building Materials plans to move from this location in 2012.

Soil and Groundwater

No soil or groundwater contamination has been identified at this property. Therefore, the potential for sediment recontamination associated with the groundwater pathway is low.

Stormwater

Stormwater drainage from this property discharges to the WSDOT storm drain along SR 99, which enters the 1st Avenue S SD and ultimately discharges to the LDW. As of November 2009, the facility was in compliance with environmental regulations and BMPs. The potential for sediment recontamination associated with the groundwater pathway is believed to be low.

5.30.5 Data Gaps

No data gaps have been identified for this property.

5.31 West Seattle Reservoir

Property Summary: West Seattle Reservoir	
Address	9000 8th Avenue SW, Seattle 98106
Tax Parcel No.	7972603535
Property Owner	City of Seattle
Parcel Size	20.71 acres (902,128 sq ft)
Facility/Site ID	26116543
Alternate Names	None

Property Summary: West Seattle Reservoir	
SIC Code	NA
EPA ID No.	WAD988480430 (inactive)
NPDES Permit No.	WAR010404 (inactive)
UST/LUST ID No.	NA

5.31.1 Current Operations

The West Seattle Reservoir is a 30 million gallon water supply reservoir for the City of Seattle (Figure 3). SPU is replacing its open reservoirs with underground structures to improve the quality and security of the city water supply, and to provide new public open spaces on reservoir lids (City of Seattle 2011). The new underground West Seattle Reservoir was constructed between 2008 and 2010, and was placed into service in July 2010. The underground structure creates 20 acres of new open space. The lid was completed in 2011, and park construction is expected to begin in 2013 (City of Seattle 2012b).

5.31.2 Historical Operations

The original aboveground West Seattle Reservoir was constructed in 1931. It had a surface area of 11.8 acres, was of earthen construction with a concrete core.

5.31.3 Regulatory History

The West Seattle Reservoir was identified as a small quantity generator of hazardous waste during 1997, and as a conditionally exempt small quantity generator from 1998 through 2004 (Ecology 2010e).

During construction of the underground reservoir, the facility was covered under the construction stormwater general permit (WAR010404). Coverage under the general permit was granted in February 2008 and was terminated in December 2011.

5.31.4 Potential for Sediment Recontamination

This property is an underground water supply reservoir and a park. The potential for sediment recontamination associated with activities at this location is considered extremely low.

5.31.5 Data Gaps

No data gaps have been identified for this property.

5.32 Former Myers Way Sand Pit

Facility Summary: Former Myers Way Sand Pit	
Address	9400-9401 Myers Way S, Seattle 98106
Tax Parcel No.	Northern portion of 3124049024
Property Owner	City of Seattle Dept. of Fleets and Facilities
Parcel Size	12.61 acres; approximately one-third located within the 1st Avenue S SD source control area

Facility Summary: Former Myers Way Sand Pit	
Facility/Site ID	12326 (Myers Way Sand Pit)
Alternate Names	City of Seattle Joint Training Facility; Meyers Way Sand Pit
SIC Code	1442: Construction Sand and Gravel
EPA ID No.	None
NPDES Permit No.	WAG503170 (Sand & Gravel General Permit; inactive)
UST/LUST ID No.	None

The former Myers Way Sand Pit consists of a series of parcels located west of Myers Way S, south of the Arrowhead Senior Housing development, and east and north of a residential area (Figure 14). This area, which was covered under Department of Natural Resources Surface Mining Permit No. 70-10167, encompasses an area of approximately 44 acres that straddles the boundary between the 1st Avenue S SD and Riverside Drive source control areas. Parcels located within the footprint of the former Myers Way Sand Pit include 3124049024, 3224049082, 0623049001, 0523049012, 0523049013, 0623049053, and 0523049259.

The northern portion of Parcel 9024 is included in the 1st Avenue S SD source control area because stormwater in this area drains to the SR 509 drainage system, which flows to the 1st Avenue S SD and discharges to the LDW under the 1st Avenue S Bridge.

5.32.1 Current Operations

Parcel 9024, including the portion within the 1st Avenue S SD source control area, is currently owned and occupied by the City of Seattle Department of Fleets and Facilities, which operates the Joint Training Facility (JTF) at this location. The JTF is a state-of-the-art training facility used by the Seattle Fire Department, Seattle Department of Transportation, and SPU to train firefighters and utility workers for delivering emergency services to the public in times of crisis.

The facility consists of a 26,000 sq ft classroom/administration building and a 7,200 sq ft high-bay fire apparatus/storage building. In addition, the facility contains various training props, such as a six-story High Drill Tower to simulating staging and fire assault in multi-story buildings; a two-story Burn Building outfitted with natural-gas “fireplaces,” an Emergency Vehicle Accident Prevention area for heavy construction equipment and fire apparatus driver training; an overpass prop to simulate a highway overpass and bridge; a collapsed building prop; trench digging and rescue props; confined spaces prop; and a vehicle extrication and foam area (City of Seattle 2012a).

During construction of the JTF, the City of Seattle created, enhanced, and restored nearly 2.5 acres of wetlands and buffer zone (City of Seattle 2007).

5.32.2 Historical Operations

The Myers Way Sand Pit[24] was an open pit construction sand and gravel mining operation that operated from at least the 1940s through about 1996. Some reports refer to “a century of sand and gravel extraction” in this area (AMEC 2007), including during the development of local arterial roadways (Myers Way S) and SR 509. The property was purchased by Nintendo of

[24] The property is also referenced in some of documents as “Meyers” Way Sand Pit. This is believed to be a typographical error.

America in 1990 from University Savings Bank as a result of foreclosure, and was sold to the City of Seattle in September 2003. No information on earlier property owners/operators was available in the files reviewed for this Data Gaps Report.

During operations at the Myers Way Sand Pit, several hundred vertical feet of material were removed from a hillside, leaving an east-sloping grade overlooking the Lower Duwamish alluvial plain (Ecology 2007j).

A stormwater management and drainage system was present at the facility prior to construction of the JTF. This consisted of a retention pond, a drainage ditch, a surface channel, and buried pipes that conveyed water offsite to the municipal storm drain system. The drainage facilities were constructed as part of the decommissioning of the mine as required by the Department of Natural Resources Reclamation Permit (No. 10167), which requires that a facility owner manage stormwater flow and groundwater seepage from the former open pit gravel mine in order to accommodate future land uses. While not the intended goal of the mine reclamation process, wetlands developed on the property as a consequence of poor system performance (Ecology 2007j).

5.32.3 Regulatory History

Nintendo of America operated the Myers Way Sand Pit under a sand and gravel stormwater general permit (WAG503170) from August 1999 to July 2003. Under the permit, discharge monitoring was required on a quarterly basis for pH, temperature, and turbidity of the detention pond. In July 2003, the permit status was changed from active to inactive (Ecology 2003d). In January 2005, the stormwater permit was transferred to City of Seattle Department of Fleets & Facilities. The permit is currently inactive.

The sand and gravel mine operated under Surface Mining Permit No. 70-10167, which was transferred to the City of Seattle when they purchased the property in 2003 (City of Seattle 2004). Reclamation was completed on Reclamation Segment Lot 3 (the northern portion of the property) in 2003, and this portion of the Surface Mining Permit Area was terminated in January 2004 (WDNR 2004).

In August 2007, the Center for Environmental Law and Policy (CELP) submitted a letter alleging unauthorized beneficial use of water by the City of Seattle during development of the JTF (CELP 2007). CELP asserted that the facility lies within the Hamm Creek watershed, and that proposed wetland mitigation would divert waters that would otherwise flow to Hamm Creek and could result in dewatering of the creek.

Based on field analysis of facility drainage and a review of topographic and historical maps, Ecology evaluated information regarding stormwater drainage from the JTF, and made the following conclusions (AMEC 2007; Ecology 2007j):

- Water flowing from the facility does not, nor did it ever, flow to Hamm Creek; instead, water from the north portion of the JTF flows to the SR509 stormwater drainage system (and ultimately to the 1st Avenue S SD), and water from the south portion of the JTF flows to the 7th Avenue S SD. Before construction of the LDW, drainage from this area flowed to Durham Creek, which historically discharged to the Duwamish River approximately 1.5 miles to the north.

- Water features were not a natural part of the property but were constructed to support mining of the hillside, and therefore the city's development of the facility did not disrupt an existing natural land area.
- Including use of water in wetlands required by the USACE permit does not require a water right.

The city therefore concluded that the CELP complaint regarding the JTF construction project were unfounded (City of Seattle 2007).

5.32.4 Potential for Sediment Recontamination

This property operated as a sand and gravel mining operation for decades. Since that time, the property has been developed as a training facility by the City of Seattle. No environmental investigations have been performed at this property, and no evidence of environmental contamination has been identified.

Soil and Groundwater

No environmental investigations have been conducted at this property, and no contamination has been identified. The potential for sediment recontamination associated with the soil and groundwater pathway is considered low.

Stormwater

The Myers Way Sand Pit operated under a sand and gravel stormwater general permit from 1999 to 2003; the permit is currently inactive. Very little information was available regarding the use and handling of potential sediment COCs during current City of Seattle training activities at this location. Because drainage systems at the facility discharge into the SR 509 storm drain system, sediment COCs in stormwater could be transported to LDW sediments via the 1st Avenue S SD. However, due to its distance from the 1st Avenue S SD outfall (over 1.5 miles), the potential for LDW sediment recontamination associated with the stormwater pathway at this property is considered low.

5.32.5 Data Gaps

No data gaps were identified for this property.

5.33 SR 509 & Greenbelt

Facility Summary: SR 509 & Greenbelt	
Address	Greenbelt near SR 509 and S Barton Street
Tax Parcel No.	None
Property Owner	WSDOT
Parcel Size	NA
Facility/Site ID	4185778 (SR 509 & Greenbelt)
Alternate Names	Greenbelt Myers Way SR 509; Joint Training Facility

Facility Summary: SR 509 & Greenbelt	
SIC Code	None
EPA ID No.	None
NPDES Permit No.	None
UST/LUST ID No.	None

5.33.1 Current Operations

This property is a dumping area located on a paved portion of an access road within a green belt area between Myers Way S and SR 509 (Figure 14). Access to the property is via a dirt road off the shoulder of SR 509 at approximately mile marker 29. The access road was reportedly the original Myers Way before SR 509 was built. The access road is believed to be owned by WSDOT. The property does not have a King County parcel number.

The access road is approximately 0.25 mile long; at the time the dumping activity was initially reported, the last half of this access road was paved. The road is described as "halfway down a ravine that begins on the east edge of the new Myers Way S and continues past SR 509," terminating in the former Turkey Duck Pond which has since filled with sediment.

5.33.2 Historical Operations

This area is a green belt and therefore undeveloped. No information was available about historical operations on the SR 509 & Greenbelt site.

5.33.3 Regulatory History

The SR 509 & Greenbelt site is listed on Ecology's CSCSL for suspected contamination of soil and surface water with metals and unspecified petroleum products. The current status is listed in Ecology's ISIS database as "awaiting cleanup."

A release was initially reported on January 31, 2006, by an SPU employee who observed various materials that had been dumped at the end of the access road, including 55-gallon drums, dirt, and other debris, and indicated that the ground was saturated with petroleum (Ecology 2006a).

King County Hazardous Waste and SPU conducted a follow-up investigation on February 28 (King County 2006). Several large piles (10 to 15 cubic yards total) of dirt waste, believed to be street sweepings from WSDOT road crews, were observed on the paved portion of the access road. The material was mostly dirt and soil, along with some "garbage," including damaged automotive batteries, a cell phone, containers for motor oil, a larger container marked "used oil", metal buckets, and other debris. Concrete barriers were present along the western edge of the paved road, but did not extend north far enough to protect a creek that passes this site and continues across SR 509 and to the east. An empty 55-gallon drum was pulled out of the creek; no petroleum odors or sheen were observed. Due to the heavy rain at the time of the investigation, it was not possible to determine whether the ground was saturated with petroleum as identified in the initial complaint (King County 2006).

Ecology sent an early notice letter to WSDOT on May 3, 2006, to inform them that the site was being considered for addition to the CSCSL due to illegal dumping in the greenbelt within 1 foot of Hamm Creek (Ecology 2006c). This creek is referred to elsewhere as Lost Fork Hamm Creek. Based on investigations by Ecology, this creek drains north to wetlands that discharge to the LDW via the 1st Avenue S SD (Ecology 2007j).

On August 16, 2006, a second complaint was reported to Ecology. According to the complaint, 10 5-gallon containers of used paint, antifreeze, and one 55-gallon container (contents unknown) had been dumped on the property. King County staff visited the site on August 17, and confirmed the information in the complaint (Hamilton 2006). WSDOT agreed to look into property ownership and potential cleanup of the site (Moore 2006).

Another report regarding this site was filed on February 13, 2007. SPU staff were investigating drainage in the area and found what they identified as a WSDOT vactor dump. Waste liquids were observed running into the SR 509 drainage, which discharges to the wetlands and ultimately to the LDW near the 1st Avenue Bridge (Ecology 2007c).

A fourth report regarding this site was filed on September 3, 2008. SPU staff identified three 55-gallon drums, one containing dry cleaning fluid, and areas of concentrated human waste in this area. A large garbage pile was observed next to a stream that runs through this area. The drum of dry cleaning fluid was mostly empty, but there was a strong odor of solvent in the area, and the ground under the drum was wet (Ecology 2008f).

5.33.4 Potential for Sediment Recontamination

Illegal dumping of debris has occurred on an access road within the greenbelt in this area. Four separate ERTS reports have been filed. These appear to relate to the same general location; however, the location descriptions have not been consistent. The site was added to Ecology's CSCSL in 2006; no investigations or cleanup activities have been conducted. Based on current aerial photographs, some dumping may still be occurring in this area.

Soil and Groundwater

Illegal dumping of potentially hazardous material may result in contamination of soil and groundwater. Material was generally observed on paved portions of the roadway. While contamination of soil and groundwater may have resulted from this activity, the property is over a mile from the LDW, and is unlikely to contribute to sediment recontamination.

Stormwater

SPU staff have observed waste liquids running into the SR 509 drainage; this drainage discharges to a wetland area to the north and ultimately to the LDW via the 1st Avenue S SD. While contaminants may be entering stormwater from this property, the property is approximately 1.4 miles from the 1st Avenue S SD outfall, and is therefore unlikely to pose a significant risk of LDW sediment recontamination.

5.33.5 Data Gaps

No data gaps were identified for this property.

6.0 Summary of Data Gaps

Data gaps have been identified for outfalls, adjacent properties, and upland properties in Sections 3 through 5, respectively. These data gaps are summarized below, listed by potential sediment recontamination pathway.

The 1st Avenue S SD source control area is one of 24 source control areas identified as part of the overall cleanup process for the LDW Superfund Site. Ecology is the lead agency for source control for the LDW site. Source control is the process of finding and eliminating or reducing releases of contaminants to LDW sediments, to the extent practicable. The goal of source control is to prevent sediments from being recontaminated after cleanup has been undertaken. The plan is to identify and manage potential sources of sediment recontamination in coordination with sediment cleanups. Source control will be achieved by using existing administrative and legal authorities to perform inspections and require necessary source control actions.

6.1 COCs in Sediments Near the 1st Avenue S SD Source Control Area

The following chemicals are considered to be COCs for the 1st Avenue S SD source control area with regard to potential sediment recontamination (Section 2.2.3):

- Mercury
- PAHs (acenaphthene)
- Phthalates (BEHP, BBP)
- PCBs
- Other SVOCs (1,4-dichlorobenzene, benzyl alcohol, dibenzofuran)
- Dioxins/furans

In addition, arsenic and cPAHs are considered risk drivers for the LDW Superfund Site.

6.2 Potential Adjacent or Upland Sources of Contaminants

The 1st Avenue S SD and four WSDOT bridge drains discharge to the LDW within the 1st Avenue S SD source control area (Figure 7

Stormwater in the 1st Avenue S SD basin is transported via underground pipes and surface ditches to a series of wetlands, which discharge to the LDW under the 1st Avenue S bridge (Figures 4 and 6).

Three vacant parcels are located directly adjacent to the LDW; no information about releases to soil or groundwater associated with these parcels, if any, was available.

There are 73 upland facilities that could potentially affect RM 2.1 West sediments; these properties are listed on Table 1. The parcels associated with these adjacent and upland facilities are identified on Figure 9; parcels identified with like colors are considered a single “property” for purposes of this Data Gaps Report. The 73 upland facilities were grouped into 35 properties, as listed in Table 5. Available information about these properties is presented in Section 5.0.

6.3 Data Gaps

Data gaps have been identified for outfalls properties within the 1st Avenue S SD source control area, as summarized below.

Data Gaps	Facility/ Site ID	Data Gaps Report Section
1st Avenue S SD Basin		
Stormwater from upland facilities may enter the 1st Avenue S SD system via surface ditches or underground piping. Additional information on the configuration of pipes and drainage ditches in this area would support identification of potential contaminant sources to the 1st Avenue S SD.	NA	3.5
Additional information is needed regarding the quantity and quality of stormwater discharged to the LDW through the WSDOT bridge drains.	NA	3.5
Additional information is needed to determine if undocumented industrial operations are occurring within the 1st Avenue S SD basin that may be an ongoing source of sediment recontamination.	NA	3.5
Seattle Engineering Department 2nd Avenue SW		
Information on historical activities at this property is needed to determine whether these activities may have resulted in the release of contaminants to soil, groundwater, or stormwater.	84167493	5.1
Additional information about illegal dumping of contaminated soil in this area is needed, including information on concentrations of contaminants in soil and/or groundwater.		
Waste Management Eastmont Transfer Station, 7201 West Marginal Way SW		
A follow-up stormwater compliance inspection is needed to assess whether Waste Management has complied with the corrective actions identified during a September 2009 inspection, and whether current activities at the property may represent a potential source of LDW sediment recontamination.	2425; 91926231	5.2
Jones Stevedoring, 7205 to 7245 West Marginal Way SW		
Information about a LUST release in 2011 is needed to evaluate whether the release poses a risk of sediment recontamination to the LDW.	94931167	5.3
Additional information is needed about historical landfilling activities at this location; sampling may be needed to determine whether buried landfill debris poses a risk of sediment recontamination.		
A review of compliance with corrective actions identified during the April 20, 2012, initial inspection is needed to assess the facility's compliance with environmental regulations and BMPs.		
Additional information is needed regarding the locations, materials, and condition of storm drain system pipes and structures at this property.		
Updated information about the status of the wetland drainage pond at the southeast corner of the property is needed. A solids sample from this pond would be useful to assess the potential for sediment recontamination associated with stormwater discharges from this or other properties along 1st Avenue S.		

Data Gaps	Facility/ Site ID	Data Gaps Report Section
Seattle Housing Authority, 7500 Detroit Avenue SW		
Information is needed regarding the status of compliance with stormwater and hazardous waste regulations and BMPs at the Seattle Housing Authority facility. Coverage may be required under an ISGP or a CNE certificate (Wright 2012).	2109	5.4
Former Eastern Supply Company, 7745 1st Avenue S		
Groundwater samples collected in1995 indicated the presence of metals at concentrations above groundwater-to-sediment screening levels. Additional information on the current concentrations of metals in groundwater is needed to assess the potential for sediment recontamination due to groundwater discharges.	2258	5.6
Former First Avenue Bridge Landfill		
Additional information is needed to assess the current concentrations of arsenic and other contaminants in soil, groundwater, and surface water in this area.	2201	5.7
Seaport Petroleum, 7800 Detroit Avenue SW		
Additional information about remediation activities that have been performed at this facility, if any, is needed to assess the potential for metals in soil and groundwater to be transported to the storm drain system or the nearby wetland area, and subsequently to LDW sediments.	12494; 4982711	5.8
Additional information regarding compliance with the VCA and implementation of the preliminary engineering plan is needed to determine the potential for sediment recontamination via the stormwater pathway.		
Kenyon Street Property, 149 SW Kenyon Street		
Data from February 2008 and subsequent groundwater monitoring, if any, are needed to assess the potential that contaminated groundwater at this property may be a source of sediment recontamination.	4709; 4504516	5.11
Information about additional investigations conducted at this property after February 2008, if any, is needed.		
Additional information is needed regarding potential releases to soil and/or groundwater from historical auto wrecking yard operations at this property, particularly for chemicals other than metals.		
Intermountain Supply/Former Recycle America		
Additional information on current concentrations of metals in soil and groundwater at this property is needed to assess the potential for sediment recontamination.	95878752; 55695661; 47666565	5.12
MAPSCO, 8135 1st Avenue S		
A map showing the current facility layout, including catch basins and storm drains on the property, is needed.	46338473	5.14
Former Global Diving & Salvage, 8165 1st Avenue S		
Information regarding current industrial activities at this property, if any, is needed to verify that these activities are in compliance with applicable regulations and BMPs.	NA	5.16
Lion Trucking, 8425 1st Avenue S		
Additional information is needed about the source and contents of rusty drums observed near this property, in order to assess the potential for sediment recontamination via the groundwater pathway.	17445; 16981594	5.17

Data Gaps	Facility/ Site ID	Data Gaps Report Section
Information on follow-up inspections, if any, at Old Dominion Freight Lines is needed to assess the potential for sediment recontamination associated with current activities at this property.		
Urban Hardwoods Sawmill, 8427 1st Avenue S		
Additional information is needed to assess whether current activities at this facility have the potential for sediment recontamination via stormwater discharge. Coverage under the ISGP or a CNE certificate may be required (Wright 2012).	14193	5.18
South Transfer Station/Former S Kenyon Street Bus Yard, 130 S Kenyon Street		
Additional information regarding stormwater drainage at the property after construction of the South Transfer Station is complete is needed to determine if operations have the potential to recontaminate sediment via stormwater discharge.	3453; 3329; 29892767; 47374256; 63293426; 90247719; 96838255	5.19
Kenyon Business Park, 121 S Kenyon Street		
Additional information regarding stormwater drainage at the property is needed to determine if current operations have the potential to recontaminate sediments via stormwater discharge.	10791; 72863999; 82954349; 85495122; 86979859; 96897184; 97992431	5.20
Former Formula Corp, 7901 2nd Avenue SW		
Additional information about historical activities at this property is needed to assess whether there is a potential for sediment recontamination via groundwater transport of contaminants, if any.	44534539	5.21
South Recycle & Disposal Station, 8100 2nd Avenue S		
Information on follow-up (if any) to the 2005 and 2009 Ecology stormwater inspections is needed to determine whether the facility is in compliance with applicable regulations and BMPs.	2175; 3665320; 89337496; 91256919	5.23
Information on proposed handling of stormwater drainage during and after the 2013/2014 construction is needed to assess the potential for sediment recontamination associated with the stormwater pathway.		
Information on contaminant concentrations in soil and groundwater, if any, is needed to assess the potential for sediment recontamination via groundwater transport.		
North Star Ice Equipment, 8151 Occidental Avenue S		
A water quality inspection was reportedly conducted at North Star Ice Equipment in September 2010, and a warning letter/notice of violation issues. No record of this inspection or any follow-up actions was available in the files reviewed. Additional information regarding this inspection is needed to assess whether current activities at this facility may result in the transport of contaminants of concern to stormwater. Coverage under the ISGP or a CNE certificate may be required (Wright 2012).	25963342	5.27

Data Gaps	Facility/ Site ID	Data Gaps Report Section
Non-Ferrous Metals, 230 S Chicago Street		
No additional information regarding inspections or corrective actions since 2003 was available in the files reviewed. Additional information is needed to assess whether current activities at this facility have the potential for sediment recontamination via stormwater discharge. Coverage under the ISGP or a CNE certificate may be required (Wright 2012).	66671686	5.28
Flamespray Northwest, 250 S Chicago Street		
Review of an inspection report from the May 17, 2012 SPU inspection is needed to assess the potential for sediment recontamination associated with current operations at this facility.	1736255	5.29

No data gaps were identified for the following properties:

- Burkheimer Family Property, 7739 1st Avenue S and 7553 Detroit Avenue SW
- Former West Coast Equipment, 7777 Detroit Avenue SW
- MacDonald Miller Company, 7707 to 7717 Detroit Avenue SW
- Waste Management 1st Avenue S, 8101 to 8111 1st Avenue S
- Standard Steel Fabricating, 8155 1st Avenue S
- WG Clark Construction, 7958 Occidental Avenue S
- Former South Park Landfill, 8100 to 8200 2nd Avenue S
- International Construction Equipment, 8101 Occidental Avenue S
- Demolition Man, 8129 Occidental Avenue S
- Non-Ferrous Metals, 230 S Chicago Street
- Former Custom Roofing, 8001 5th Avenue S
- ABC Metal Finishing, 501 S Elmgrove Street
- West Seattle Reservoir, 9000 8th Avenue SW
- Arrowhead Senior Housing Association, 9200 2nd Avenue SW
- Former Myers Way Sand Pit, 9400 to 9401 Myers Way S
- SR 509 & Greenbelt

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Figures

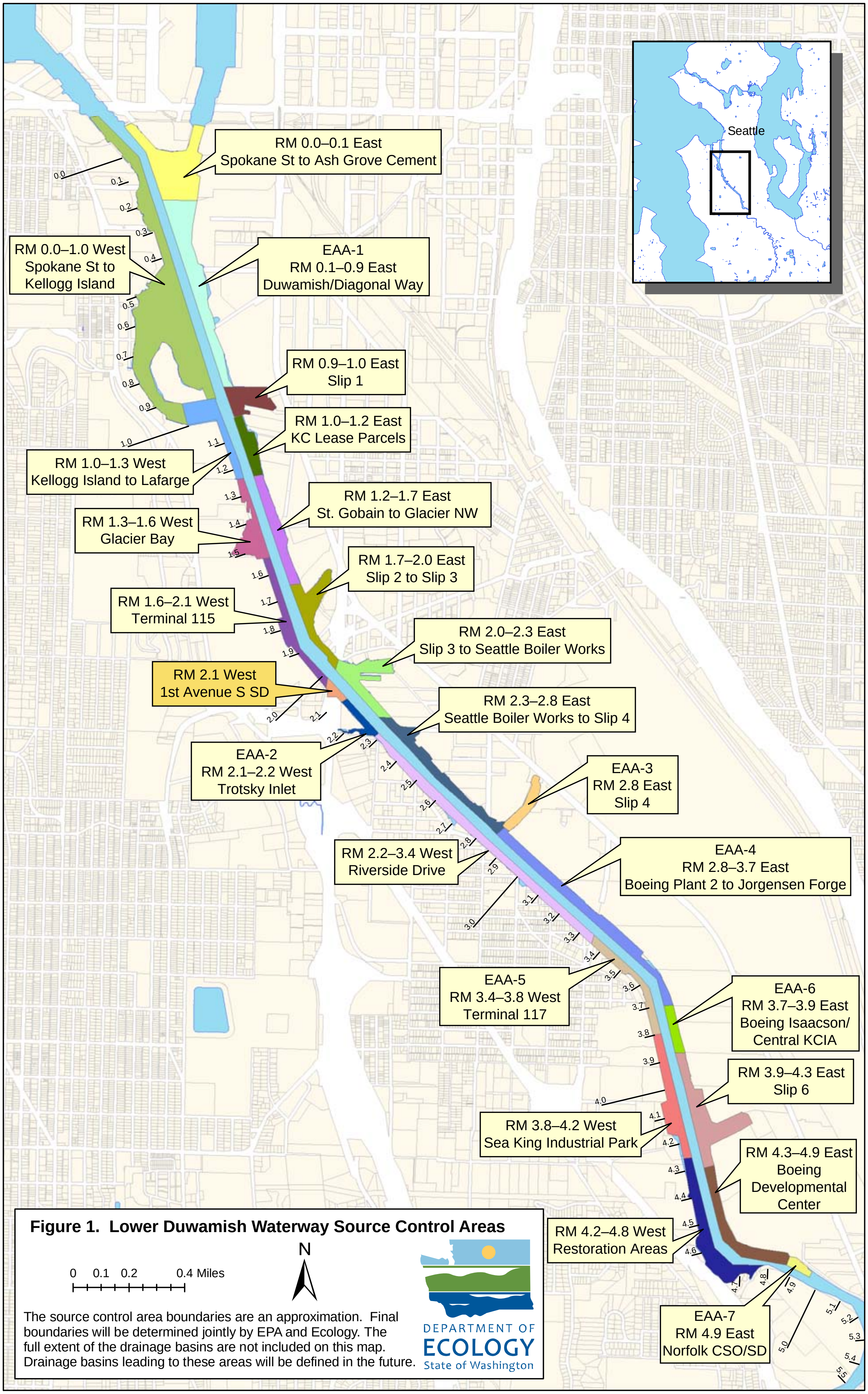

Figure 1. Lower Duwamish Waterway Source Control Areas

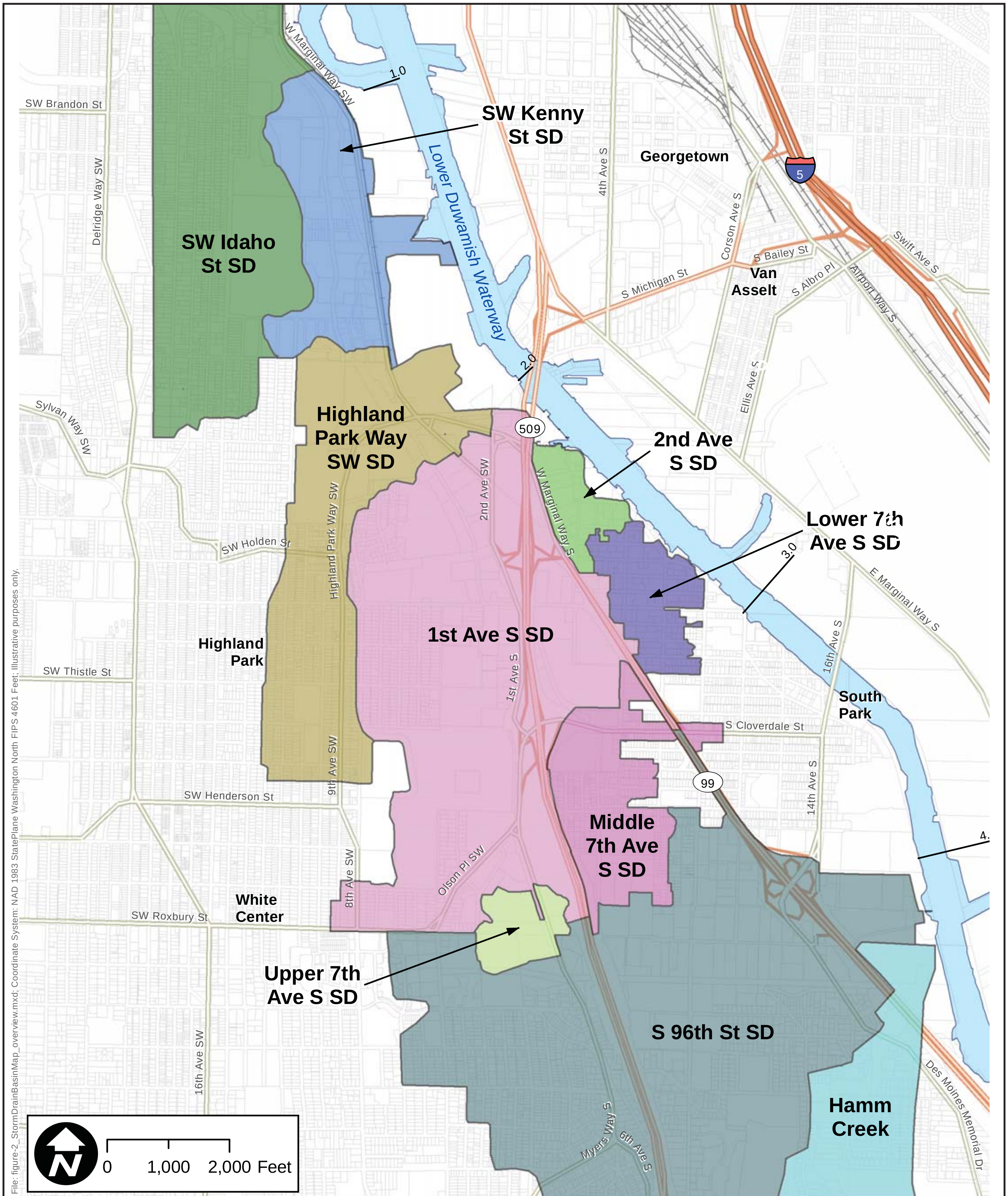

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Figure 2. Lower Duwamish Waterway Storm Drain Basins – West Side

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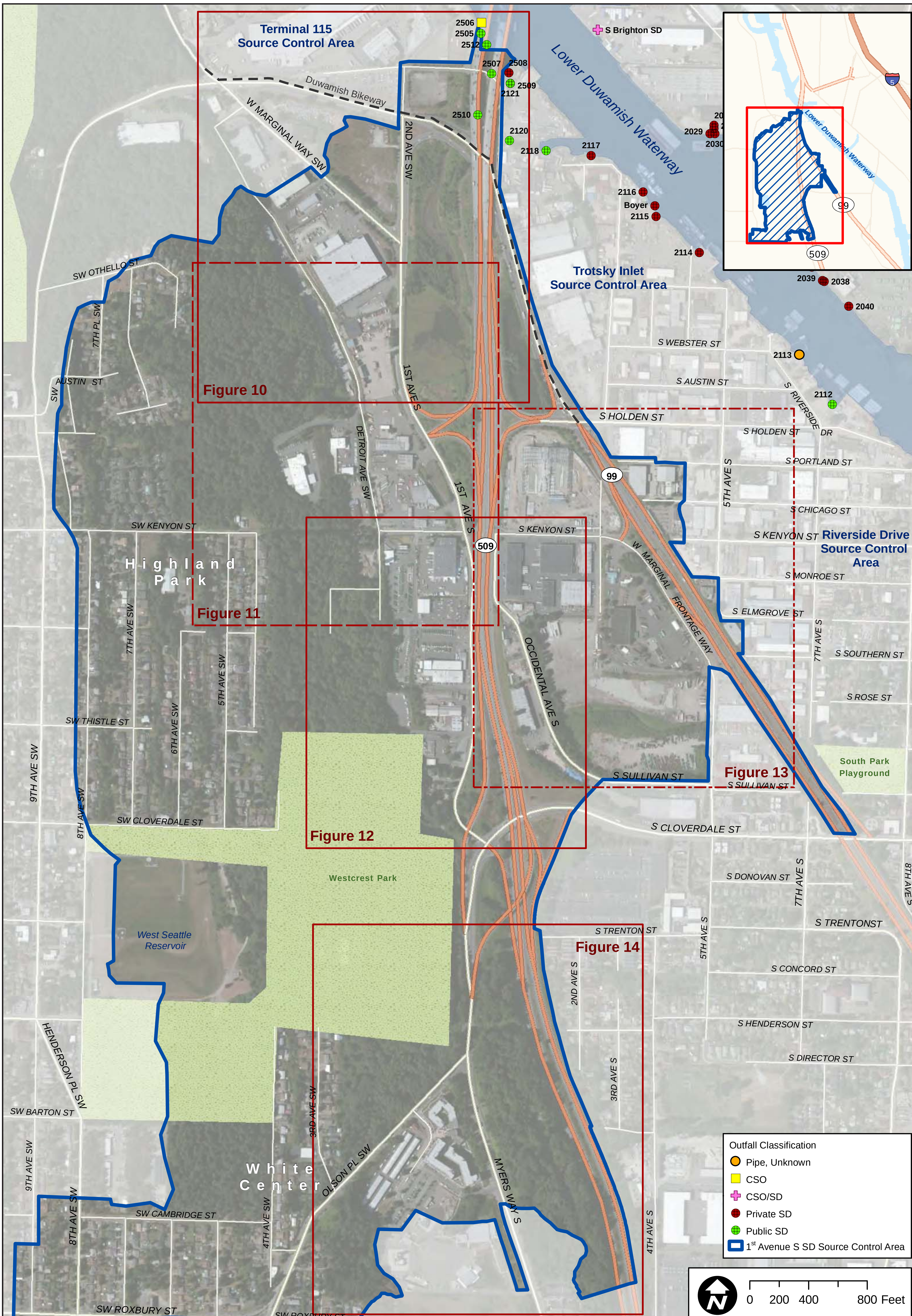

Figure 3. 1st Avenue S SD Source Control Area

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Source: Washington State Coastal Atlas (https://fortress.wa.gov/ecy/coastalatlas/)

Source: Richard Thomas, Washington State Department of Ecology

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Figure 4. Shoreline Near 1st Avenue S SD

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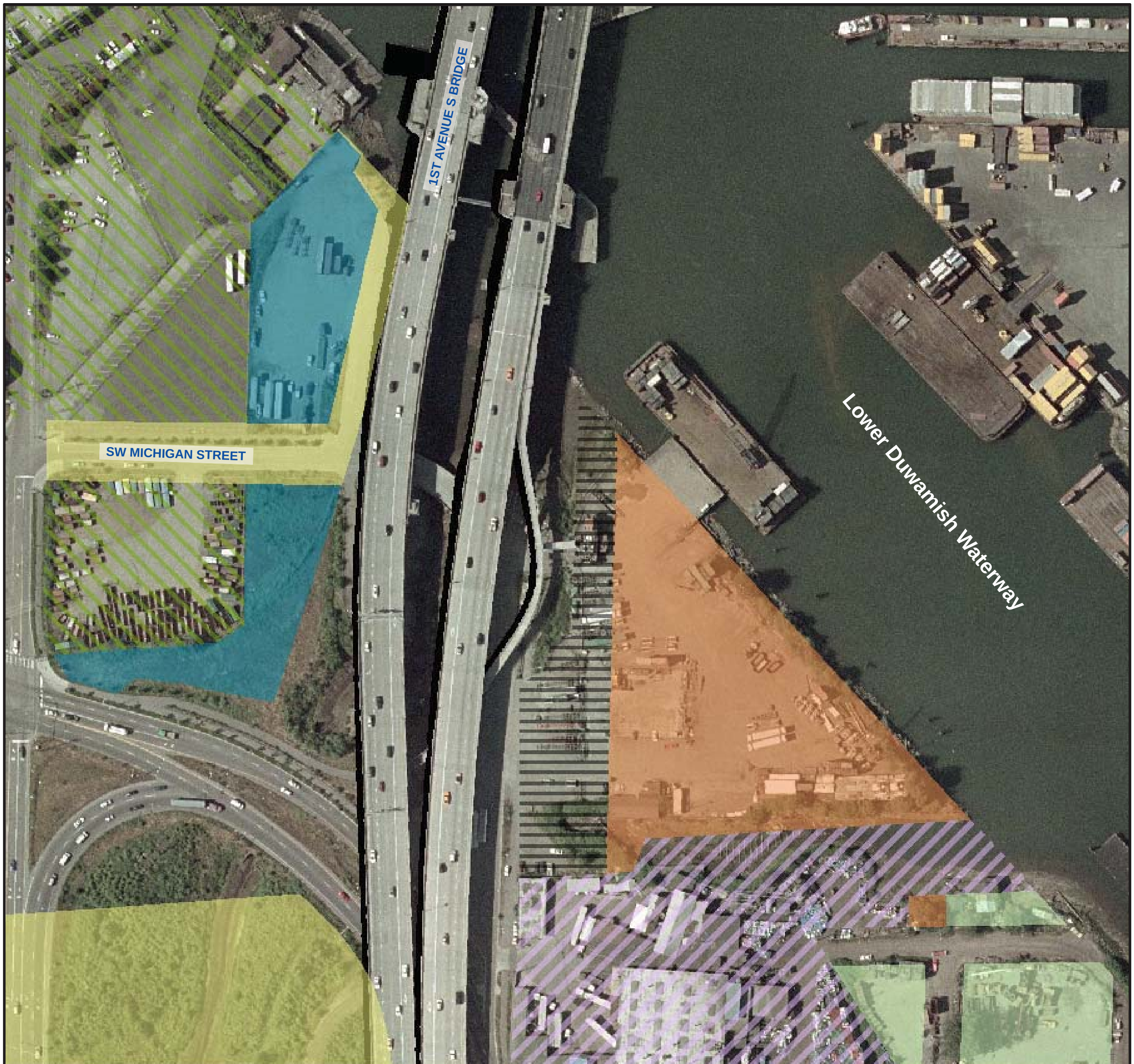

Parcel Ownership

Douglas Management Company

Seattle Department of Transportation

State of Washington

Boyer Towing

Port of Seattle

Trotsky, Herman & Jacqualine

Leased by Douglas Management Company
From the State of Washington

Feet
0 62.5 125 250 375 500

WA State Plane
North, NAD83

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Figure 5. Parcel Ownership in the Vicinity of the 1st Avenue S Bridge

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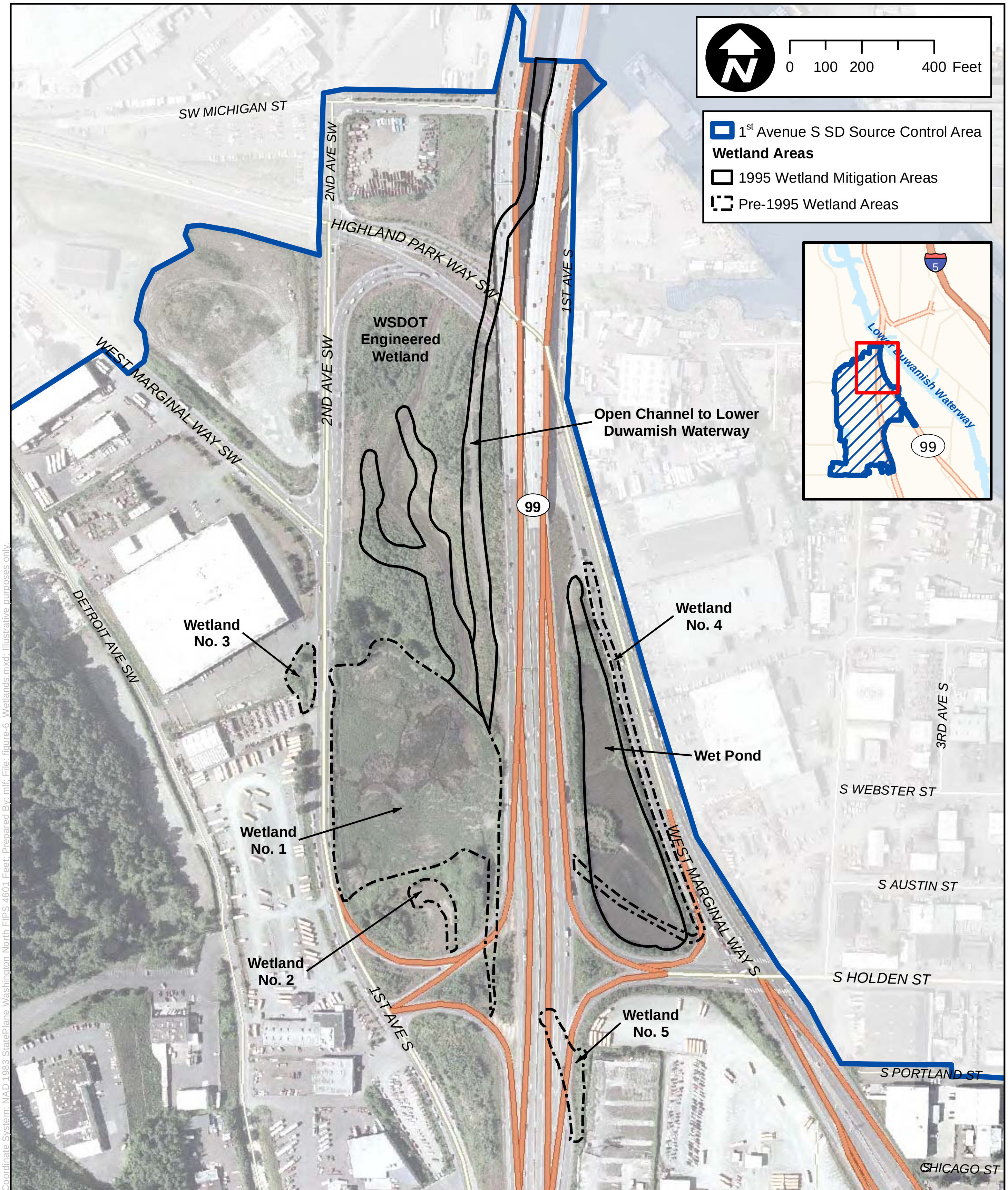

Adapted from: WSDOT 1994a

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Figure 6. 1st Avenue S SD Central Wetland Areas

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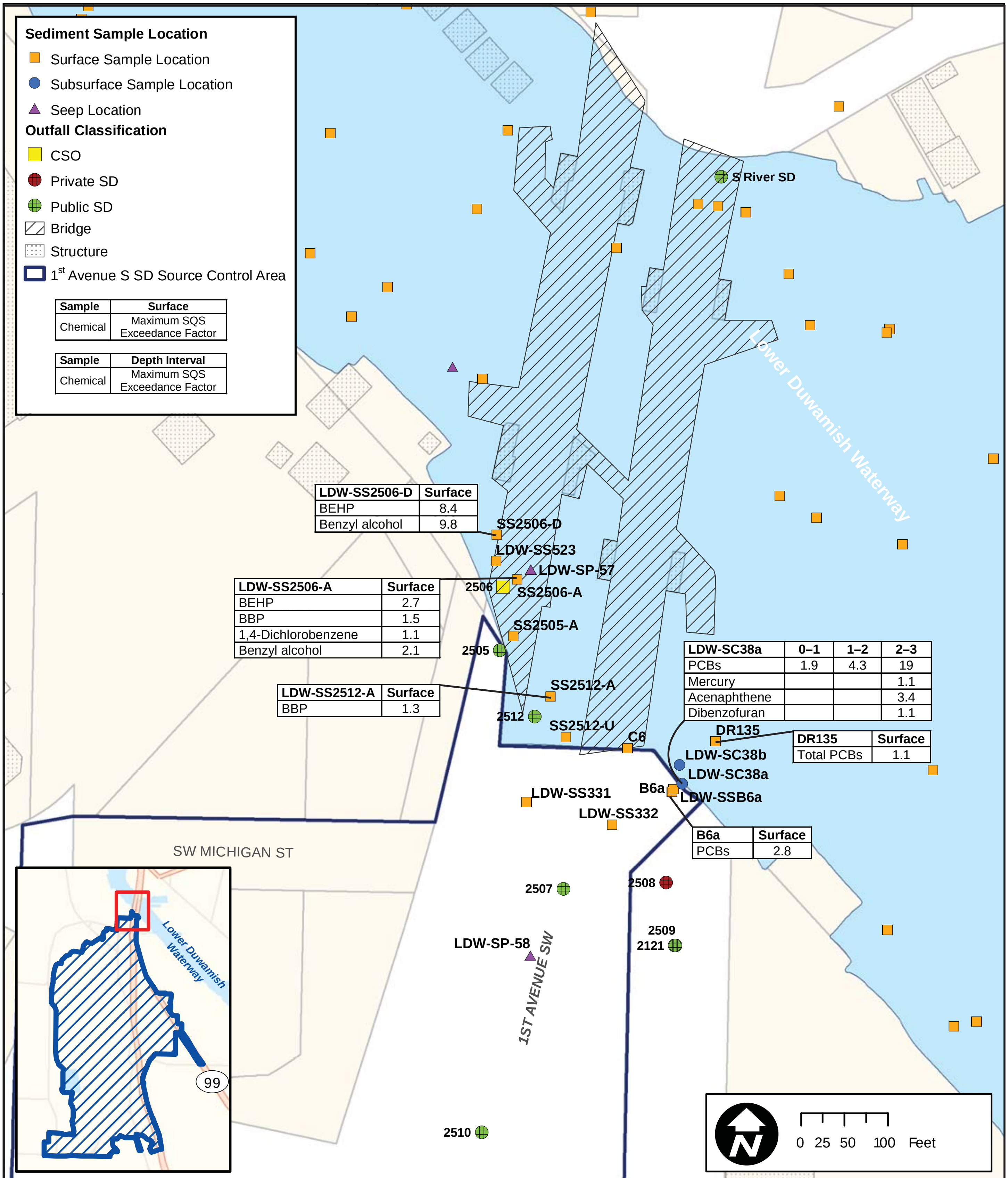

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Figure 7. Sediment Sample Locations Near the 1st Avenue S SD Source Control Area

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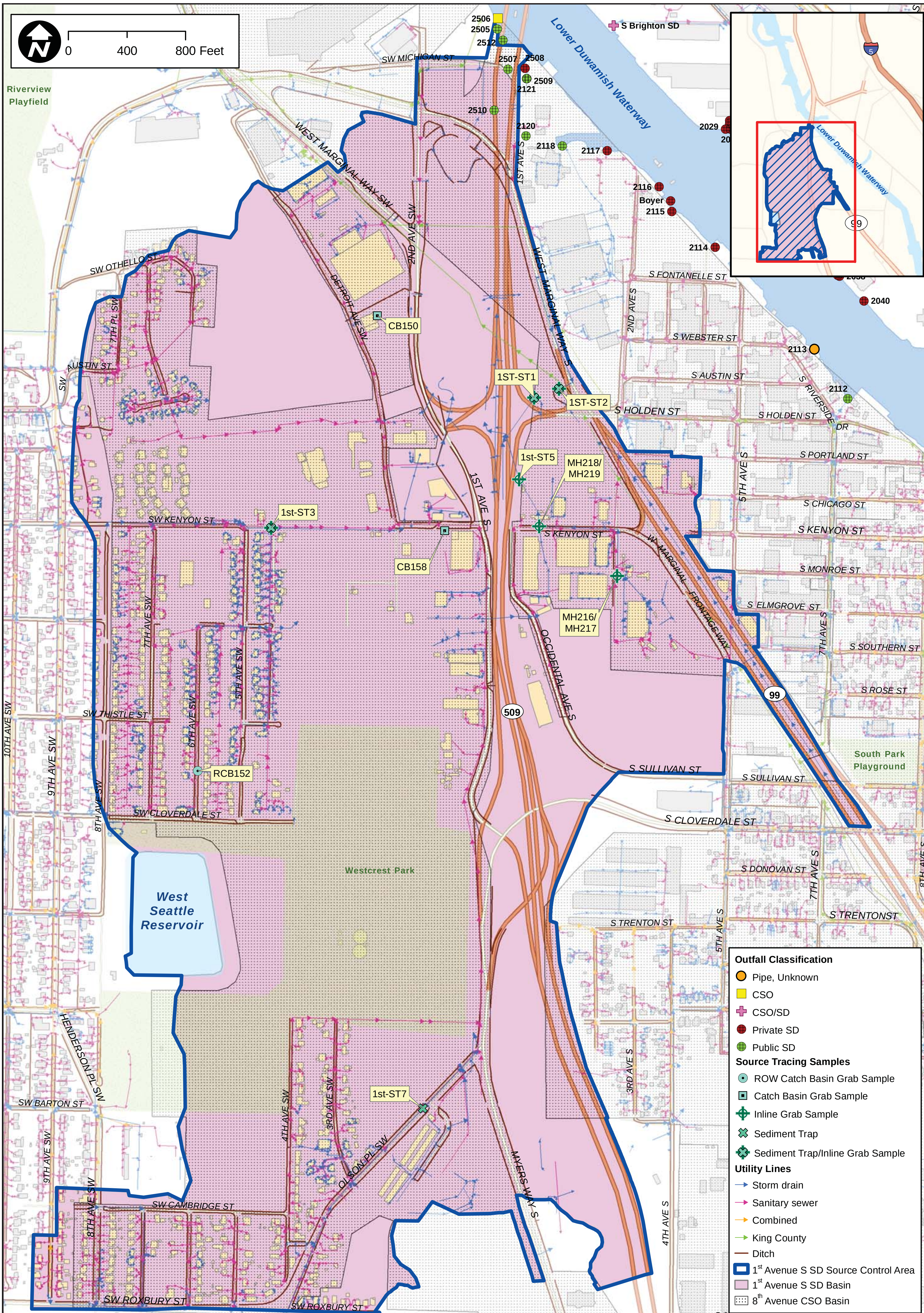

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Figure 8. Storm Drain and Sanitary Sewer Line in 1st Avenue S SD Source Control Area

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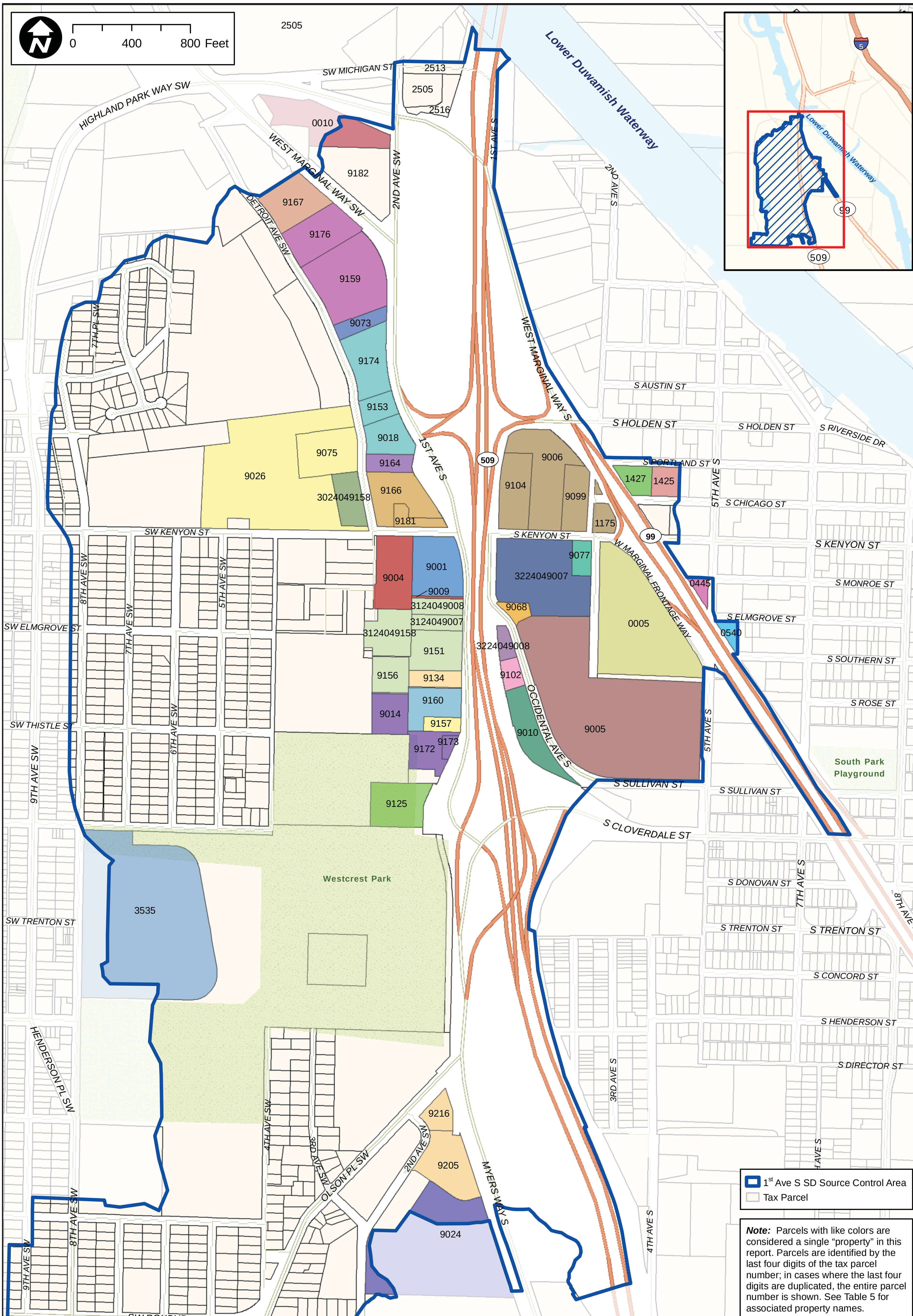

Note: Parcels with like colors are considered a single "property" in this report. Parcels are identified by the last four digits of the tax parcel number; in cases where the last four digits are duplicated, the entire parcel number is shown. See Table 5 for associated property names.

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Figure 9. Tax Parcels for Properties in the 1st Avenue S SD Source Control Area

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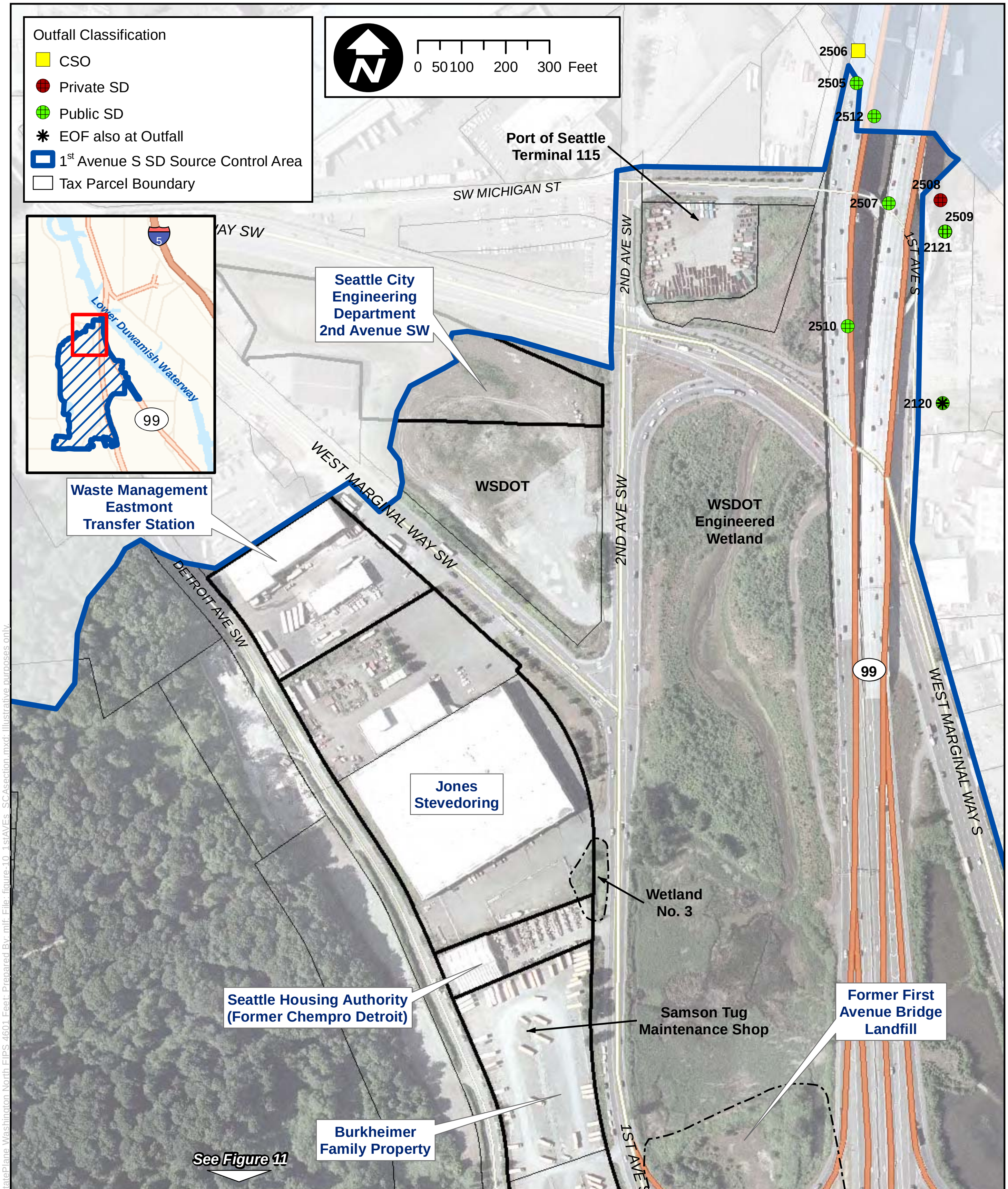

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Figure 10. 1st Avenue S SD Source Control Area (North Section)

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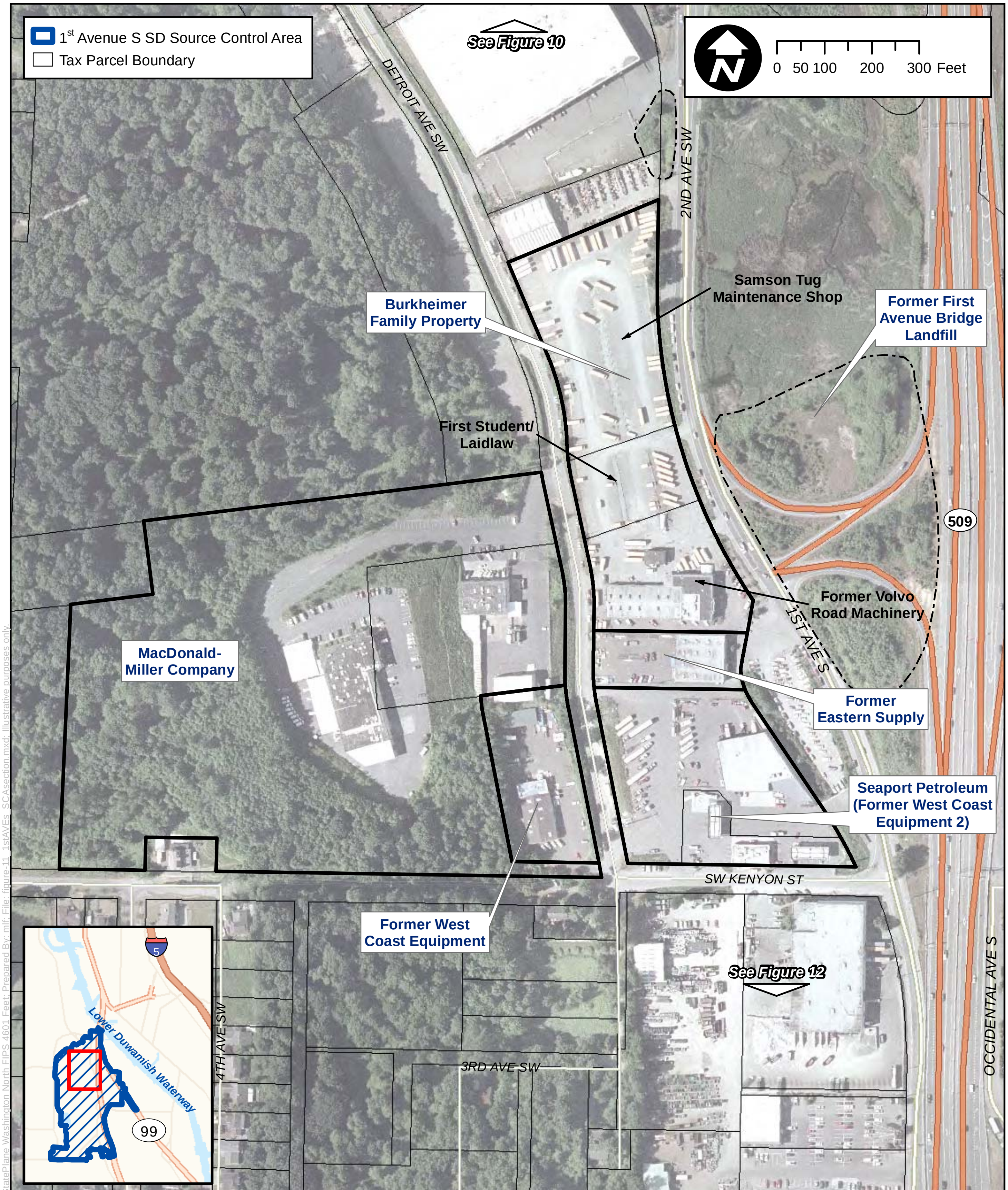

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Figure 11. 1st Avenue S SD Source Control Area (West Section)

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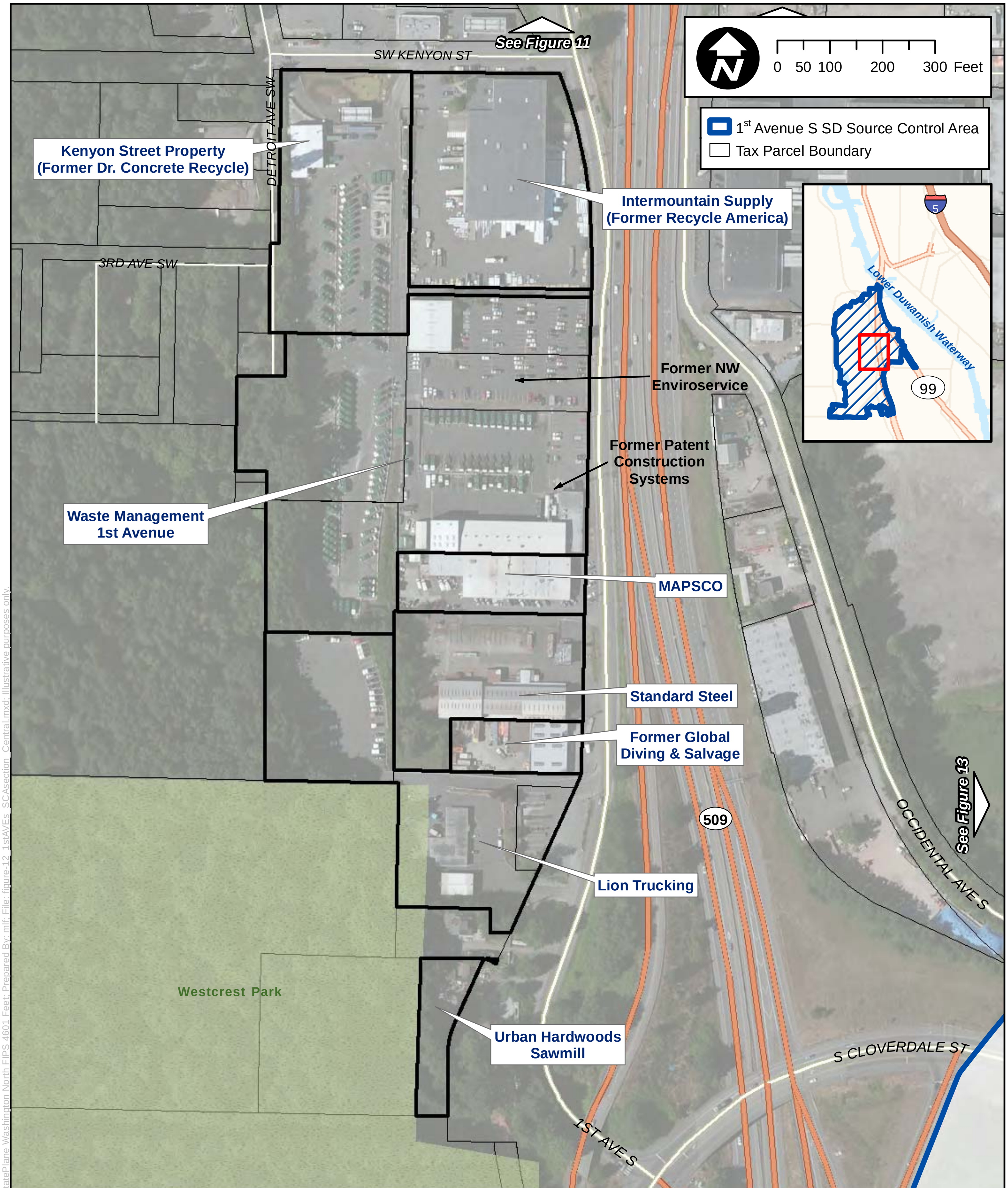

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Figure 12. 1st Avenue S SD Source Control Area (Central Section)

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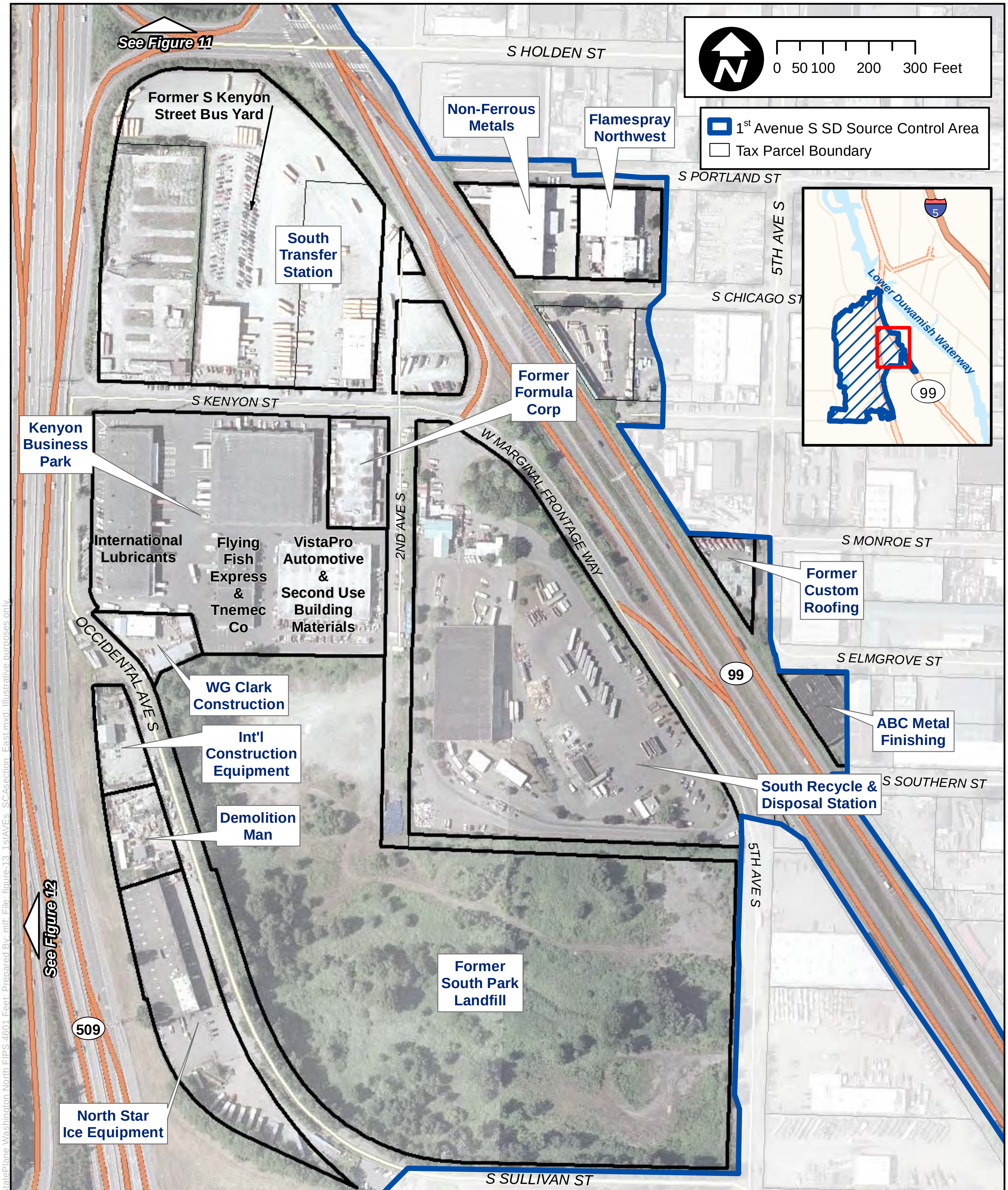

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Figure 13. 1st Avenue S SD Source Control Area (East Section)

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Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet; Prepared By: mlf; File: figure-13_1stAVES_SCAsection_East.mxd; Illustrative purposes only.

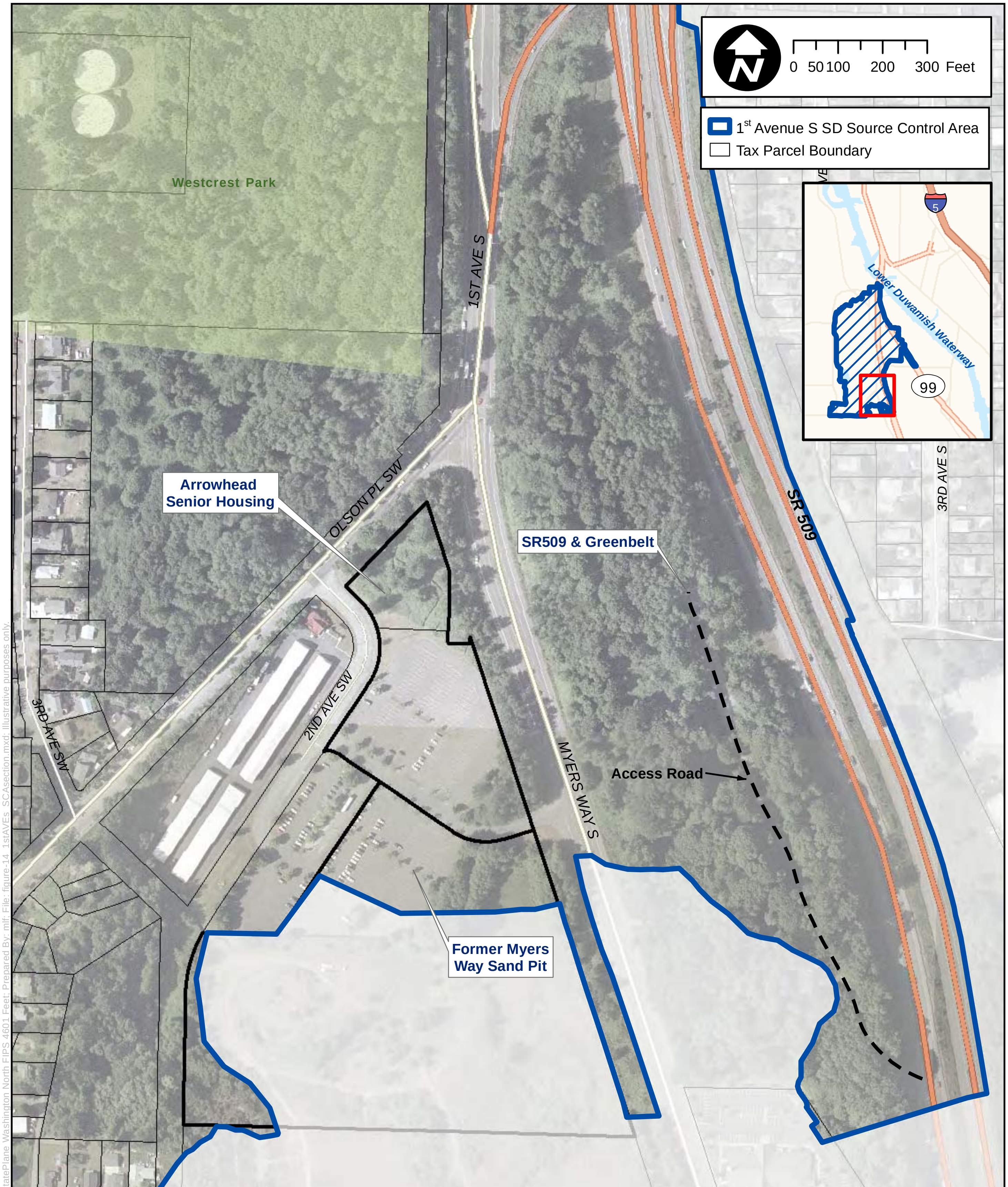

Figure 14. 1st Avenue S SD Source Control Area (South Section)

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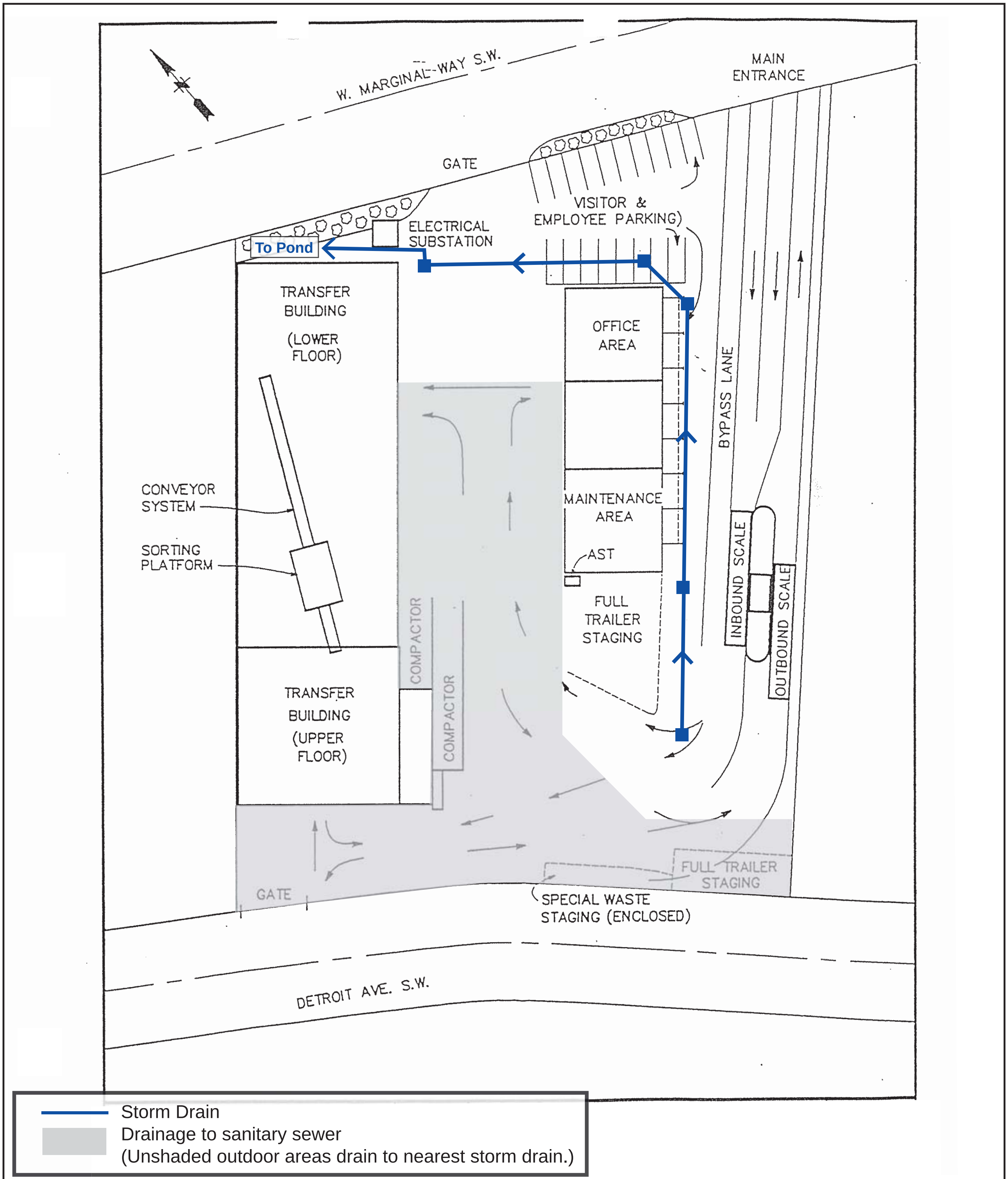
Coordinate System: NAD 1983 StatePlane Washington North FIPS 4601 Feet; Prepared By: mlf; File: figure-14_1stAVES_SCAsection.mxd; Illustrative purposes only.



Source: Waste Management 2001b; Ecology 2005i; SPU 2009t

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Figure 15. Facility Plan – Waste Management Eastmont Transfer Station (7201 West Marginal Way SW)

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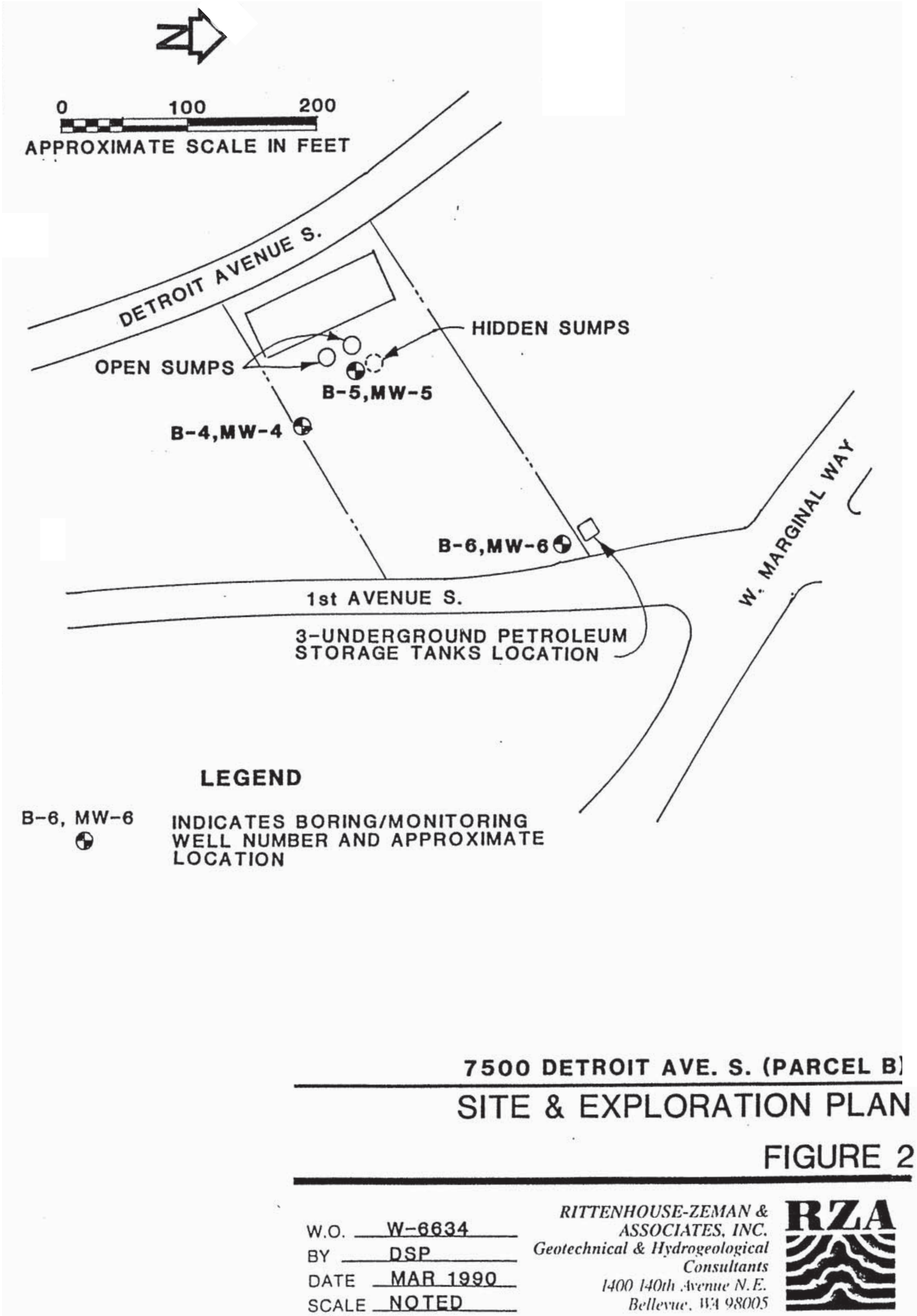

Source: RZA 1990b

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Figure 16. Sampling Locations – Seattle Housing Authority (7500 Detroit Avenue S)

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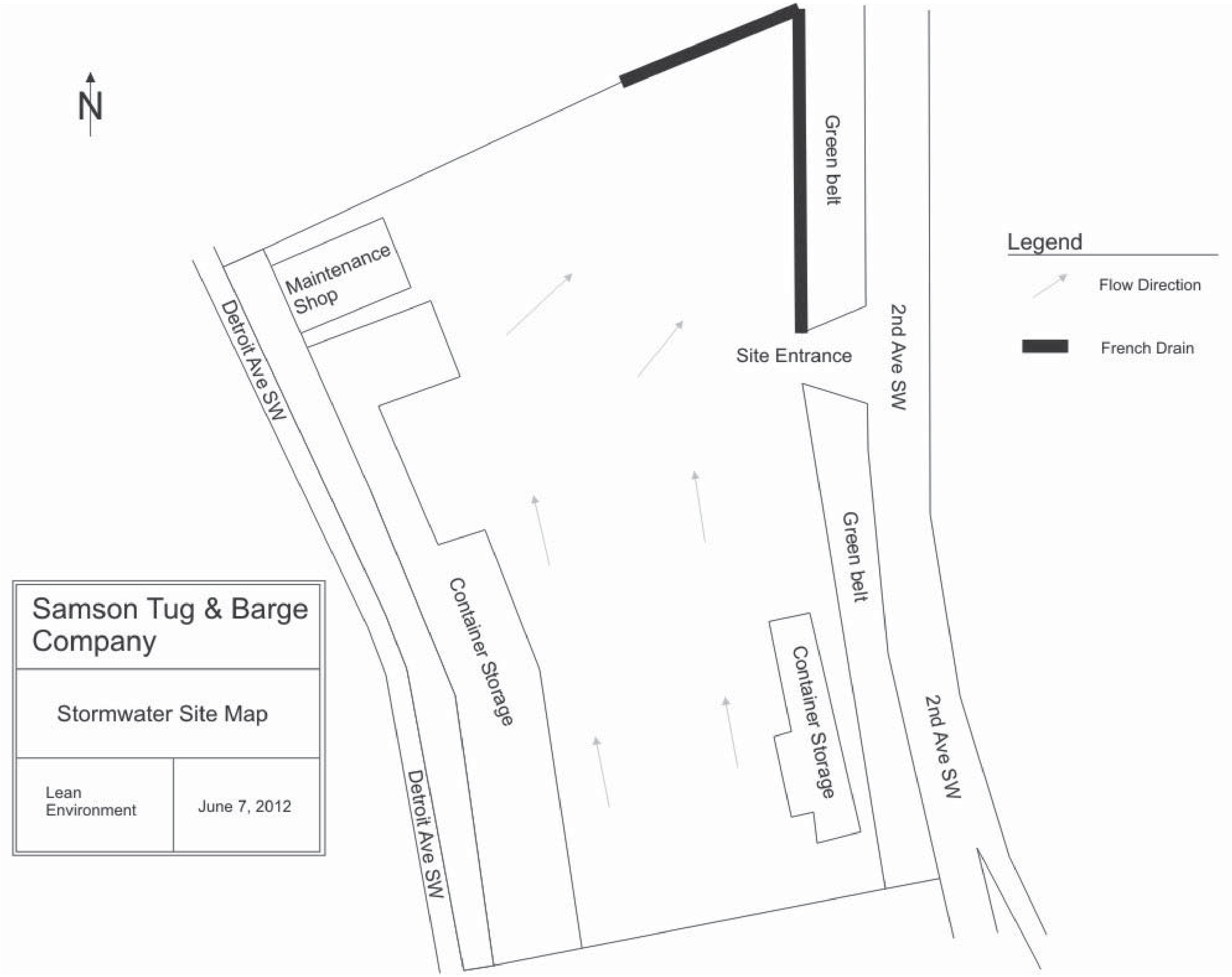

Source: Blue Environmental 2012

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Figure 17. Facility Layout – Samson Tug Maintenance Facility (7553 Detroit Avenue SW)

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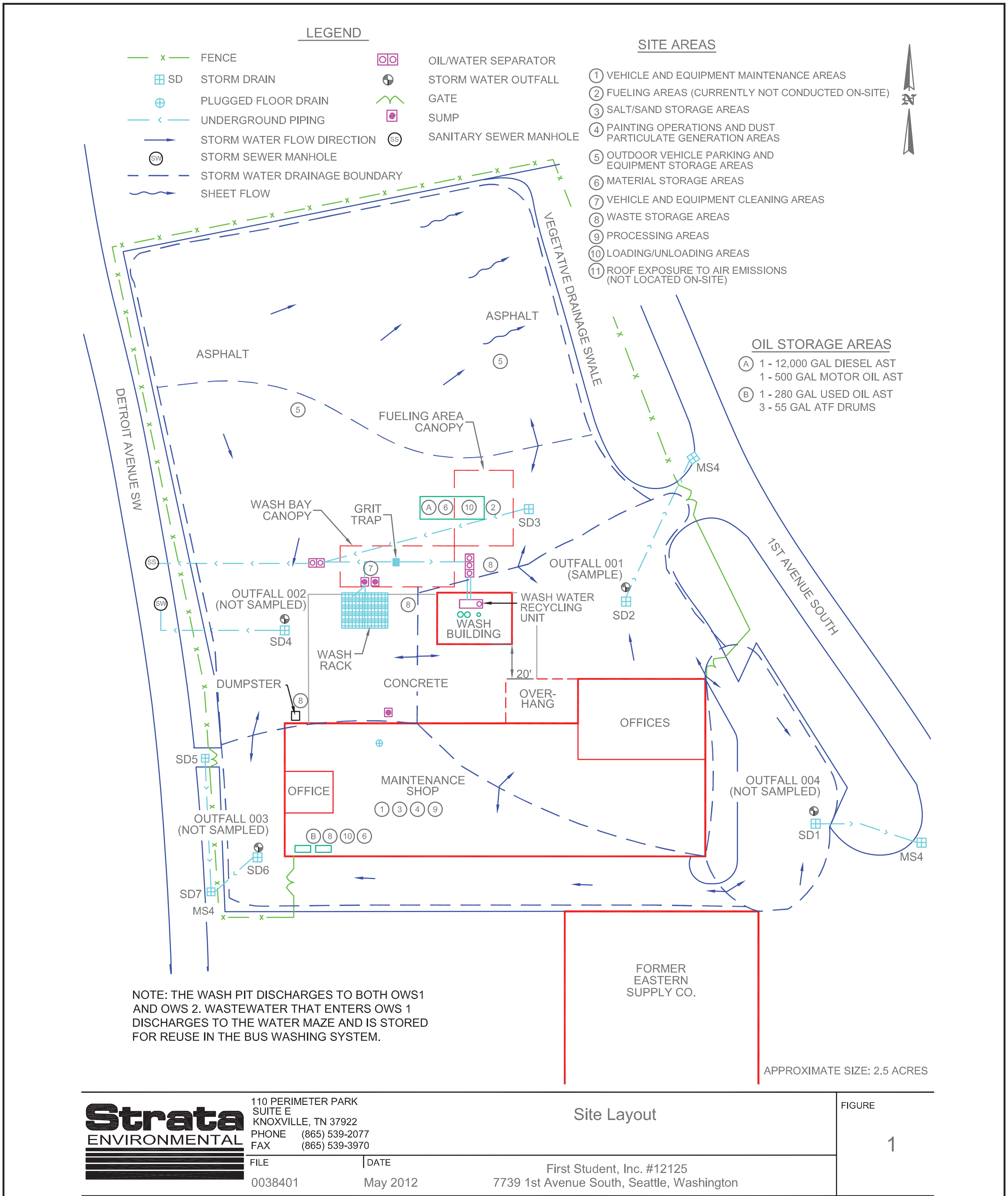

Source: First America 2012

Figure 18. Facility Layout – First Student (7739 1st Avenue S)

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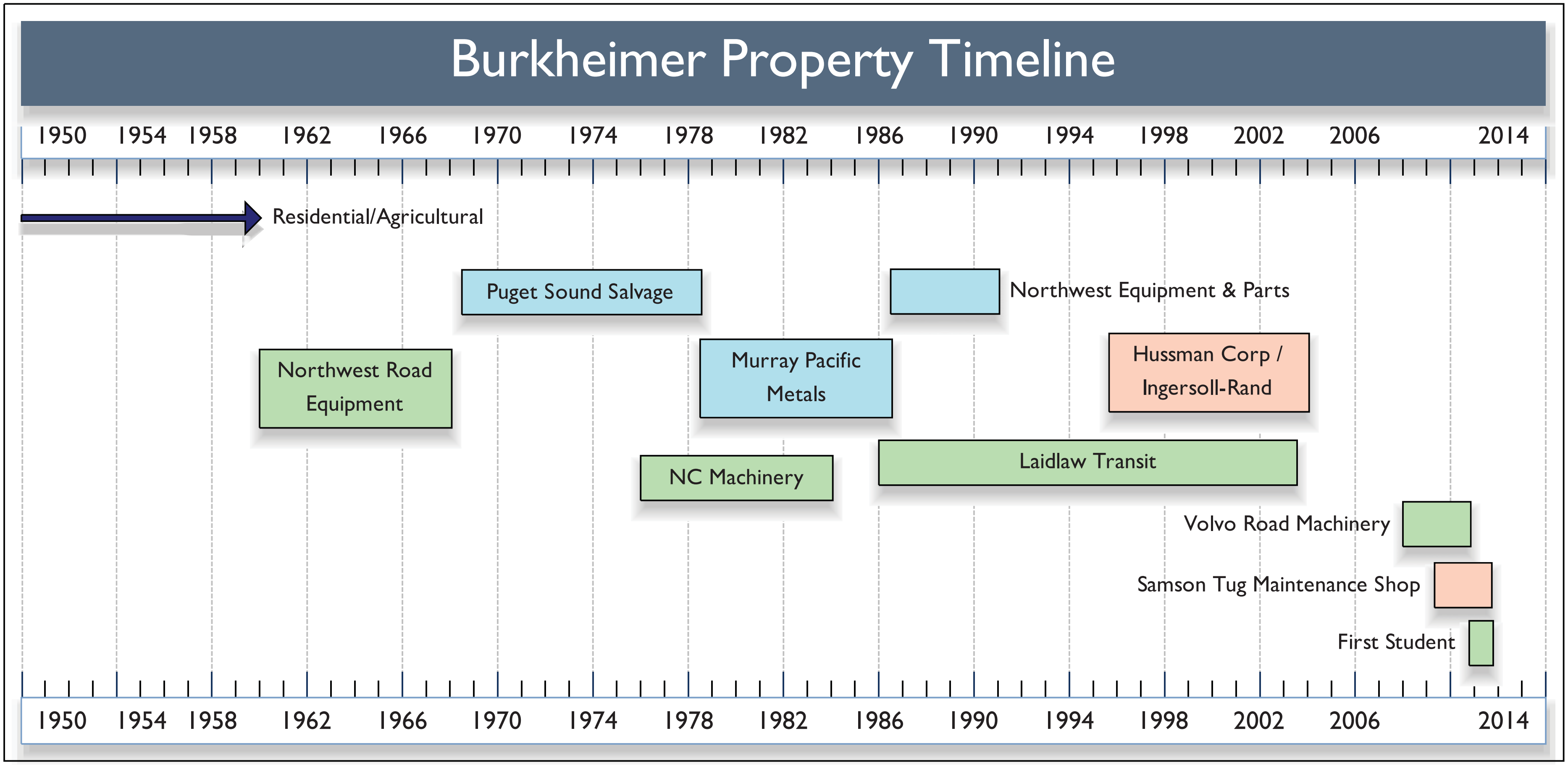

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Figure 19. Timeline of Activities at Burkheimer Family Property

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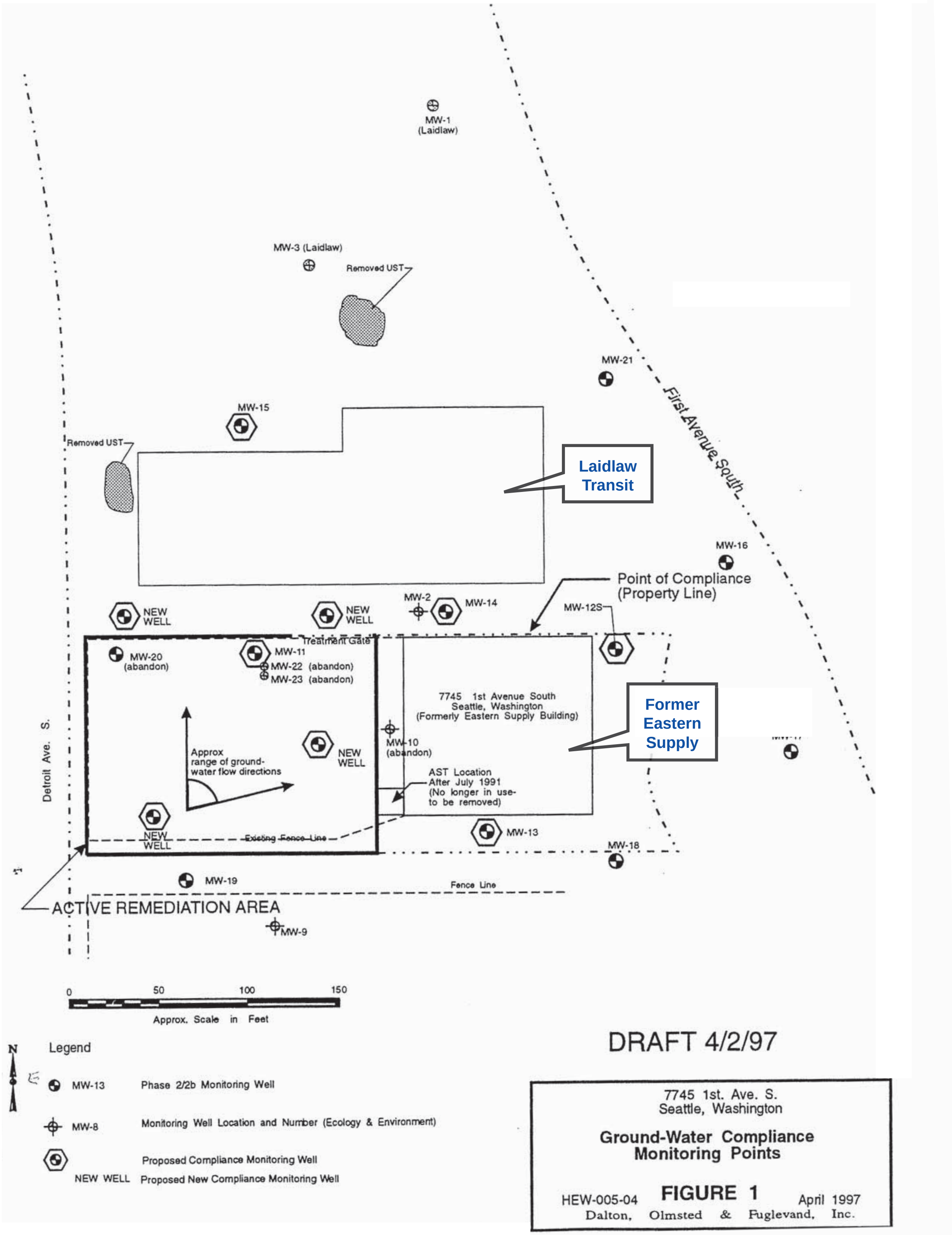

Source: Dalton Olmsted 1997

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Figure 20. Groundwater Compliance Monitoring Locations – Former Eastern Supply (7745 1st Avenue S)

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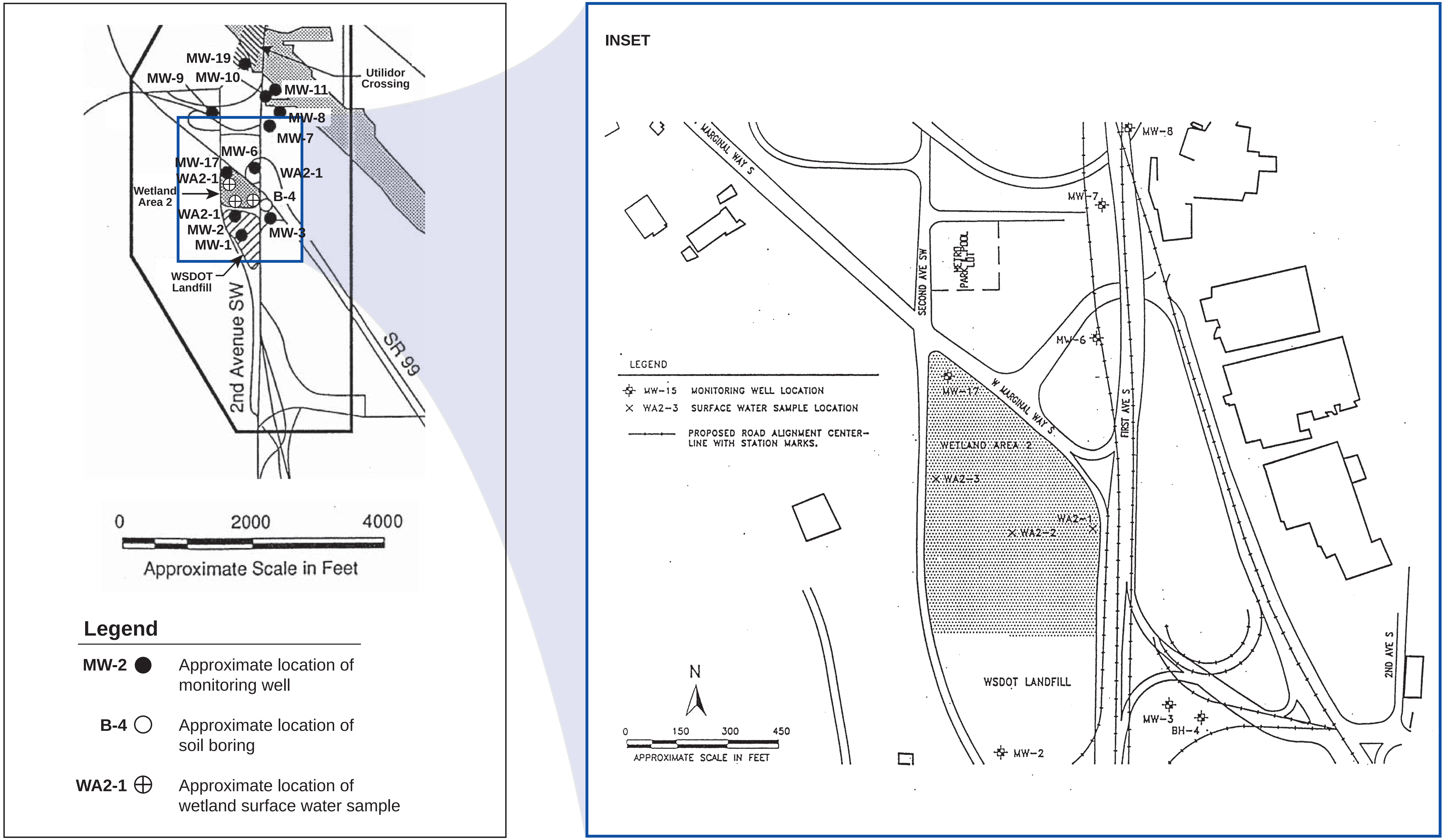

Adapted From: Dames & Moore 1994

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Figure 21. Sampling Locations Near Former First Avenue Bridge Landfill

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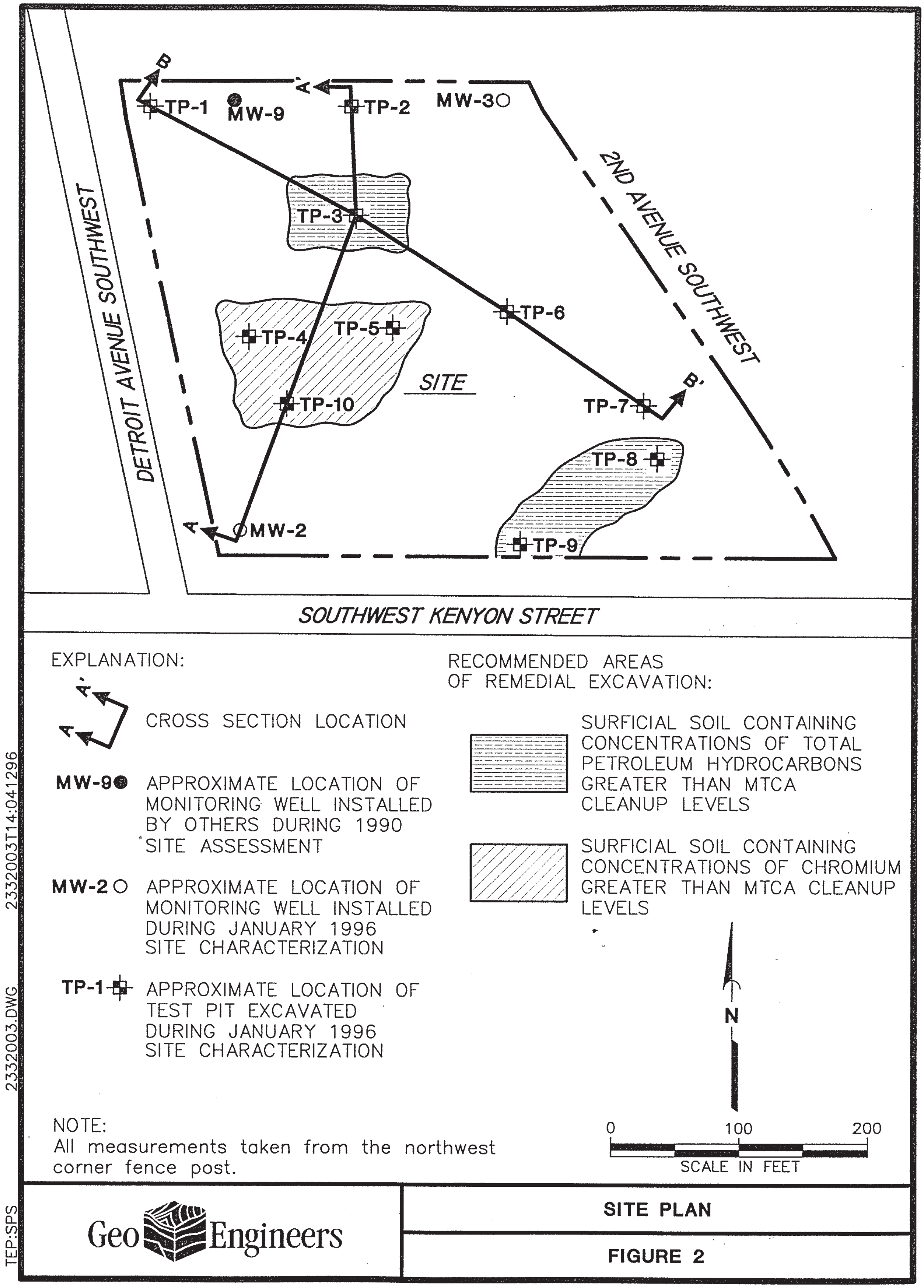
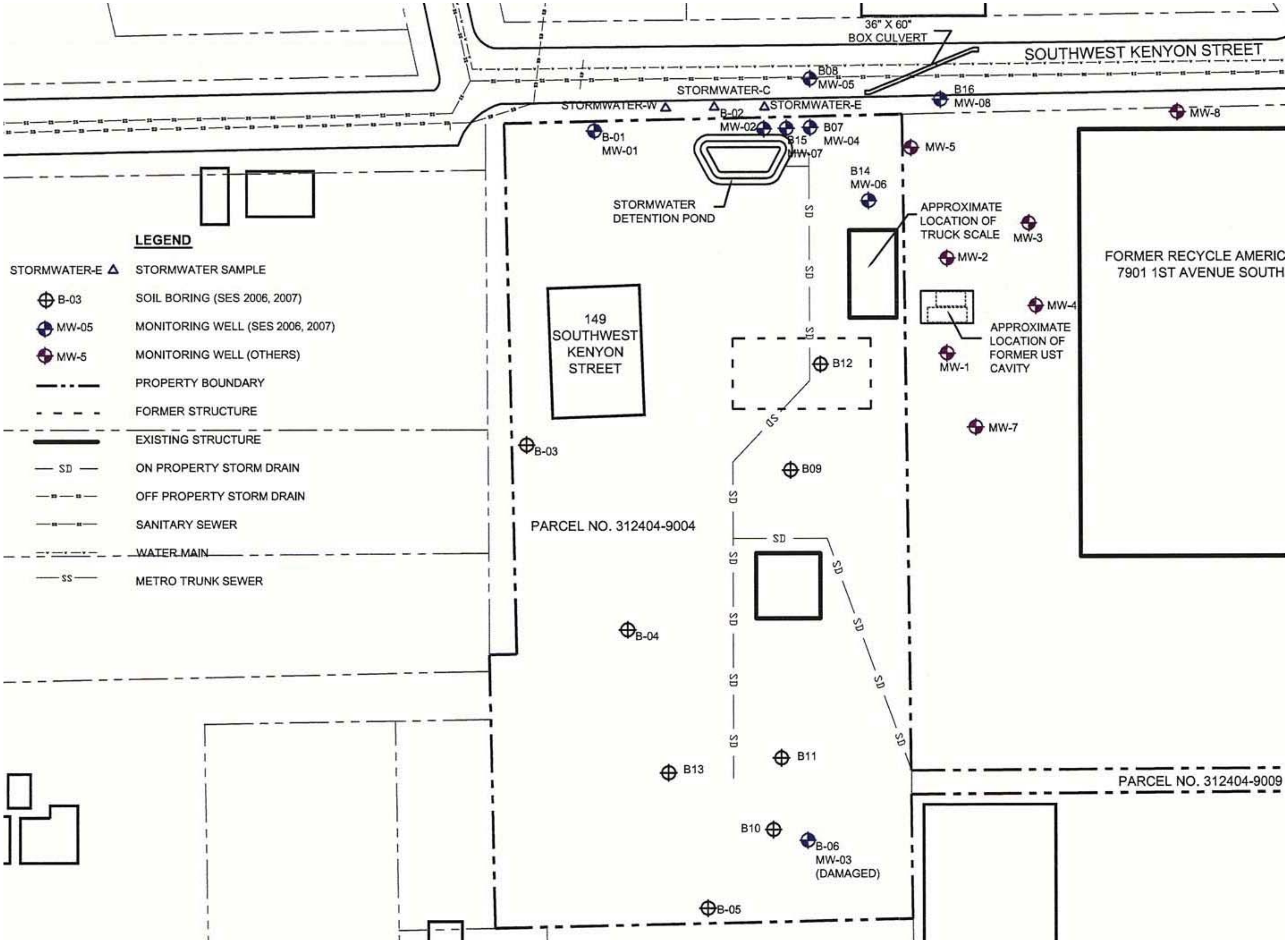


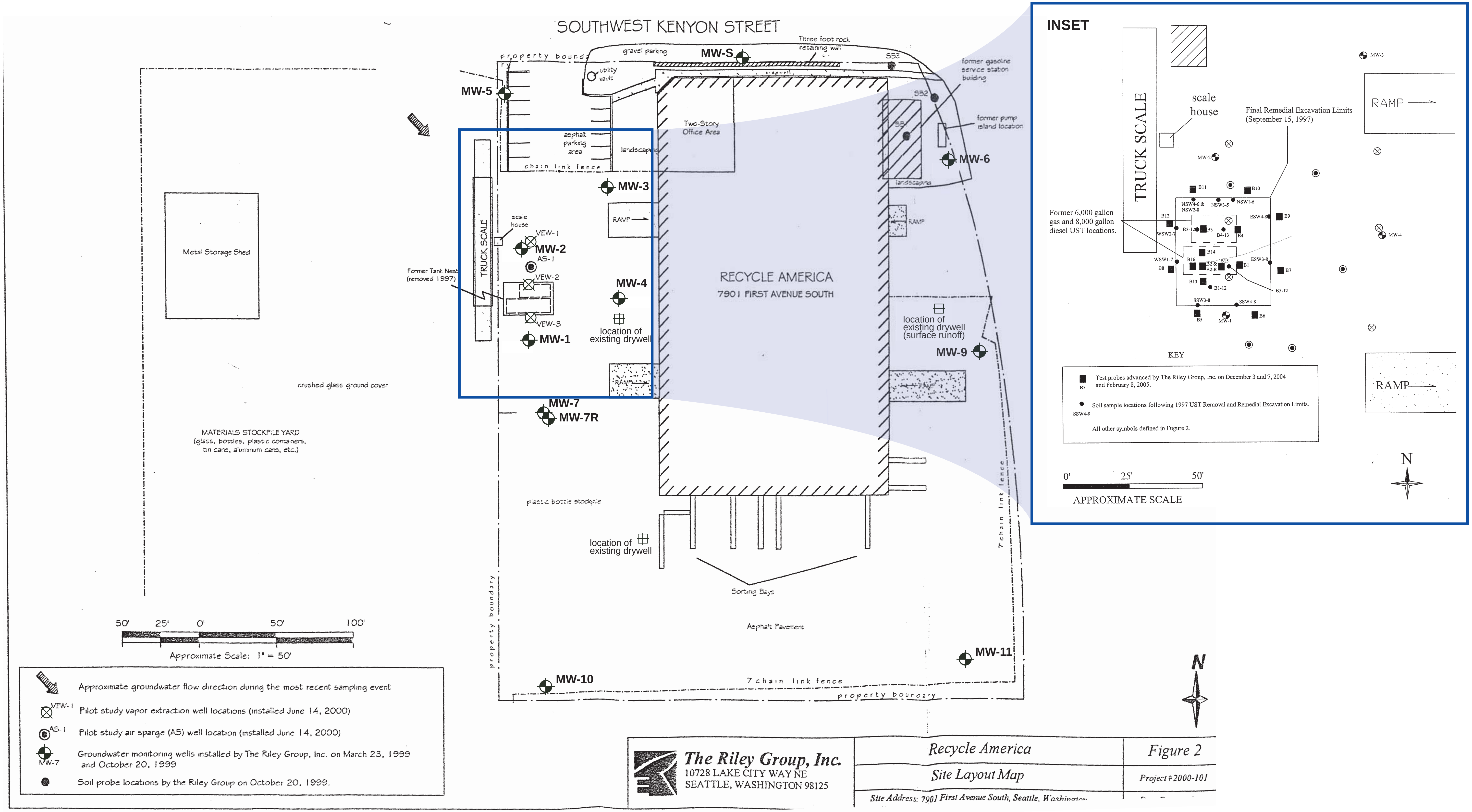
Source: GeoEngineers 1996

Figure 22. Sampling Locations – Former West Coast Equipment 2 (7746 Detroit Avenue SW)



Source: SES 2007

Figure 23. Sampling Locations – Kenyon Street Property/ Former Dr Concrete Recycle (149 SW Kenyon Street)



Adapted From: Riley 2000b, 2005d

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Figure 24. Sampling Locations – Former Recycle America (7901 1st Avenue S)

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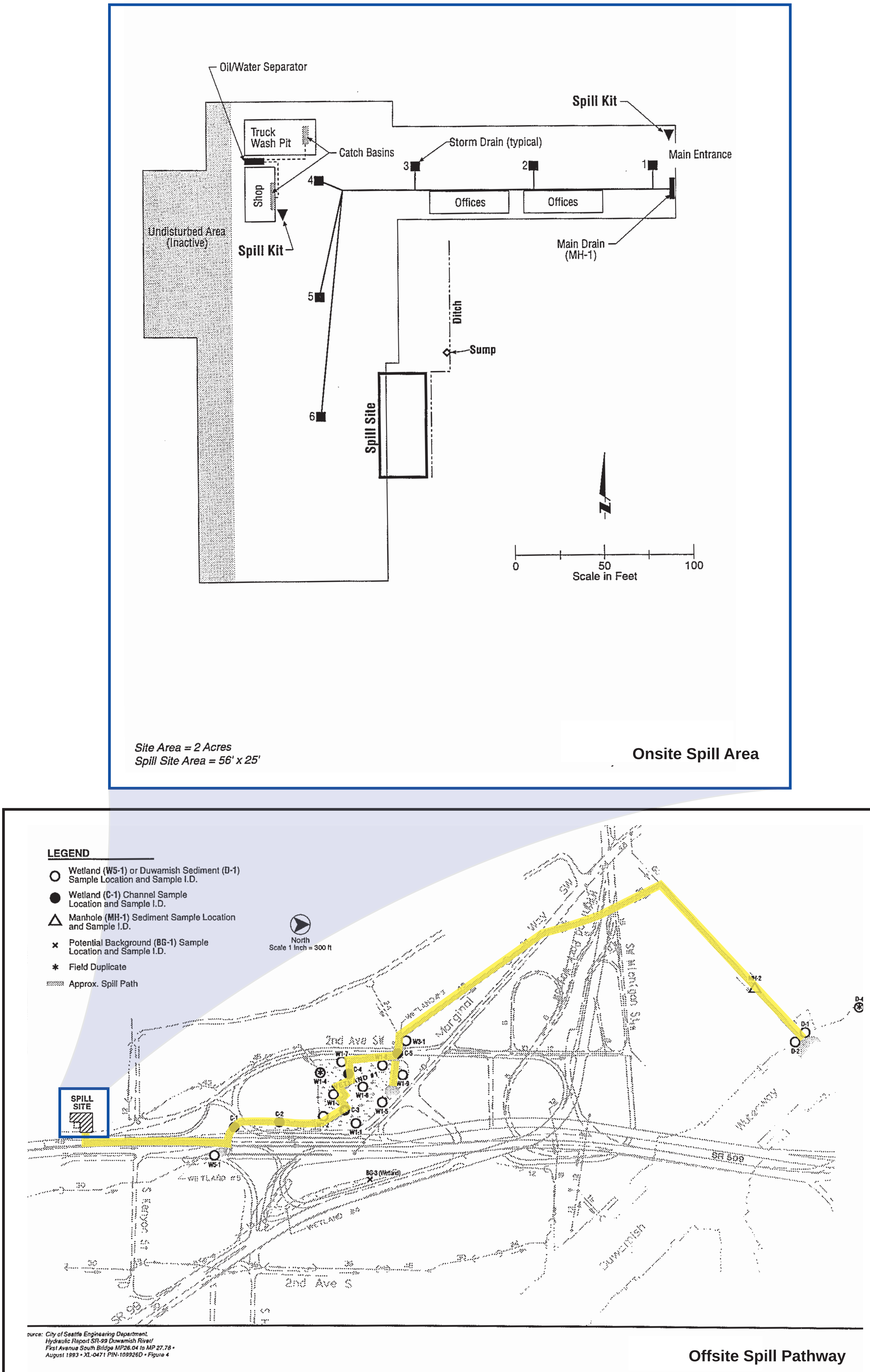
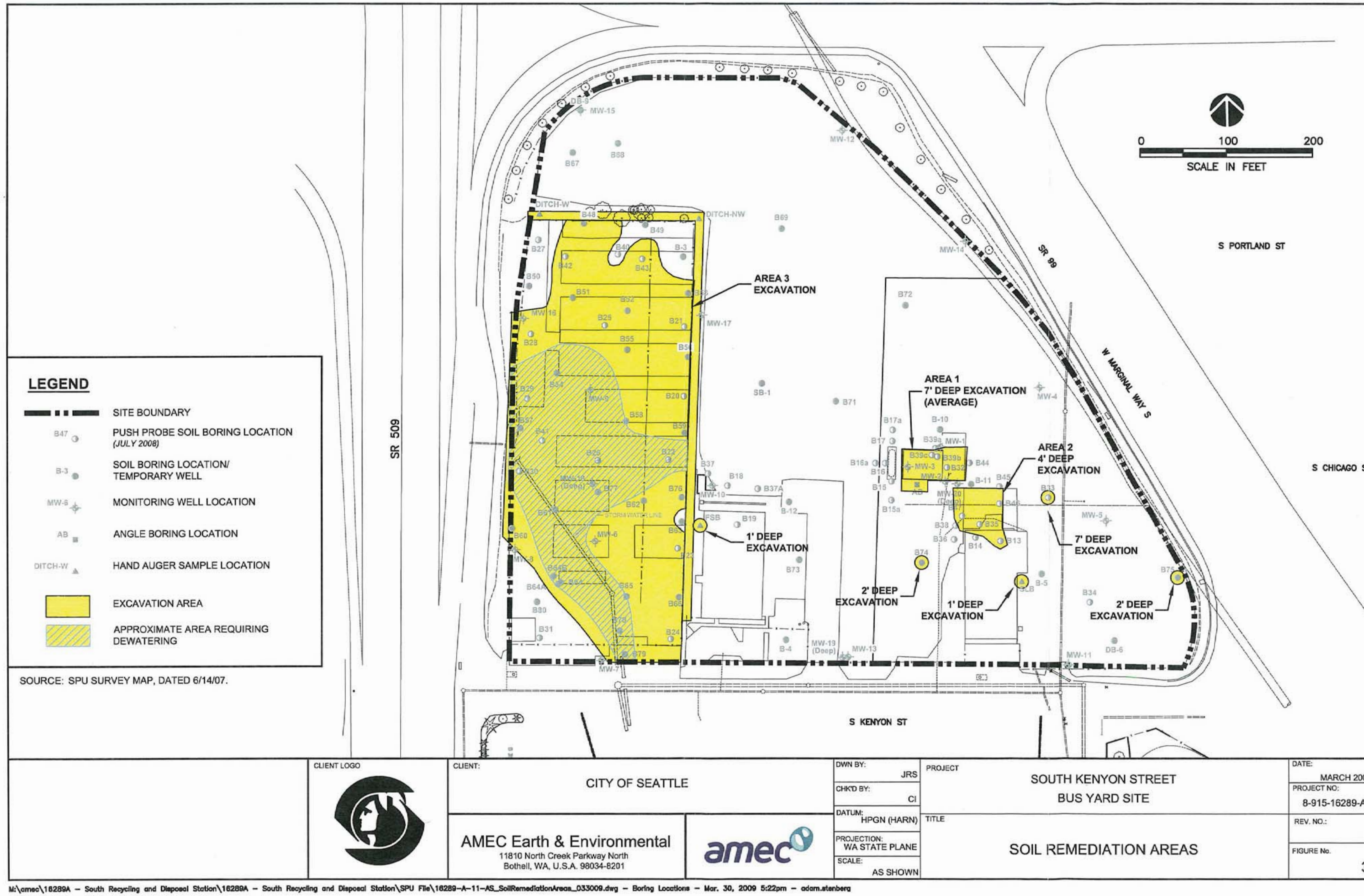


Source: CH2M Hill 1994c

Figure 25. 1994 Spill Location – Former Northwest Enviroservice (8105 1st Avenue S)



Adapted From: AMEC 2009a

Figure 26. Soil Contamination and Remediation Areas, South Transfer Station (Former S Kenyon Street Bus Yard)

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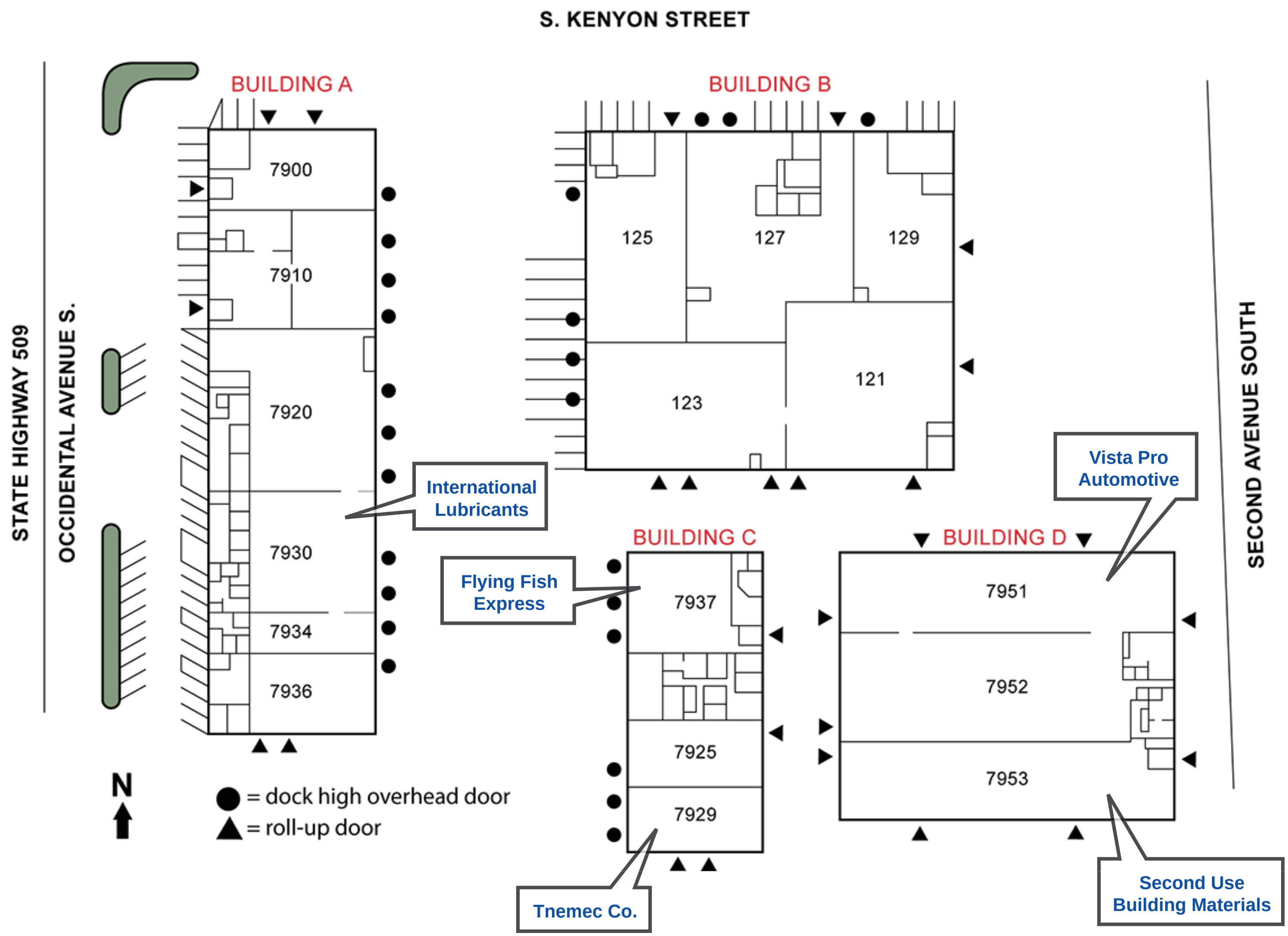

Adapted from: Harsch Investment Properties 2012

Figure 27. Current Tenants at Kenyon Business Park

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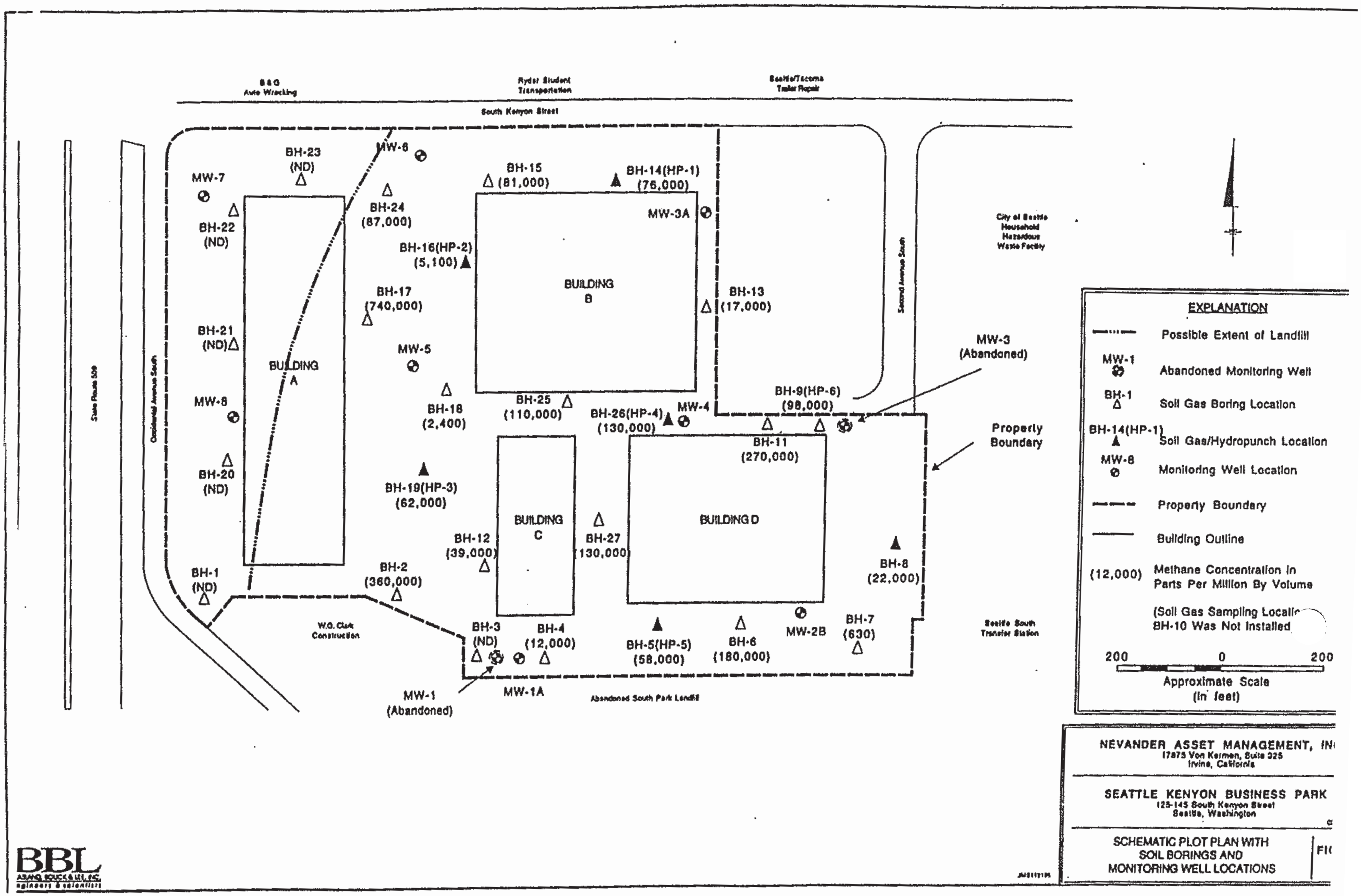
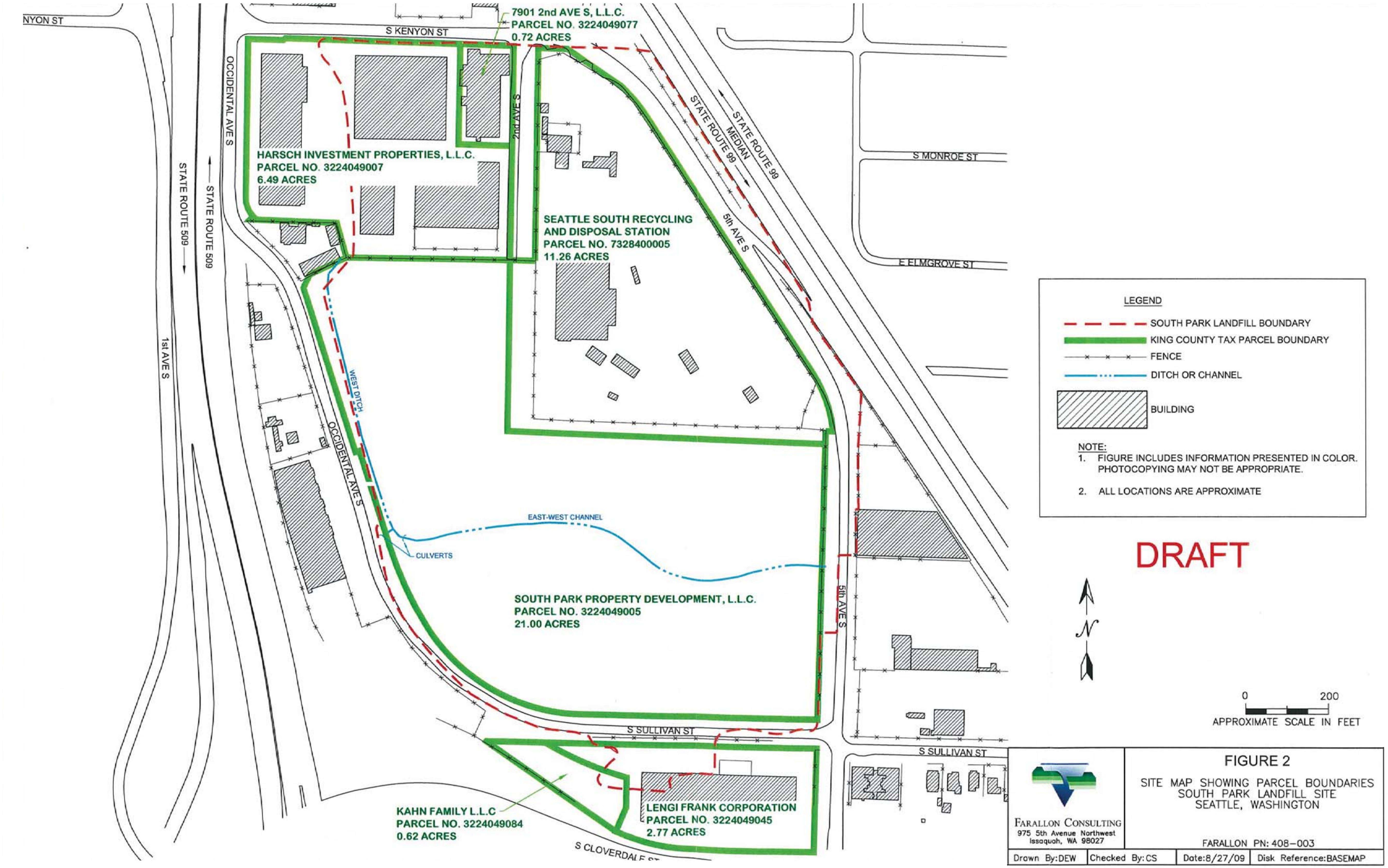


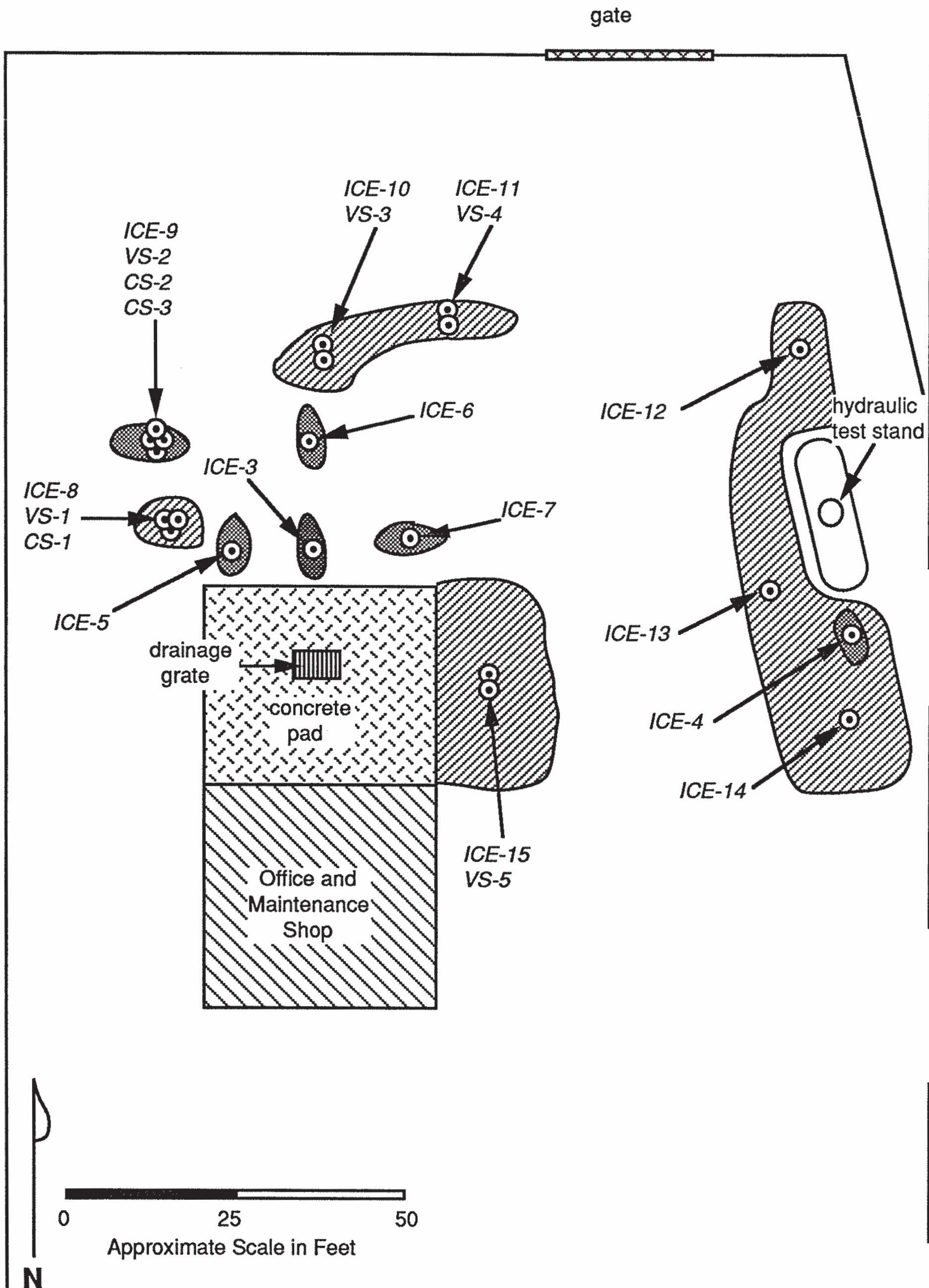
Source: BBL 1995

Figure 28. Samping Locations – Kenyon Business Park



Source: Farallon 2009

Figure 29. Former Extent of South Park Landfill



SOIL SAMPLE LABORATORY RESULTS
Collected 10-7-92

Sample Number	Depth (feet)	TPH (ppm)
ICE-3	7	ND
ICE-4	6	ND
ICE-5	7	ND
ICE-6	7	ND
ICE-7	7	ND
ICE-8	1.5	772
ICE-9	2	1231
ICE-10	1.5	462
ICE-11	1.5	319
ICE-12	2	195
ICE-13	2	167
ICE-14	2	ND
ICE-15	2	321

SOIL SAMPLE LABORATORY RESULTS
Collected 10-12-92

Sample Number	Depth (feet)	TPH (ppm)
VS-1	2.5	1635
VS-2	3	1653
VS-3	2	152
VS-4	2	96
VS-5	2.5	ND

SOIL SAMPLE LABORATORY RESULTS
Collected 10-16-92

Sample Number	Depth (feet)	TPH (ppm)
CS-1	3	35
CS-2	3.5	1390
CS-3	6.5	ND

Notes: Depths are in feet below grade. ND = not detected at limits stated in official laboratory reports; TPH = total petroleum hydrocarbons heavier than diesel; ppm = parts per million; Figure adapted from B&C Equipment report dated April 10, 1992.

LEGEND

⊙ = Alton Geoscience Soil Sample Location
= Deep Remedial Excavations
= Shallow Remedial Excavations

ALTON GEOSCIENCE
3425 SOUTH 116TH STREET
SUITE 101
TUKWILA, WA 98168-1985

FIGURE 3
REMEDIAL EXCAVATIONS, SOIL SAMPLE LOCATIONS, AND LABORATORY RESULTS
INTERNATIONAL CONSTRUCTION EQUIPMENT
8101 Occidental Avenue South
Seattle, Washington

Source: Alton Geoscience 1992

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Figure 30. Sampling Locations – International Construction Equipment (8101 Occidental Avenue S)

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Tables

Table 1
Facilities within the 1st Avenue S SD Source Control Area that are Listed in the Ecology Facility/Site Database

FSID	Facility Name	Alternate Names	Address	Source Control Inspection	Active EPA ID No.	Ecology CSCSL	Active NPDES Permit	KCIW Discharge Authorization or Permit	Ecology UST LIST	LUST	Ecology NFA Determi-nation
46918719	1st Kenyon Drum	None	1st Ave S & SW Kenyon St								
97913617	ABC Metal Finishing	None	501 S Elmgrove St								
17746	Arrowhead Senior Housing Assoc	None	9200 2nd Ave SW								
3329	Bus Yard Site Preparation CSWGP	Bus Yard Site Preparation	130 S Kenyon St								
15161	Can Do Services	Waste Management of Seattle	8101 1st Ave S	●							
2109	Chemical Processors Inc Detroit	Impact Property Services; Seattle Housing Authority	7500 Detroit Ave SW	●		●					●
61231536	Custom Roofing Inc	None	8001 5th Ave S						●		
14413	Demolition Man Inc	None	8129 Occidental Avenue S	●							
19521	Demolition Man Inc 8151	None	8151 Occidental Avenue S	●							
4504516	Dr Concrete Recycle	Healthcare Solutions Inc; Kenyon Street Property	149 SW Kenyon St	●		●					
2258	Eastern Supply Co	None	7745 1st Ave S			●					
91926231	Eastmont Transfer Station	Eastmont Development Inc	7155 W Marginal Way SW								
5542431	Exxon Co USA Div of Exxon Cor		7150 2nd Ave SW								
2201	First Ave Bridge Landfill	DOT Landfill	7700 Block of 2nd Ave SW			●					
90247719	First Student Seattle	First Student Inc Steilacoom; Ryder Student Transportation SEA	130 S Kenyon St								
1736255	Flamespray Northwest Inc	None	250 S Chicago St	●	●						
10791	Flying Fish Express	None	7937 2nd Ave S	●				●			
44534539	Formula Corp	Formula Corp 2nd Ave; T H Seafood	7901 2nd Ave S	●							
7130166	Greg Peterson Duwamish River	None	None Listed								
61437393	Hussmann Corp	Hussmann Corp First Ave	7272 1st Ave S								
99142846	International Construction Equipment	None	8101 Occidental Ave S								
97992431	International Lubricants Inc	None	7930 Occidental S		●						
94931167	Jones Washington Stevedoring Co UST2313	Icicle Seafoods	7245 W Marginal Way SW	●					●	●	
29892767	Kenyon Drum	None	Kenyon St S at Transfer Sta								
2320	Laidlaw	First Student Inc; First Student Inc 1st Ave S; Gazelle International; Laidlaw First Ave SEA; Laidlaw Transit; Laidlaw Transit Inc 1st Ave	7739 1st Ave S	●		●	●		●	●	
16981594	Lion Trucking Inc	1st Ave S Waste Oil; Iverson Property	8425 1st Ave S	●					●		
21626	MacDonald Miller Co Inc	None	7717 Detroit Ave SW	●							

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36776588	MacDonald Miller Service Inc	MacDonald Miller Company	7707 Detroit Ave SW						●		
46338473	Magnetic & Penetrant Services Co Inc	MAPSCO	8135 1st Ave S		●		●	●			
9677878	Metro Holden Marginal Way	None	W Marginal Way SW & S Holden St								
12326	Myers Way Sand Pit	City of Seattle Joint Training Facility	9400 Myers Way								
66671686	Non-Ferrous Metals Inc	Nonferrous Metals; Non Ferrous Metals	230 S Chicago St								
25963342	North Star Ice Equipment Inc	Ocean Terminals Inc Seattle; North Star Ice Equipment	8151 Occidental Ave S		●				●		
2536	Northwest Enviroservice 2	None	8105 1st Ave S			●					
74491434	NW Enviroservice 1st Ave Site	None	8105 1st Ave S								
2537	Northwest Enviroservice 2W	None	1st Ave SW & Marginal			●					
17445	Old Dominion Freight Line Inc	None	8425 1st Ave S	●							
72863999	Omnisource Inc	None	123 S Kenyon St								
85495122	Omnisource Inc 121	None	121 1/2 S Kenyon St								
82954349	Omnisource Inc 129	None	129 S Kenyon St								
79459683	Patent Construction Systems	None	8111 1st Ave S								
96897184	Proliance International Inc Seattle	VistaPro Automotive LLC; Daniel Radiator Corp; Go Dan Industries Seattle; Transpro	7951 2nd Ave S								
55695661	Recycle America	None	7901 1st Ave S Clean Up								
63293426	Ryder Student Transportation Services	First Student Inc.; Ryder Student Transportation Services I; Seattle Public Utilities Bus Yard; Starline Luxury Coaches	130 S Kenyon St			●			●	●	
15539	Samson Tug Maintenance Shop	None	7739 1st Avenue S	●							
21272	Samson Tug & Barge 2nd Ave SW	None	7600 2nd Avenue SW	●							
24041	Samson Tug & Barge Detroit Ave SW	None	7553 Detroit Ave SW				●				
4982711	Seaport Petroleum Detroit Ave	Collins Oil Co DBA Seaport Petroleum Co Detroit; Seaport Petroleum; Seaport Petroleum Co Detroit	7800 Detroit Ave SW	●	●				●		
84167493	Seattle City Eng Dept 2nd Ave SW	None	2nd Ave SW & W Marginal Way SW								
77377391	Seattle Public Utilities W Seattle Res	SPU W Seattle Hypochlorination	8820 3rd Ave SW								
2175	Seattle S Transfer Sta	Oak Classics Co	8100 2nd Ave S			●					

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FSID	Facility Name	Alternate Names	Address	Source Control Inspection	Active EPA ID No.	Ecology CSCSL	Active NPDES Permit	KCIW Discharge Authorization or Permit	Ecology UST LIST	LUST	Ecology NFA Determi-nation
3388037	South Kenyon Street	None	110, 130, 150, & 200 South Kenyon Street			●					
2180	South Park Landfill	Southpark Landfill; South Park Landfill Redevelopment	8200 2nd Ave S			●	●				
91256919	South Recycle & Disposal Station	Seattle City South Recycling & Dispos; Seattle Solid Waste Div Sts; South Recycle and Disposal Center; South Seattle HHW Facility	8100 2nd Ave S		●		●	●	●		
3665320	South Recycle & Disposal Station 5th Ave	None	8105 5th Ave S								
3453	South Transfer Station	South Transfer Station ISW; South Transfer Station Seattle	130 S Kenyon St		●		●				
4185778	SR 509 & Greenbelt	Greenbelt Myers Wy SR 509; Joint Training Facility; SR 509 & Greenbelt	SR 509 & Barton			●					
42718345	Standard Steel Fabricating Co Inc	None	8155 1st Ave S	●			●		●		
96838255	Tacoma Seattle Trailer Repair	None	150 S Kenyon St						●	●	
86979859	Tnemec Co Inc	None	7929 2nd Ave S								
39937726	Transfer Sta Barrel	None	8100 Occidental Ave S 033								
47666565	TW Express	None	7901 1st Avenue S								
14193	Urban Hardwoods Sawmill	Urban Hardwoods Inc	8427 1st Ave S	●							
9437672	Volvo Road Machinery Inc	None	7739 1st Ave S	●							
89337496	WA AGR King 2	None	8100B 2nd Ave S		●						
4709	Waste Management CNG Upgrades	None	149 SW Kenyon & 8111 1st Ave S								
2425	Waste Management of Seattle	Bayside Disposal Co; Eastmont Transfer Station; Sunset Disposal; Waste Management of Seattle Marg Wy	7201 West Marginal Way SW		●	●	●	●	●	●	
95878752	Waste Management of Seattle 1st Ave	AVL Freight Svc; Intermountain Supply Inc; Recycle America; Waste Management First Ave; Waste Management of Seattle UST 10291; Waste Management SEA Recycle AM	7901 1st Ave S	●		●	●	●	●	●	
47374256	We Painters Inc	None	110 S Kenyon								
12494	West Coast Equipment 2	None	7746 Detroit Avenue SW			●					

Table 1
Facilities within the 1st Avenue S SD Source Control Area that are Listed in the Ecology Facility/Site Database

FSID	Facility Name	Alternate Names	Address	Source Control Inspection	Active EPA ID No.	Ecology CSCSL	Active NPDES Permit	KCIW Discharge Authorization or Permit	Ecology UST LIST	LUST	Ecology NFA Determi-nation
2262	West Coast Equipment Inc	Contractors Equipment Co	7777 Detroit Ave SW	●		●					
26116543	West Seattle Reservoir	None	None Listed								
64488657	WG Clark Construction Occidental Ave	None	7958 Occidental Ave S	●							

EPA - Environmental Protection Agency
CSCSL - Confirmed or Suspected Contaminated Sites List
NPDES - National Pollutant Discharge Elimination System
KCIW - King County Industrial Waste
UST - Underground Storage Tank
LUST -Leaking Underground Storage Tank
NFA - No Further Action

Table 2
LDW Sediment Samples Collected Near RM 2.1 West

Event Name	Location Name	Date Collected	Collection Depth (feet)	Metals	SVOCs	PCBs	Dioxins/ Furans	Organo-tins	Pesticides	Source
EPA Site Investigation	DR135	8/13/1998	Surface	●	●	●				Weston 1999
LDW RI Phase 2 Round 1	B6a	8/15/2004	Surface	●	●	●		●	●	Windward 2005a
	C6	8/25/2004		●	●	●		●	●	
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Surface	●	●	●				Windward 2005b
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Surface	●	●	●				Windward 2007b
	LDW-SS332			●	●	●				
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 to 1	●	●	●				Windward 2007a
			1 to 2	●	●	●				
			2 to 3	●	●	●				
	LDW -SC38b	2/20/2006	3 to 3.3	●	●	●				
LDW Dioxin Sampling	LDW-SS523	12/15/2009	Surface				●			Windward 2010a
LDW Outfall Sampling	SS2505-A	3/7/2011	Surface	●	●	●				SAIC 2011b
	SS2506-A	3/7/2011		●	●	●				
	SS2506-D	3/7/2011								
	SS2512-A	3/7/2011		●	●	●				
	SS2512-U	3/7/2011		●	●	●				

SVOCs - semivolatile organic compounds
PCBs - polychlorinated biphenyls

Table 3
Chemicals Detected Above Screening Levels in Sediment Samples
Near RM 2.1 West

Event Name	Sample Location	Date Collected	Sample Depth (feet)	Chemical	Concentration (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS*	CSL*	Units	SQS Exceedance Factor	CSL Exceedance Factor
Metals												
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Mercury	0.45	1.5	30	0.41	0.59	mg/kg DW	1.1	<1
PAHs												
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Acenaphthene	0.81 J	1.5	54	16	57	mg/kg OC	3.4	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3	Acenaphthene	0.21	1.3	16	16	57	mg/kg OC	1.0	<1
Phthalates												
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Surface	Bis(2-ethylhexyl)phthalate	4.9	1.24	395	47	78	mg/kg OC	8.4	5.1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Surface	Bis(2-ethylhexyl)phthalate	2.5	1.95	128	47	78	mg/kg OC	2.7	1.6
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Surface	Butyl benzyl phthalate	0.14	1.95	7.2	4.9	64	mg/kg OC	1.5	<1
LDW Outfall Sampling	LDW-SS2512-A	3/7/2011	Surface	Butyl benzyl phthalate	0.082	0.48	17	0.063	0.90	mg/kg DW	1.3	<1
Other SVOCs												
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Surface	Benzyl alcohol	0.056	1.24		57	73	ug/kg DW	9.8	7.7
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Surface	Benzyl alcohol	0.12	1.95		57	73	ug/kg DW	2.1	1.6
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Surface	1,4-Dichlorobenzene	0.068	1.95	3.5	3.1	9.0	mg/kg OC	1.1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Dibenzofuran	0.25 J	1.5	17	15	58	mg/kg OC	1.1	<1
PCBs												
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	PCBs (total calc'd)	3.4	1.5	227	12	65	mg/kg OC	19	3.5
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	PCBs (total calc'd)	0.71	1.37	52	12	65	mg/kg OC	4.3	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Surface	PCBs (total calc'd)	0.3	0.89	34	12	65	mg/kg OC	2.8	<1
EPA Site Inspection	DR135	8/13/1998	Surface	PCBs (total calc'd)	0.26 J	2.04	13	12	65	mg/kg OC	1.1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Surface	PCBs (total calc'd)	0.15	1.26	12	12	65	mg/kg OC	1.0	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	PCBs (total calc'd)	0.45	1.95	23	12	65	mg/kg OC	1.9	<1

mg/kg - milligram per kilogram
ug/kg - microgram per kilogram
DW - Dry weight
TOC - Total Organic Carbon
OC - Organic carbon normalized
SQS - SMS Sediment Quality Standard
PCB - Polychlorinated biphenyl
CSL - SMS Cleanup Screening Level
PAH - Polycyclic aromatic hydrocarbon
SMS - Sediment Management Standards
AET - Apparent Effects Threshold
Total HPAH - Total high molecular weight PAH
Total LPAH - Total low molecular weight PAH
J - Estimated value between the method detection limit and the laboratory reporting limit
SMS - Sediment Management Standard (Washington Administrative Code 173-204)

* Samples with TOC <0.5% were compared to dry weight SMS or AET criteria.

Table presents detected chemicals only.
Exceedance factors are the ratio of the detected concentrations to the CSL or SQS; exceedance factors are shown only if they are greater than 1.
Sampling events are listed in Table 2.

Table 4
Chemicals Detected Above Screening Levels in Storm Drain Samples
1st Avenue S SD Source Control Area

Sample Location	Date Collected	Sample Type	Chemical	Concentration (mg/kg DW)	TOC (%)	SQS/ LAET	CSL/ 2LAET	Units	SQS Exceedance Factor	CSL Exceedance Factor
Metals										
1st-ST5	9/16/2008	Inline	Mercury	0.6	11.2%	0.41	0.59	mg/kg DW	1.5	1.0
1st-ST5	8/2/2010	Inline	Mercury	0.49	9.9%	0.41	0.59	mg/kg DW	1.2	<1
1st-ST5	8/2/2010	Inline	Mercury	0.42	12.8%	0.41	0.59	mg/kg DW	1.0	<1
CB158	5/14/2010	CB	Zinc	3,770	6.3%	410	960	mg/kg DW	9.2	3.9
CB150	5/28/2009	CB	Zinc	2,140	6.3%	410	960	mg/kg DW	5.2	2.2
1st-ST5	9/16/2008	Inline	Zinc	1,480	11.2%	410	960	mg/kg DW	3.6	1.5
1st-ST5	8/2/2010	Inline	Zinc	924	12.8%	410	960	mg/kg DW	2.3	1.0
1st-ST5	8/2/2010	Inline	Zinc	852	9.9%	410	960	mg/kg DW	2.1	<1
1st-ST1	11/04/10	Trap	Zinc	793	7.9%	410	960	mg/kg DW	1.9	<1
1st-ST7	11/11/2010	Trap	Zinc	662	15.1%	410	960	mg/kg DW	1.6	<1
1st-ST1	03/06/09	Trap	Zinc	647	9.0%	410	960	mg/kg DW	1.6	<1
MH218	5/19/2009	Inline	Zinc	619	1.8%	410	960	mg/kg DW	1.5	<1
1st-ST2	3/6/2009	Trap	Zinc	579	NA	410	960	mg/kg DW	1.4	<1
RCB262	4/22/2011	Inline	Zinc	519 J	8.3%	410	960	mg/kg DW	1.3	<1
1st-ST1	09/05/08	Inline	Zinc	502	8.4%	410	960	mg/kg DW	1.2	<1
1st-ST2	11/4/2010	Trap	Zinc	466	5.5%	410	960	mg/kg DW	1.1	<1
PAHs										
1st-ST5	8/2/2010	Inline	Acenaphthene	0.55 J	12.8%	0.50	0.73	mg/kg DW	1.1	<1
1st-ST5	9/16/2008	Inline	Acenaphthene	0.58	11.2%	0.50	0.73	mg/kg DW	1.2	<1
RCB152	9/17/2008	RCB	Benzo(a)anthracene	1.6	15.3%	1.3	1.6	mg/kg DW	1.2	1.0
1st-ST7	11/11/2010	Trap	Benzo(a)pyrene	2.5	15.1%	1.6	3.0	mg/kg DW	1.6	<1
RCB152	9/17/2008	RCB	Benzo(a)pyrene	1.8	15.3%	1.6	3.0	mg/kg DW	1.1	<1
1st-ST7	11/11/2010	Trap	Benzo(g,h,i)perylene	4.8	15.1%	0.67	0.72	mg/kg DW	7.2	6.7
1st-ST1	11/04/10	Trap	Benzo(g,h,i)perylene	2.3	7.9%	0.67	0.72	mg/kg DW	3.4	3.2
1st-ST2	11/4/2010	Trap	Benzo(g,h,i)perylene	0.74	5.5%	0.67	0.72	mg/kg DW	1.1	1.0
RCB152	9/17/2008	RCB	Benzofluoranthenes	4.4	15.3%	3.2	3.6	mg/kg DW	1.4	1.2
1st-ST7	11/11/2010	Trap	Chrysene	3.1	15.1%	1.4	2.8	mg/kg DW	2.2	1.1
RCB152	9/17/2008	RCB	Chrysene	2.6	15.3%	1.4	2.8	mg/kg DW	1.9	<1
1st-ST1	11/04/10	Trap	Chrysene	1.6	7.9%	1.4	2.8	mg/kg DW	1.1	<1
1st-ST7	11/11/2010	Trap	Fluoranthene	6.1	15.1%	1.7	2.5	mg/kg DW	3.6	2.4
RCB152	9/17/2008	RCB	Fluoranthene	5.2	15.3%	1.7	2.5	mg/kg DW	3.1	2.1
1st-ST1	11/04/10	Trap	Fluoranthene	3.3	7.9%	1.7	2.5	mg/kg DW	1.9	1.3
MH218	5/19/2009	Inline	Fluoranthene	3.2	1.8%	1.7	2.5	mg/kg DW	1.9	1.3
1st-ST5	9/16/2008	Inline	Fluoranthene	2.2	11.2%	1.7	2.5	mg/kg DW	1.3	<1
1st-ST7	11/11/2010	Trap	Indeno(1,2,3-cd)pyrene	1.4	15.1%	0.60	0.69	mg/kg DW	2.3	2.0
RCB152	9/17/2008	RCB	Phenanthrene	2.7	15.3%	1.5	5.4	mg/kg DW	1.8	<1
1st-ST7	11/11/2010	Trap	Phenanthrene	2.4	15.1%	1.5	5.4	mg/kg DW	1.6	<1
1st-ST1	11/04/10	Trap	Phenanthrene	2	7.9%	1.5	5.4	mg/kg DW	1.3	<1
MH218	5/19/2009	Inline	Phenanthrene	1.9	1.8%	1.5	5.4	mg/kg DW	1.3	<1
1st-ST7	11/11/2010	Trap	Pyrene	3.9	15.1%	2.6	3.3	mg/kg DW	1.5	1.2
RCB152	9/17/2008	RCB	Pyrene	3.6	15.3%	2.6	3.3	mg/kg DW	1.4	1.1

Table 4
Chemicals Detected Above Screening Levels in Storm Drain Samples
1st Avenue S SD Source Control Area

Sample Location	Date Collected	Sample Type	Chemical	Concentration (mg/kg DW)	TOC (%)	SQS/ LAET	CSL/ 2LAET	Units	SQS Exceedance Factor	CSL Exceedance Factor
RCB152	9/17/2008	RCB	Total HPAH	25 J	15.3%	12	17	mg/kg DW	2.1	1.5
1st-ST7	11/11/2010	Trap	Total HPAH	25	15.1%	12	17	mg/kg DW	2.1	1.5
MH218	5/19/2009	Inline	Total HPAH	14	1.8%	12	17	mg/kg DW	1.2	<1
Phthalates										
CB150	05/28/09	CB	BBP	6.5	6.3%	0.063	0.90	mg/kg DW	103	7.2
1st-ST1	11/04/10	Trap	BBP	3.2	7.9%	0.063	0.90	mg/kg DW	51	3.6
CB158	5/14/2010	CB	BBP	0.61	6.3%	0.063	0.90	mg/kg DW	9.7	<1
MH218	5/19/2009	Inline	BBP	0.32	1.8%	0.063	0.90	mg/kg DW	5.1	<1
1st-ST1	03/06/09	Inline	BBP	0.3	6.0%	0.063	0.90	mg/kg DW	4.8	<1
1st-ST1	03/06/09	Trap	BBP	0.26	9.0%	0.063	0.90	mg/kg DW	4.1	<1
1st-ST2	11/4/2010	Trap	BBP	0.22	5.5%	0.063	0.90	mg/kg DW	3.5	<1
1st-ST1	09/05/08	Inline	BBP	0.21	8.4%	0.063	0.90	mg/kg DW	3.3	<1
MH216	5/19/2009	Inline	BBP	0.17	1.6%	0.063	0.90	mg/kg DW	2.7	<1
1st-ST1	11/04/10	Inline	BBP	0.090 J	7.6%	0.063	0.90	mg/kg DW	1.4	<1
1st-ST2	3/6/2009	Inline	BBP	0.077	2.1%	0.063	0.90	mg/kg DW	1.2	<1
1st-ST2	9/5/2008	Inline	BBP	0.064	0.9%	0.063	0.90	mg/kg DW	1.0	<1
1st-ST5	9/16/2008	Inline	BEHP	44	11.2%	1.3	1.9	mg/kg DW	34	23
1st-ST5	8/2/2010	Inline	BEHP	26	12.8%	1.3	1.9	mg/kg DW	20	14
RCB262	4/22/2011	Inline	BEHP	25 B	8.3%	1.3	1.9	mg/kg DW	19	13
1st-ST5	8/2/2010	Inline	BEHP	24	9.9%	1.3	1.9	mg/kg DW	18	13
CB150	5/28/2009	CB	BEHP	16	6.3%	1.3	1.9	mg/kg DW	12	8.4
MH218	5/19/2009	Inline	BEHP	14	1.8%	1.3	1.9	mg/kg DW	11	7.4
1st-ST1	03/06/09	Trap	BEHP	13	9.0%	1.3	1.9	mg/kg DW	10	6.8
CB158	5/14/2010	CB	BEHP	13	6.3%	1.3	1.9	mg/kg DW	10	6.8
1st-ST1	11/04/10	Trap	BEHP	11 B	7.9%	1.3	1.9	mg/kg DW	8.5	5.8
1st-ST7	11/11/2010	Trap	BEHP	11	15.1%	1.3	1.9	mg/kg DW	8.5	5.8
1st-ST1	03/06/09	Inline	BEHP	8.1	6.0%	1.3	1.9	mg/kg DW	6.2	4.3
1st-ST2	11/4/2010	Trap	BEHP	6.8 B	5.5%	1.3	1.9	mg/kg DW	5.2	3.6
1st-ST1	11/04/10	Inline	BEHP	4.5 B	7.6%	1.3	1.9	mg/kg DW	3.5	2.4
1st-ST7	3/17/2009	Trap	BEHP	3.2 B	4.5%	1.3	1.9	mg/kg DW	2.5	1.7
1st-ST2	3/6/2009	Inline	BEHP	3.2	2.1%	1.3	1.9	mg/kg DW	2.5	1.7
1st-ST1	09/05/08	Inline	BEHP	2.4	8.4%	1.3	1.9	mg/kg DW	1.8	1.3
RCB152	9/17/2008	RCB	BEHP	1.7	15.3%	1.3	1.9	mg/kg DW	1.3	<1
1st-ST1	03/06/09	Inline	Dimethylphthalate	0.12 J	6.0%	0.071	0.16	mg/kg DW	1.7	<1
1st-ST1	09/05/08	Inline	Dimethylphthalate	0.097	8.4%	0.071	0.16	mg/kg DW	1.4	<1
Other SVOCs										
RCB152	9/17/2008	RCB	4-Methylphenol	1.7	15.0%	0.67	0.67	mg/kg DW	2.5	2.5
1st-ST3	3/12/2009	Trap	4-Methylphenol	1.5	7.3%	0.67	0.67	mg/kg DW	2.2	2.2
1st-ST7	3/17/2009	Trap	4-Methylphenol	1.4	4.5%	0.67	0.67	mg/kg DW	2.1	2.1
1st-ST2	11/4/2010	Trap	Benzoic acid	0.75 J	5.5%	0.65	0.65	mg/kg DW	1.2	1.2
CB158	5/14/2010	CB	Benzoic acid	0.71 J	6.3%	0.65	0.65	mg/kg DW	1.1	1.1

Table 4
Chemicals Detected Above Screening Levels in Storm Drain Samples
1st Avenue S SD Source Control Area

Sample Location	Date Collected	Sample Type	Chemical	Concentration (mg/kg DW)	TOC (%)	SQS/ LAET	CSL/ 2LAET	Units	SQS Exceedance Factor	CSL Exceedance Factor
PCBs										
MH218	5/19/2009	Inline	Total PCBs	0.78	1.8%	0.13	1.0	mg/kg DW	6.0	<1
1st-ST7	11/11/2010	Trap	Total PCBs	0.77	15.1%	0.13	1.0	mg/kg DW	5.9	<1
1st-ST5	9/16/2008	Inline	Total PCBs	0.50	11.2%	0.13	1.0	mg/kg DW	3.8	<1
1st-ST5	8/2/2010	Inline	Total PCBs	0.27 J	9.9%	0.13	1.0	mg/kg DW	2.1	<1
1st-ST5	8/2/2010	Inline	Total PCBs	0.19 J	12.8%	0.13	1.0	mg/kg DW	1.5	<1
CB158	5/14/2010	CB	Total PCBs	0.18	6.3%	0.13	1.0	mg/kg DW	1.4	<1
Dioxins/Furans										
1st-ST1	11/04/10	Inline	Dioxin/Furan TEQ	12 J	7.6%	1.6		ng/kg DW	7.5	
Petroleum Hydrocarbons										
RCB262	4/22/2011	Inline	TPH-Diesel	2,900	8.3%	2,000		mg/kg DW	1.5	
1st-ST1	03/06/09	Trap	TPH-Diesel	2,400	9.0%	2,000		mg/kg DW	1.2	
RCB262	4/22/2011	Inline	TPH-Oil	16,000	8.3%	2,000		mg/kg DW	8.0	
1st-ST1	03/06/09	Trap	TPH-Oil	11,000	9.0%	2,000		mg/kg DW	5.5	
CB150	5/28/2009	CB	TPH-Oil	8,200	6.3%	2,000		mg/kg DW	4.1	
1st-ST1	11/04/10	Trap	TPH-Oil	5,900	7.9%	2,000		mg/kg DW	3.0	
1st-ST7	11/11/2010	Trap	TPH-Oil	5,500	15.1%	2,000		mg/kg DW	2.8	
CB158	5/14/2010	CB	TPH-Oil	4,400	6.3%	2,000		mg/kg DW	2.2	
1st-ST5	9/16/2008	Inline	TPH-Oil	3,800	11.2%	2,000		mg/kg DW	1.9	
1st-ST5	8/2/2010	Inline	TPH-Oil	3,600	12.8%	2,000		mg/kg DW	1.8	
MH218	5/19/2009	Inline	TPH-Oil	3,550	1.8%	2,000		mg/kg DW	1.8	
1st-ST1	03/06/09	Inline	TPH-Oil	3,300	6.0%	2,000		mg/kg DW	1.7	
1st-ST5	8/2/2010	Inline	TPH-Oil	3,300	9.9%	2,000		mg/kg DW	1.7	
1st-ST7	3/17/2009	Trap	TPH-Oil	2,600	4.5%	2,000		mg/kg DW	1.3	
1st-ST1	11/04/10	Inline	TPH-Oil	2,500	7.6%	2,000		mg/kg DW	1.3	

mg/kg - milligram per kilogram
ng/kg - nanogram per kilogram
DW - dry weight
TOC - total organic carbon
BEHP - bis(2-ethylhexyl)phthalate
BBP - butylbenzylphthalate
SQS - Sediment Quality Standard
CSL - Cleanup Screening Level
PCB - polychlorinated biphenyl
TPH - total petroleum hydrocarbons
PAH - polycyclic aromatic hydrocarbon
TEQ - toxic equivalence quotient
J - Estimated value between the method detection limit and the laboratory reporting limit
B - Analyte was detected in the associated method blank
LAET - lowest apparent effects threshold
2LAET - second lowest apparent effects threshold

Table presents chemicals that exceed a screening level in at least one sample.
Exceedance factors are the ratio fo the detected concentration to the SQS or CSL; exceedance factors are shown only if they are greater than 1.
Screening level for petroleum hydrocarbons is the MTCA soil cleanup level.
Screening level for dioxins/furans is the LDW background concentration.

Table 5
Properties, Facilities, and Parcel Numbers within the 1st Avenue S SD Source Control Area

Property Name	Facility Name	Current?	FSID	Address	Parcel Number	Taxpayer
Seattle Engineering Department 2nd Avenue SW	Seattle City Eng Dept 2nd Ave SW	●	84167493	2nd Avenue SW & West Marginal Way SW	7643400010	Seattle Department of Transportation
Waste Management Eastmont Transfer Station	Waste Management of Seattle	●	2425	7201 West Marginal Way SW	3024049167	Waste Management
	Eastmont Transfer Station	●	91926231	7155 West Marginal Way SW		
Jones Stevedoring	Jones Washington Stevedoring	●	94931167	7245 West Marginal Way SW	3024049176; 3024049159	Jones Washington Stevedoring; Jones Stevedoring Co.
	Nuprecon	●	NA	7245 West Marginal Way SW		
	Icicle Seafoods	●	NA	7245 West Marginal Way SW		
	MC Delivery	●	NA	7245 West Marginal Way SW		
	MDE Engineers, Inc.	●	NA	7245 West Marginal Way SW		
	Seafreeze	●	NA	7245 West Marginal Way SW		
	Sound Delivery Service	●	NA	7245 West Marginal Way SW		
	Specialty Storage Company	●	NA	7245 West Marginal Way SW		
	Western Crane	●	NA	7245 West Marginal Way SW		
Seattle Housing Authority	Chemical Processors Inc Detroit		2109	7500 Detroit Avenue SW	3024049073	Seattle Housing Authority
	Seattle Housing Authority	●	NA	7500 Detroit Avenue SW		
Burkheimer Family Property	Samson Tug & Barge Detroit Ave SW	●	24041	7553 Detroit Avenue SW	3024049174; 3024049018; 3024049153	Burkheimer Family LLC
	Samson Tug Maintenance Shop	●	15539	7739 1st Avenue S		
	Samson Tug & Barge 2nd Ave SW	●	21272	7600 2nd Avenue SW		
	Laidlaw/First Student	●	2320	7739 1st Avenue S		
	Volvo Road Machinery Inc		9437672	7739 1st Avenue S		
	Hussmann Corp		61437393	7272 1st Avenue S	Unknown	NA
Former Eastern Supply	Eastern Supply Co		2258	7745 1st Avenue S	3024049164	Fred Weinberg
Former First Avenue Bridge Landfill	First Ave Bridge Landfill		2201	7700 Block of 2nd Avenue SW	NA	NA
Seaport Petroleum	Seaport Petroleum Detroit Ave	●	4982711	7800 Detroit Avenue SW	3024049166	Seaport WE4ST LLC
	Seaport Food Mart	●	NA	7801 Detroit Avenue SW	3024049181	DJP Enterprise Inc
	West Coast Equipment 2		12494	7746 Detroit Avenue SW	3024049166	Seaport WE4ST LLC
Former West Coast Equipment	West Coast Equipment Inc		2262	7777 Detroit Avenue SW	3024049158	Thidwick Management Co

Table 5
Properties, Facilities, and Parcel Numbers within the 1st Avenue S SD Source Control Area

Property Name	Facility Name	Current?	FSID	Address	Parcel Number	Taxpayer
MacDonald Miller	MacDonald Miller Co Inc	●	21626	7717 Detroit Avenue SW	3024049026	F&V Investments LLC
	MacDonald Miller Service Inc	●	36776588	7707 Detroit Avenue SW	3024049075	
Kenyon Street Property	Dr Concrete Recycle		4504516	149 SW Kenyon Street	3124049004; 3124049009	Kenyon Street Partners
	Healthcare Solutions	●	NA	149 SW Kenyon Street		
Intermountain Supply/Former Recycle America	Waste Management of Seattle 1st Ave		95878752	7901 1st Avenue S	3124049001	LMN, LLC
	Recycle America		55695661			
	Intermountain Supply	●	NA			
	TW Express		47666565			
Waste Management 1st Avenue S	Can Do Services	●	15161	8101 1st Avenue S	3124049008	Oak Classics Company
	Waste Management Fueling Facility	●	NA	8105 1st Avenue S	3124049156; 3124049158	First Avenue Industries LLC
	NW Enviroservice 1st Ave Site		74491434	8105 1st Avenue S	3124049007	
	Northwest Enviroservice 2		2536	8105 1st Avenue S		
	Northwest Enviroservice 2W		2537	1st Avenue SW & Marginal	NA	
	Patent Construction Systems		79459683	8111 1st Avenue S	3124049151	Waste Management Inc.
	Waste Management CNG Upgrades		4709	149 SW Kenyon & 8111 1st Avenue S		
MAPSCO	Magnetic & Penetrant Services Co Inc	●	46338473	8135 1st Avenue S	3124049134	Promise Land Enterprise LLC
Standard Steel Fabricating	Standard Steel Fabricating Co Inc	●	42718345	8155 1st Avenue S	3124049160; 3124049157	Standard Steel Fabricating
Former Global Diving & Salvage	Global Diving & Salvage	●	None	8165 1st Avenue S	3124049157	IVMG LLC
Lion Trucking	Lion Trucking Inc	●	16981594	8425 1st Avenue S	3124049172; 3124049173; 3124049014	D&Z Lion Properties LLC
	Old Dominion Freight Line Inc	●	17445	8425 1st Avenue S		
Urban Hardwoods Sawmill	Urban Hardwoods Sawmill	●	14193	8427 1st Avenue S	3124049125	South Park 45 LLC
South Transfer Station/Former Kenyon Street Bus Yard	Bus Yard Site Preparation CSWGP		3329	130 S Kenyon Street	2924049006, 2924049099, 2924049104, 7328401175	City of Seattle
	First Student Seattle		90247719	130 S Kenyon Street		
	Ryder Student Transportation Services		63293426	130 S Kenyon Street		
	South Kenyon Street		3388037	110, 130, 150, & 200 South Kenyon Street		
	South Transfer Station	●	3453	130 S Kenyon Street		
	Tacoma Seattle Trailer Repair		96838255	150 S Kenyon St		
	We Painters Inc		47374256	110 S Kenyon		
Kenyon Business Park	Flying Fish Express	●	10791	7937 2nd Avenue S	3224049007	Harsch Investment Properties LLC
	International Lubricants Inc	●	97992431	7930 Occidental S		
	Omnisource Inc		72863999	123 S Kenyon St		

Table 5
Properties, Facilities, and Parcel Numbers within the 1st Avenue S SD Source Control Area

Property Name	Facility Name	Current?	FSID	Address	Parcel Number	Taxpayer
	Omnisource Inc 121		85495122	121 1/2 S Kenyon St		
	Omnisource Inc 129		82954349	129 S Kenyon St		
	Proliance International Inc Seattle		96897184	7951 2nd Avenue S		
	Second Use Building Materials	●	NA	7953 2nd Avenue S		
	Tnemec Co Inc	●	86979859	7929 2nd Avenue S		
	VistaPro Automotive	●	NA	7951 2nd Avenue S		
Former Formula Corp	Formula Corp		44534539	7901 2nd Avenue S	3224049077	7901 2nd Ave S LLC
	T H Seafood	●	NA	7901 2nd Avenue S		
WG Clark Construction	WG Clark Construction Occidental Ave	●	64488657	7958 Occidental Avenue S	3224049068	W G Clark Construction
South Recycle & Disposal Station	Seattle S Transfer Sta	●	2175	8100 2nd Avenue S	7328400005	City of Seattle
	South Recycle & Disposal Station	●	91256919	8100 2nd Avenue S		
	South Recycle & Disposal Station 5th Ave	●	3665320	8105 5th Avenue S		
	WA AGR King 2	●	89337496	8100B 2nd Avenue S		
Former South Park Landfill	South Park Landfill		2180	8200 2nd Avenue S	3224049005	South Park Property Developmen LLC
International Construction Equipment	International Construction Equipment	●	99142846	8101 Occidental Avenue S	3224049008	International Construction Equipment
Demolition Man	Demolition Man	●	14413	8129 Occidental Avenue S	3224049102	John M. and Ginny M. McFarland
North Star Ice Equipment	North Star Ice Equipment Inc	●	25963342	8151 Occidental Avenue S	3224049010	Rainier Northwest JFK LLC
	Demolition Man Storage Yard	●	19521	8151 Occidental Avenue S		
Non-Ferrous Metals	Nonferrous Metals	●	66671686	230 S Chicago St	7328401427	McGee Properties Inc
Flamespray Northwest	Flamespray Northwest Inc	●	1736255	250 S Chicago St	7328401425	FSNW LLC
Former Custom Roofing	Custom Roofing Inc		61231536	8001 5th Avenue S	7328400445	Rick Larson Enterprises
	Second Use Building Materials	●	NA	8001 5th Avenue S		
ABC Metal Finishing*	ABC Metal Finishing		97913617	501 S Elmgrove St	7327900540	Bank of America TRE
West Seattle Reservoir	West Seattle Reservoir	●	26116543	None Listed	7972603535	City of Seattle
	Seattle Public Utilities W Seattle Res	●	77377391	8820 3rd Avenue SW		
Arrowhead Senior Housing*	Arrowhead Senior Housing Assoc	●	17746	9200 2nd Avenue SW	3124049205, 3124049216	Arrowhead Senior Housing Assoc.
Former Myers Way Sand Pit	Myers Way Sand Pit		12326	9400 Myers Way	3124049024 (northern portion)	City of Seattle Dept. of Fleets and Facilities
	City of Seattle Joint Training Facility	●	NA	9400 Myers Way		
SR 509 & Greenbelt	SR 509 & Greenbelt		4185778	SR 509 & Barton	NA	NA

Table 5
Properties, Facilities, and Parcel Numbers within the 1st Avenue S SD Source Control Area

Property Name	Facility Name	Current?	FSID	Address	Parcel Number	Taxpayer

Not Listed: 1st Kenyon Drum (FSID 46918719), Greg Peterson Duwamish River (FSID 7130166), Kenyon Drum (FSID 29892767), Metro Holden Marginal Way (FSID 967787
Transfer Sta Barrel (FSID 39937726); Exxon Co USA Div of Exxon Cor (FSID 5542431

* Minimal information was available about this property; it is discussed briefly at the beginning of Section 5.

	Location shown on Figure 10
	Location shown on Figure 11
	Location shown on Figure 12
	Location shown on Figure 13
	Location shown on Figure 14

Table 6
Chemicals Detected Above Screening Levels in Soil
Waste Management Eastmont Transfer Station

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Soil Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
SCS Engineers 1992	3/19/1992	B-3	5.0	Arsenic	1.1	0.67	590	1.6
SCS Engineers 1993	9/21/1992	Bin 9	Composite	Benzo(a)anthracene	1.7		0.27	6.1
SCS Engineers 1993	9/21/1992	Bin 9	Composite	Benzo(a)pyrene	2.3		0.21	11
SCS Engineers 1993	9/21/1992	Bin 9	Composite	Benzo(b)fluoranthene	3.6		0.45	8.0
SCS Engineers 1993	9/21/1992	Bin 9	Composite	Chrysene	1.7		0.46	3.6
SCS Engineers 1993	9/21/1992	Bin 9	Composite	Fluoranthene	3.6		1.2	3.0
SCS Engineers 1992	3/19/1992	B-2	4.0	Lead	472	250	67	1.9
SCS Engineers 1992	3/19/1992	B-3	5.0	Lead	273	250	67	1.1
SCS Engineers 1993	9/21/1992	Bin 9	Composite	Phenanthrene	1.0		0.49	2.1
SCS Engineers 1993	9/21/1992	Bin 9	Composite	Pyrene	4.0		1.4	2.9
SCS Engineers 1993	9/21/1992	West sidewall	Composite	Total petroleum hydrocarbons	20,700	2,000		10
SCS Engineers 1993	9/21/1992	Bin 9	Composite	Total petroleum hydrocarbons	20,400	2,000		10
SCS Engineers 1992	4/29/1992	B-4	5.5	Total petroleum hydrocarbons	14,100	2,000		7.1
SCS Engineers 1993	9/21/1992	2.0 ft below tank	Composite	Total petroleum hydrocarbons	12,000	2,000		6.0
SCS Engineers 1992	4/29/1992	B-4	10.0	Total petroleum hydrocarbons	10,300	2,000		5.2
SCS Engineers 1992	4/29/1992	B-5	9.5	Total petroleum hydrocarbons	8,910	2,000		4.5
SCS Engineers 1993	9/21/1992	Bin 3	Composite	Total petroleum hydrocarbons	5,180	2,000		2.6
SCS Engineers 1993	9/21/1992	Bin 6	Composite	Total petroleum hydrocarbons	3,390	2,000		1.7
SCS Engineers 1993	9/21/1992	East sidewall	Composite	Total petroleum hydrocarbons	2,860	2,000		1.4
Omega Services 1995	7/11/1995	Below Pump Island	2.0	TPH-Diesel	18,000	2,000		9.0
Omega Services 1995	7/11/1995	UST 3 East End	6.0	TPH-Diesel	15,000	2,000		7.5
Omega Services 1995	7/11/1995	Overburden Soil	--	TPH-Diesel	6,700	2,000		3.4
Omega Services 1995	7/11/1995	UST 2 East End	6.0	TPH-Diesel	3,400	2,000		1.7

ft bgs - feet below ground surface
mg/kg - Milligrams per kilogram
MTCA - Model Toxics Control Act

Table presents detected chemicals only.
Sample location was excavated during remediation activities.

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.
b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).
Exceedance factors are the ratio of the detected concentration to the MTCA cleanup level or the soil-to-sediment screening level, whichever level is lower.
The MTCA cleanup level for petroleum hydrocarbons is the value for diesel-range and heavy oil-range hydrocarbons.

Table 7
Chemicals Detected Above Screening Levels in Soil
Seattle Housing Authority

Source	Sample Date	Sample Location	Chemical	Sample Depth (ft bgs)	Soil Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
RZA 1990b	1/31/1990	B-5 (S-27)	Tetrachloroethylene	2.5-4.0	0.75	0.05		15
RZA 1990b	1/31/1990	B-6 (S-33)	Tetrachloroethylene	2.5-4.0	0.69	0.05		14
RZA 1990b	1/31/1990	B-4 (S-22)	Tetrachloroethylene	5.0-6.5	0.42	0.05		8.4
RZA 1990b	1/31/1990	Catch Basin Sludge	Total petroleum hydrocarbons[c]	--	3,942	2,000		2.0
RZA 1990b	1/31/1990	Catch Basin Sludge	Total petroleum hydrocarbons[c]	--	3,374	2,000		1.7

Table 8
Chemicals Detected Above Screening Levels in Groundwater
Seattle Housing Authority

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	GW-to-Sediment Screening Level (ug/L)	Exceedance Factor
RZA 1990b	1/31/1990	MW-4	Total petroleum hydrocarbons[d]	6,000	500		12
RZA 1990b	1/31/1990	MW-5	Total petroleum hydrocarbons[d]	6,000	500		12

ft bgs - feet below ground surface

ug/L - Micrograms per liter

mg/kg - Milligrams per kilogram

MTCA - Model Toxics Control Act

Tables present detected chemicals only.

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.

b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).

c - For Table 7, the MTCA cleanup level is the value for diesel-range and heavy oil-range hydrocarbons

d - For Table 8, the MTCA cleanup level is the value for diesel-range petroleum hydrocarbons

For Table 7, exceedance factors are the ratio of the detected concentration to the MTCA cleanup level or the soil-to-sediment screening level, whichever level is lower. For Table 8, exceedance factors are the ratio of the detected concentration to the MTCA cleanup level or the groundwater-to-sediment screening level, whichever level is lower.

Table 9
Chemicals Detected Above Screening Levels in Soil
Burkheimer Family Property

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
WT Services 1999b	2/9/1999	2-1 and 2-2 (Composite)	2 - 3.5	Arsenic	150	0.67	590	224
WT Services 1999b	2/9/1999	2-1	2	Heavy oil[c]	2,800	2,000		1.4
WT Services 1999b	2/9/1999	2-1 and 2-2 (Composite)	2 - 3.5	Lead	110	250	67	1.6
RZA 1990a	1/25/1990	B-3/S-15	5 - 6.5	Tetrachloroethylene	0.64	0.05		13
RZA 1990a	1/25/1990	B-2/S-9	2.5 - 4	Tetrachloroethylene	0.57	0.05		11
RZA 1990a	1/25/1990	B-1/S-4	7.5 - 9	Tetrachloroethylene	0.36	0.05		7.2
RZA 1990a	1/25/1990	B-2/S-9	2.5 - 4	Trichloroethylene	0.42	0.03		14

Table 10
Chemicals Detected Above Screening Levels in Groundwater
Burkheimer Family Property

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	GW-to- - Sediment Screening Level (ug/L)	Exceedance Factor
RZA 1991	6/27/1991	MW-2	Vinyl chloride	41	0.20		0

ft bgs - feet below ground surface

ug/L - Micrograms per liter

GW - groundwater

Sample location was excavated during remediation activities.

mg/kg - Milligrams per kilogram

MTCA - Model Toxics Control Act

Tables present detected chemicals only.

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.

b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).

c - For Table 9, the MTCA cleanup level is the value for diesel-range and heavy oil-range hydrocarbons.

For Table 9, exceedance factors are the ratio of the detected concentration to the MTCA cleanup level or the soil-to-sediment screening level, whichever level is lower. For Table 10, exceedance factors are the ratio of the detected concentration to the MTCA cleanup level or the groundwater-to-sediment screening level, whichever is lower.

Table 11
Chemicals Detected Above Screening Levels in Soil
Former Eastern Suppy Company

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
Dalton Olmsted 1991	10/11/1990	SD-3	Surface	Tetrachloroethene	8,500	0.05		170,000
Dalton Olmsted 1996b	2/27/1991	TP-2 (S-1)	1 - 2	Tetrachloroethene	4,900	0.05		98,000
Dalton Olmsted 1996b	2/27/1991	TP-1 (S-1)	1 - 2	Tetrachloroethene	3,800	0.05		76,000
Dalton Olmsted 1996b	2/27/1991	TP-1 (S-2)	5 - 6	Tetrachloroethene	2,700	0.05		54,000
Dalton Olmsted 1993	8/1/1991	W-2a (East wall)	5 - 7	Tetrachloroethene	1,700	0.05		34,000
E&E 1991	10/12/1990	MW-8	4.5	Tetrachloroethene	110	0.05		2,200
E&E 1991	10/10/1990	SD-1	Surface	Tetrachloroethene	55	0.05		1,100
Dalton Olmsted 1996b	2/27/1991	TP-5 (S-2)	5 - 6	Tetrachloroethene	47	0.05		940
E&E 1991	10/11/1990	SD-3	Surface	Tetrachloroethene	30	0.05		600
Dalton Olmsted 1991	10/12/1990	MW-3	4.5	Tetrachloroethene	25	0.05		500
Dalton Olmsted 1993	8/1/1991	W-3b (West wall)	6 - 8	Tetrachloroethene	23	0.05		460
Dalton Olmsted 1993	8/1/1991	W-4a (South wall)	1 - 3	Tetrachloroethene	12	0.05		240
Dalton Olmsted 1991	10/11/1990	SD-1	Surface	Tetrachloroethene	11	0.05		220
Dalton Olmsted 1991	10/12/1990	MW-3	9.5	Tetrachloroethene	9.7	0.05		194
Dalton Olmsted 1993	8/1/1991	W-2a (East wall)	1 - 3	Tetrachloroethene	6.0	0.05		120
E&E 1991	10/12/1990	MW-8	9.5	Tetrachloroethene	5.3	0.05		106
Dalton Olmsted 1996b	2/27/1991	TP-5 (S-1)	1 - 2	Tetrachloroethene	4.5	0.05		90
Dalton Olmsted 1996b	2/27/1991	TP-3 (S-2)	5 - 6	Tetrachloroethene	3.1	0.05		62
Dalton Olmsted 1996b	2/27/1991	TP-7 (S-1)	1 - 2	Tetrachloroethene	1.6	0.05		32
Dalton Olmsted 1996b	2/27/1991	TP-8 (S-1)	1 - 2	Tetrachloroethene	1.5	0.05		30
Dalton Olmsted 1996b	2/27/1991	TP-6 (S-1)	1 - 2	Tetrachloroethene	1.1	0.05		22
Dalton Olmsted 1993	8/1/1991	W-1a (North wall)	1 - 3	Tetrachloroethene	0.66	0.05		13
Dalton Olmsted 1996b	2/27/1991	TP-4 (S-2)	5 - 6	Tetrachloroethene	0.44	0.05		8.8
Dalton Olmsted 1996b	2/27/1991	TP-8 (S-2)	5 - 6	Tetrachloroethene	0.40	0.05		8.0
Dalton Olmsted 1993	8/1/1991	W-3a (West wall)	1 - 3	Tetrachloroethene	0.36	0.05		7.2
E&E 1991	10/11/1990	BH-1	9.5	Tetrachloroethene	0.31	0.05		6.2
E&E 1991	10/10/1990	MW-7	1.5	Tetrachloroethene	0.30	0.05		6.0
Dalton Olmsted 1996b	2/27/1991	TP-3 (S-1)	1 - 2	Tetrachloroethene	0.28	0.05		5.6
Dalton Olmsted 1996b	2/27/1991	TP-10 (S-1)	1 - 2	Tetrachloroethene	0.23	0.05		4.6
Dalton Olmsted 1993	8/1/1991	B-2 (Bottom of excavation)	NA	Tetrachloroethene	0.22	0.05		4.4
Dalton Olmsted 1996b	2/27/1991	TP-6 (S-2)	5 - 6	Tetrachloroethene	0.20	0.05		4.0
Dalton Olmsted 1996b	2/27/1991	TP-7 (S-2)	5 - 6	Tetrachloroethene	0.18	0.05		3.6
Dalton Olmsted 1991	10/11/1990	MW-2	9.5	Tetrachloroethene	0.17	0.05		3.4
Dalton Olmsted 1996b	2/27/1991	TP-10 (S-2)	5 - 6	Tetrachloroethene	0.14	0.05		2.8
Dalton Olmsted 1996b	2/27/1991	TP-4 (S-1)	1 - 2	Tetrachloroethene	0.13	0.05		2.6
Dalton Olmsted 1993	8/1/1991	B-1 (Bottom of excavation)	NA	Tetrachloroethene	0.13	0.05		2.6

Table 11
Chemicals Detected Above Screening Levels in Soil
Former Eastern Suppy Company

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
Dalton Olmsted 1996b	2/27/1991	TP-3 (S-2)	5 - 6	Trichloroethylene	51	0.03		1,700
Dalton Olmsted 1993	8/1/1991	W-3b (West wall)	6 - 8	Trichloroethylene	0.77	0.03		26
Dalton Olmsted 1991	10/11/1990	SD-1	Surface	Trichloroethylene	0.17	0.03		5.7
Dalton Olmsted 1993	8/1/1991	B-1 (Bottom of excavation)	NA	Trichloroethylene	0.066	0.03		2.2
Dalton Olmsted 1996b	2/27/1991	TP-10 (S-2)	5 - 6	Trichloroethylene	0.065	0.03		2.2

ft bgs - feet below ground surface

mg/kg - Milligrams per kilogram

MTCA - Model Toxics Control Act

Sample location was excavated during remediation activities.

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.

b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentration to the MTCA cleanup level or the soil-to-sediment screening level, whichever level is lower.

Table 12
Chemicals Detected Above Screening Levels in Groundwater
Former Eastern Supply Company

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dalton Olmsted 2005	4/5/2005	MW-27	1,2-Dichloroethene, cis-	6,180	16		386
Dalton Olmsted 2007	5/3/2007	MW-25	1,2-Dichloroethene, cis-	3,700	16		231
Dalton Olmsted 2005	4/5/2005	MW-25	1,2-Dichloroethene, cis-	3,550	16		222
Dalton Olmsted 2005	3/17/2004	MW-25	1,2-Dichloroethene, cis-	3,450	16		216
Dalton Olmsted 2006	4/19/2006	MW-25	1,2-Dichloroethene, cis-	3,370	16		211
Dalton Olmsted 2005	9/10/2004	MW-27	1,2-Dichloroethene, cis-	2,980	16		186
Dalton Olmsted 2005	3/17/2004	MW-27	1,2-Dichloroethene, cis-	2,850	16		178
Dalton Olmsted 2006	4/19/2006	MW-27	1,2-Dichloroethene, cis-	2,200	16		138
Dalton Olmsted 2005	9/10/2004	MW-26	1,2-Dichloroethene, cis-	2,140	16		134
Dalton Olmsted 2005	4/5/2005	MW-26	1,2-Dichloroethene, cis-	1,810	16		113
Dalton Olmsted 2006	4/19/2006	MW-13	1,2-Dichloroethene, cis-	1,540	16		96
Dalton Olmsted 2007	5/3/2007	MW-13	1,2-Dichloroethene, cis-	1,360	16		85
Dalton Olmsted 2005	3/17/2004	MW-26	1,2-Dichloroethene, cis-	1,190	16		74
Dalton Olmsted 2006	4/19/2006	MW-26	1,2-Dichloroethene, cis-	1,040	16		65
Dalton Olmsted 2006	4/19/2006	MW-28	1,2-Dichloroethene, cis-	716	16		45
Dalton Olmsted 2005	4/5/2005	MW-12S	1,2-Dichloroethene, cis-	505	16		32
Dalton Olmsted 2005	4/5/2005	MW-28	1,2-Dichloroethene, cis-	470	16		29
Dalton Olmsted 2005	9/10/2004	MW-28	1,2-Dichloroethene, cis-	356	16		22
Dalton Olmsted 2007	5/3/2007	MW-27	1,2-Dichloroethene, cis-	352	16		22
Dalton Olmsted 2006	4/19/2006	MW-12S	1,2-Dichloroethene, cis-	348	16		22
Dalton Olmsted 2007	5/3/2007	MW-26	1,2-Dichloroethene, cis-	309	16		19
Dalton Olmsted 2005	3/17/2004	MW-28	1,2-Dichloroethene, cis-	250	16		16
Dalton Olmsted 2007	5/3/2007	MW-28	1,2-Dichloroethene, cis-	216	16		14
Dalton Olmsted 2005	3/17/2004	MW-13	1,2-Dichloroethene, cis-	198	16		12
Dalton Olmsted 2005	4/5/2005	MW-13	1,2-Dichloroethene, cis-	174	16		11
Dalton Olmsted 2006	4/19/2006	MW-15	1,2-Dichloroethene, cis-	163	16		10
Dalton Olmsted 2007	5/3/2007	MW-12S	1,2-Dichloroethene, cis-	119	16		7.4
Dalton Olmsted 2005	4/5/2005	MW-15	1,2-Dichloroethene, cis-	114	16		7.1
Dalton Olmsted 2005	3/17/2004	MW-12S	1,2-Dichloroethene, cis-	93	16		5.8
Dalton Olmsted 2007	5/3/2007	MW-15	1,2-Dichloroethene, cis-	67	16		4.2
Dalton Olmsted 2005	3/17/2004	MW-15	1,2-Dichloroethene, cis-	64	16		4.0
Dalton Olmsted 2005	3/17/2004	MW-14	1,2-Dichloroethene, cis-	24	16		1.5

Table 12
Chemicals Detected Above Screening Levels in Groundwater
Former Eastern Supply Company

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dalton Olmsted 2005	4/5/2005	MW-27	1,2-Dichloroethene, trans-	262	160		1.6
Dalton Olmsted 1996a	12/13/1995	MW-9	Arsenic	98	0.058	370	1690
Dalton Olmsted 1996a	12/13/1995	MW-13	Arsenic	96	0.058	370	1655
Dalton Olmsted 1996a	12/13/1995	MW-16	Arsenic	32	0.058	370	552
Dalton Olmsted 1996a	12/13/1995	MW-15	Arsenic	10	0.058	370	171
Dalton Olmsted 1996a	12/13/1995	MW-12D	Cadmium	4.1	5.0	3.4	1.2
Dalton Olmsted 1996a	12/13/1995	MW-9	Chromium	210	50[c]	320	4.2
Dalton Olmsted 1996a	12/13/1995	MW-9	Iron	35,000	11,000		3.2
Dalton Olmsted 1996a	12/13/1995	MW-16	Iron	28,000	11,000		2.5
Dalton Olmsted 1996a	12/13/1995	MW-12D	Iron	26,000	11,000		2.4
Dalton Olmsted 1996a	12/13/1995	MW-15	Iron	14,000	11,000		1.3
Dalton Olmsted 1996a	12/13/1995	MW-13	Lead	31	15	13	2.4
Dalton Olmsted 1996a	12/13/1995	MW-9	Lead	27	15	13	2.1
Dalton Olmsted 1996a	12/13/1995	MW-16	Lead	17	15	13	1.3
Dalton Olmsted 1996a	12/13/1995	MW-9	Mercury	1.1	2.0	0.0074	149
Dalton Olmsted 2007	5/3/2007	MW-26	Methylene chloride	506	5.0		101
Dalton Olmsted 2005	4/5/2005	MW-27	Tetrachloroethene	5,600	5.0		1120
Dalton Olmsted 2005	3/17/2004	MW-27	Tetrachloroethene	3,120	5.0		624
Dalton Olmsted 2005	9/10/2004	MW-27	Tetrachloroethene	2,660	5.0		532
Dalton Olmsted 2006	4/19/2006	MW-27	Tetrachloroethene	1,370	5.0		274
Dalton Olmsted 2007	5/3/2007	MW-27	Tetrachloroethene	489	5.0		98
Dalton Olmsted 2007	5/3/2007	MW-26	Tetrachloroethene	440	5.0		88
Dalton Olmsted 2006	4/19/2006	MW-26	Tetrachloroethene	308	5.0		62
Dalton Olmsted 2007	5/3/2007	MW-28	Tetrachloroethene	262	5.0		52
Dalton Olmsted 2005	4/5/2005	MW-26	Tetrachloroethene	224	5.0		45
Dalton Olmsted 2006	4/19/2006	MW-28	Tetrachloroethene	151	5.0		30
Dalton Olmsted 2005	9/10/2004	MW-26	Tetrachloroethene	123	5.0		25
Dalton Olmsted 2005	3/17/2004	MW-26	Tetrachloroethene	113	5.0		23
Dalton Olmsted 2005	4/5/2005	MW-28	Tetrachloroethene	42	5.0		8.3
Dalton Olmsted 2005	9/10/2004	MW-28	Tetrachloroethene	36	5.0		7.2
Dalton Olmsted 2005	3/17/2004	MW-28	Tetrachloroethene	16	5.0		3.2
Dalton Olmsted 2006	4/19/2006	MW-25	Tetrachloroethene	16	5.0		3.2
Dalton Olmsted 2005	3/17/2004	MW-25	Tetrachloroethene	7.5	5.0		1.5

Table 12
Chemicals Detected Above Screening Levels in Groundwater
Former Eastern Supply Company

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dalton Olmsted 2005	4/5/2005	MW-27	Trichloroethylene	1,010	2.4		421
Dalton Olmsted 2005	3/17/2004	MW-27	Trichloroethylene	497	2.4		207
Dalton Olmsted 2005	9/10/2004	MW-27	Trichloroethylene	496	2.4		207
Dalton Olmsted 2006	4/19/2006	MW-27	Trichloroethylene	198	2.4		83
Dalton Olmsted 2005	9/10/2004	MW-26	Trichloroethylene	158	2.4		66
Dalton Olmsted 2005	4/5/2005	MW-26	Trichloroethylene	152	2.4		63
Dalton Olmsted 2005	3/17/2004	MW-26	Trichloroethylene	80	2.4		34
Dalton Olmsted 2006	4/19/2006	MW-28	Trichloroethylene	70	2.4		29
Dalton Olmsted 2007	5/3/2007	MW-27	Trichloroethylene	60	2.4		25
Dalton Olmsted 2005	4/5/2005	MW-28	Trichloroethylene	55	2.4		23
Dalton Olmsted 2006	4/19/2006	MW-26	Trichloroethylene	52	2.4		22
Dalton Olmsted 2007	5/3/2007	MW-26	Trichloroethylene	50	2.4		21
Dalton Olmsted 2007	5/3/2007	MW-28	Trichloroethylene	39	2.4		16
Dalton Olmsted 2005	9/10/2004	MW-28	Trichloroethylene	33	2.4		14
Dalton Olmsted 2005	3/17/2004	MW-28	Trichloroethylene	29	2.4		12
Dalton Olmsted 2006	4/19/2006	MW-25	Trichloroethylene	21	2.4		8.5
Dalton Olmsted 2005	3/17/2004	MW-25	Trichloroethylene	19	2.4		7.9
Dalton Olmsted 2007	5/3/2007	MW-25	Trichloroethylene	4.9	2.4		2.1
Dalton Olmsted 2005	4/5/2005	MW-25	Vinyl chloride	6,900	0.2		34500
Dalton Olmsted 2005	3/17/2004	MW-25	Vinyl chloride	2,850	0.2		14250
Dalton Olmsted 2007	5/3/2007	MW-13	Vinyl chloride	2,770	0.2		13850
Dalton Olmsted 2006	4/19/2006	MW-25	Vinyl chloride	2,020	0.2		10100
Dalton Olmsted 2007	5/3/2007	MW-25	Vinyl chloride	1,920	0.2		9600
Dalton Olmsted 2005	4/5/2005	MW-27	Vinyl chloride	1,830	0.2		9150
Dalton Olmsted 2006	4/19/2006	MW-13	Vinyl chloride	1,340	0.2		6700
Dalton Olmsted 2005	4/5/2005	MW-12S	Vinyl chloride	1,130	0.2		5650
Dalton Olmsted 2005	9/10/2004	MW-27	Vinyl chloride	880	0.2		4400
Dalton Olmsted 2007	5/3/2007	MW-12S	Vinyl chloride	712	0.2		3560
Dalton Olmsted 2005	4/5/2005	MW-26	Vinyl chloride	665	0.2		3325
Dalton Olmsted 2006	4/19/2006	MW-12S	Vinyl chloride	549	0.2		2745
Dalton Olmsted 2005	9/10/2004	MW-26	Vinyl chloride	532	0.2		2660
Dalton Olmsted 2005	4/5/2005	MW-13	Vinyl chloride	378	0.2		1890
Dalton Olmsted 2005	4/5/2005	MW-15	Vinyl chloride	344	0.2		1720

Table 12
Chemicals Detected Above Screening Levels in Groundwater
Former Eastern Supply Company

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dalton Olmsted 2005	3/17/2004	MW-27	Vinyl chloride	334	0.2		1670
Dalton Olmsted 2005	3/17/2004	MW-12S	Vinyl chloride	331	0.2		1655
Dalton Olmsted 2005	9/10/2004	MW-28	Vinyl chloride	245	0.2		1225
Dalton Olmsted 2005	4/5/2005	MW-28	Vinyl chloride	235	0.2		1175
Dalton Olmsted 2005	3/17/2004	MW-26	Vinyl chloride	181	0.2		905
Dalton Olmsted 2005	3/17/2004	MW-15	Vinyl chloride	164	0.2		820
Dalton Olmsted 2006	4/19/2006	MW-15	Vinyl chloride	146	0.2		730
Dalton Olmsted 2005	4/5/2005	MW-24	Vinyl chloride	117	0.2		585
Dalton Olmsted 2007	5/3/2007	MW-15	Vinyl chloride	112	0.2		560
Dalton Olmsted 2005	3/17/2004	MW-28	Vinyl chloride	65	0.2		325
Dalton Olmsted 2005	3/17/2004	MW-24	Vinyl chloride	43	0.2		214
Dalton Olmsted 2005	4/5/2005	MW-14	Vinyl chloride	38	0.2		188
Dalton Olmsted 2005	3/17/2004	MW-13	Vinyl chloride	37	0.2		184
Dalton Olmsted 2005	3/17/2004	MW-14	Vinyl chloride	31	0.2		155
Dalton Olmsted 2006	4/19/2006	MW-28	Vinyl chloride	31	0.2		154
Dalton Olmsted 2006	4/19/2006	MW-26	Vinyl chloride	14	0.2		70
Dalton Olmsted 2006	4/19/2006	MW-24	Vinyl chloride	6.7	0.2		34
Dalton Olmsted 2006	4/19/2006	MW-14	Vinyl chloride	3.9	0.2		19
Dalton Olmsted 2007	5/3/2007	MW-27	Vinyl chloride	2.2	0.2		11
Dalton Olmsted 2007	5/3/2007	MW-14	Vinyl chloride	2.0	0.2		10
Dalton Olmsted 2007	5/3/2007	MW-26	Vinyl chloride	1.7	0.2		8.3
Dalton Olmsted 2007	5/3/2007	MW-24	Vinyl chloride	1.0	0.2		5.2
Dalton Olmsted 2007	5/3/2007	MW-28	Vinyl chloride	0.64	0.2		3.2

ug/L - Micrograms per liter   MTCA - Model Toxics Control Act

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.

b - Based on CSL (SAIC 2006)

c - MTCA Method A cleanup level for Cr Total

Table presents detected chemicals only. For chlorinated solvents, only data since 2004 are presented. Full results are presented in Appendix C.

Exceedance factors are the ratio of the detected concentration to the MTCA cleanup level or groundwater-to-sediment screening level, whichever level is lower.

Table 13
Chemicals Detected Above Screening Levels in Soil
Former First Avenue Bridge Landfill and Central Wetlands Area

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
First Avenue Bridge Landfill								
Dames & Moore 1994	July 1992	MW-2	2.5	Arsenic	14	0.67	590	21
Dames & Moore 1994	July 1992	MW-1	2.5	Arsenic	6.0	0.67	590	9.0
Dames & Moore 1994	July 1992	MW-2	12.5	Copper	52	3,200	39	1.3
Dames & Moore 1994	July 1992	MW-2	12.5	Zinc	116	24,000	38	3.1
Dames & Moore 1994	July 1992	MW-1	2.5	Zinc	66	24,000	38	1.7
Central Wetlands Area								
Dames & Moore 1994	July 1992	MW-3	5.0	Arsenic	15	0.67	590	22
Dames & Moore 1994	April 1993	MW-17	6.0	Arsenic	8.3	0.67	590	12
Dames & Moore 1994	April 1993	MW-17	6.0	Arsenic	8.3	0.67	590	12
Dames & Moore 1994	July 1992	MW-9	10	Arsenic	8.0	0.67	590	12
Dames & Moore 1994	July 1992	MW-6	10	Arsenic	4.0	0.67	590	6.0
Dames & Moore 1994	July 1992	BH-4	2.5	Arsenic	3.0	0.67	590	4.5
Dames & Moore 1994	April 1993	MW-19	2.0	Arsenic	3.0	0.67	590	4.5
Dames & Moore 1994	April 1993	MW-17	4.0	Cadmium	4.3	2.0	1.7	2.5
Dames & Moore 1994	April 1993	MW-17	4.0	Copper	44	3,200	39	1.1
Dames & Moore 1994	July 1992	MW-6	10	Copper	40	3,200	39	1.0
Dames & Moore 1994	July 1992	MW-9	10	Mercury	0.20	2.0	0.030	6.7
Dames & Moore 1994	April 1993	MW-17	4.0	Zinc	76	24,000	38	2.0
Dames & Moore 1994	July 1992	MW-6	10	Zinc	67	24,000	38	1.8
Dames & Moore 1994	July 1992	MW-3	10	Zinc	51	24,000	38	1.3
Dames & Moore 1994	July 1992	BH-4	2.5	Zinc	40	24,000	38	1.1
Dames & Moore 1994	July 1992	MW-9	10	Zinc	39	24,000	38	1.0

ft bgs - feet below ground surface

mg/kg - milligrams per kilogram

MTCA - Model Toxics Control Act

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.

b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or the soil-to-sediment screening level, whichever level is lower.

Table 14
Chemicals Detected Above Screening Levels in Water Samples
Former First Avenue Bridge Landfill and Central Wetlands Area

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	GW-to-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Former First Avenue Bridge Landfill							
Dames & Moore 1994	September 1992	MW-2	Arsenic (dissolved)	130	0.058	370	2241
Dames & Moore 1994	April 1993	MW-2	Arsenic (dissolved)	62	0.058	370	1069
Dames & Moore 1994	July 1992	MW-2	Arsenic (total)	50	0.058	370	862
Dames & Moore 1994	July 1992	MW-1	Vinyl chloride	2.7	0.20		14
Central Wetlands Area							
Dames & Moore 1994	April 1993	MW-17	Arsenic (total)	17	0.058	370	293
Dames & Moore 1994	September 1992	MW-9	Arsenic (dissolved)	11	0.058	370	190
Dames & Moore 1994	July 1992	MW-9	Arsenic (dissolved)	10	0.058	370	172
Dames & Moore 1994	April 1993	MW-9	Arsenic (dissolved)	9.0	0.058	370	155
Dames & Moore 1994	April 1993	WA2-2	Arsenic	3.0	0.058	370	52
Dames & Moore 1994	April 1993	MW-19	Arsenic (total)	2.0	0.058	370	34
Dames & Moore 1994	April 1993	MW-17	Chromium (total)	61	50	320	1.2
Dames & Moore 1994	April 1993	MW-17	Lead (total)	14	15	13	1.1
Dames & Moore 1994	April 1993	WA2-2	Methylene chloride	13	5.0		2.6
Dames & Moore 1994	April 1993	WA2-2	Total petroleum hydrocarbons	610	500		1.2
Dames & Moore 1994	July 1992	MW-9	TPH-Diesel	580	500		1.2
Dames & Moore 1994	April 1993	MW-17	Zinc (total)	130	4,800	76	1.7

ug/L - Micrograms per liter

MTCA - Model Toxics Control Act

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.

b - Based on CSL (SAIC 2006)

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or groundwater-to-sediment screening level, whichever level is lower.

Table 15
Chemicals Detected Above Screening Levels in Soil
West Coast Equipment 2

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
KM&S 1995	2/1/1995	TPE4-1	4	Arsenic	400	0.67	590	597
KM&S 1995	2/1/1995	TPE2-1	4	Arsenic	360	0.67	590	537
KM&S 1995	2/1/1995	TPE1-1	4	Arsenic	290	0.67	590	433
KM&S 1995	2/1/1995	TPE5-1	4	Arsenic	200	0.67	590	299
GeoEngineers 1996	1/31/1996	TP4, #2	3.0 (CKD)	Arsenic	200	0.67	590	299
GeoEngineers 1996	1/31/1996	TP9, #2	2.5 (CKD)	Arsenic	160	0.67	590	239
GeoEngineers 1996	1/31/1996	TP5, #2	3.0 (CKD)	Arsenic	140	0.67	590	209
GeoEngineers 1996	1/31/1996	TP6, #2	2.0 (CKD)	Arsenic	130	0.67	590	194
GeoEngineers 1996	1/31/1996	TP2, #2	3.0 (CKD)	Arsenic	120	0.67	590	179
GeoEngineers 1996	1/30/1996	B3, #1	0 (slag/native)	Arsenic	100	0.67	590	149
GeoEngineers 1996	1/31/1996	TP10, #2	2.5 (CKD)	Arsenic	94	0.67	590	140
GeoEngineers 1996	1/31/1996	TP7, #2	3.0 (CKD)	Arsenic	94	0.67	590	140
GeoEngineers 1996	1/31/1996	TP3, #2	4.5 (CKD)	Arsenic	93	0.67	590	139
GeoEngineers 1996	1/30/1996	B2, #2	2.5 (CKD)	Arsenic	67	0.67	590	100
GeoEngineers 1996	2/2/1996	TP8, #2	2.5 (CKD)	Arsenic	67	0.67	590	100
KM&S 1995	2/1/1995	TPE1-2	0.5	Arsenic	64	0.67	590	96
KM&S 1995	2/1/1995	TPE2-2	0.5	Arsenic	52	0.67	590	78
GeoEngineers 1996	1/30/1996	TP2, #1	0.5 (slag)	Arsenic	50	0.67	590	75
GeoEngineers 1996	1/30/1996	TP1, #1	0.5 (slag)	Arsenic	45	0.67	590	67
KM&S 1995	2/1/1995	TPE4-2	0.5	Arsenic	34	0.67	590	51
GeoEngineers 1996	1/30/1996	TP1, #2	2.0 (CKD)	Arsenic	32	0.67	590	48
GeoEngineers 1996	1/31/1996	TP5, #3	6.5 (CKD)	Arsenic	32	0.67	590	48
KM&S 1995	2/1/1995	TPE5-2	0.5	Arsenic	28	0.67	590	42
GeoEngineers 1996	1/31/1996	TP7, #1	0.5 (native)	Arsenic	18	0.67	590	27
GeoEngineers 1996	1/31/1996	TP3, #1	0.5 (slag/native)	Arsenic	17	0.67	590	25
GeoEngineers 1996	2/2/1996	TP8, #1	0.5 (slag/native)	Arsenic	15	0.67	590	22
GeoEngineers 1996	1/31/1996	TP1, #4	9.0 (native)	Arsenic	11	0.67	590	16
GeoEngineers 1996	1/31/1996	TP9, #4	9.5 (native)	Arsenic	7.6	0.67	590	11
GeoEngineers 1996	1/31/1996	TP7, #4	12.5 (native)	Arsenic	6.7	0.67	590	10

Table 15
Chemicals Detected Above Screening Levels in Soil
West Coast Equipment 2

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
GeoEngineers 1996	1/31/1996	TP6, #4	12 (native)	Arsenic	5.6	0.67	590	8.4
GeoEngineers 1996	1/31/1996	TP2, #4	12 (native)	Arsenic	5.5	0.67	590	8.2
GeoEngineers 1996	2/2/1996	TP8, #4	9.5 (native)	Arsenic	3.5	0.67	590	5.2
GeoEngineers 1996	1/31/1996	TP3, #4	10.25 (native)	Arsenic	2.7	0.67	590	4.0
GeoEngineers 1996	1/31/1996	TP4, #4	10.75 (native)	Arsenic	2.3	0.67	590	3.4
GeoEngineers 1996	1/30/1996	B2, #1	0 (slag/native)	Barium	450	41		11
GeoEngineers 1996	1/31/1996	TP10, #1	0.5 (slag/native)	Barium	280	41		6.8
GeoEngineers 1996	1/31/1996	TP5, #1	0.5 (slag/native)	Barium	270	41		6.6
GeoEngineers 1996	1/31/1996	TP4, #1	0.5 (slag/native)	Barium	220	41		5.4
GeoEngineers 1996	1/31/1996	TP9, #1	0.5 (slag/native)	Barium	220	41		5.4
GeoEngineers 1996	1/30/1996	TP1, #1	0.5 (slag)	Barium	180	41		4.4
GeoEngineers 1996	1/30/1996	TP2, #1	0.5 (slag)	Barium	140	41		3.4
GeoEngineers 1996	1/31/1996	TP3, #2	4.5 (CKD)	Barium	65	41		1.6
GeoEngineers 1996	1/30/1996	B3, #3	5.0 (CKD)	Barium	58	41		1.4
GeoEngineers 1996	1/30/1996	B2, #2	2.5 (CKD)	Barium	57	41		1.4
GeoEngineers 1996	1/31/1996	TP5, #3	6.5 (CKD)	Barium	53	41		1.3
GeoEngineers 1996	1/31/1996	TP2, #2	3.0 (CKD)	Barium	50	41		1.2
GeoEngineers 1996	1/30/1996	B3, #5	10 (native)	Barium	47	41		1.1
GeoEngineers 1996	1/31/1996	TP9, #2	2.5 (CKD)	Barium	45	41		1.1
KM&S 1995	2/1/1995	TPE4-1	4	Cadmium	12	2.0	1.7	7.1
KM&S 1995	2/1/1995	TPE5-1	4	Cadmium	10	2.0	1.7	5.9
KM&S 1995	2/1/1995	TPE2-1	4	Cadmium	8.6	2.0	1.7	5.1
GeoEngineers 1996	1/31/1996	TP6, #2	2.0 (CKD)	Cadmium	6.6	2.0	1.7	3.9
KM&S 1995	2/1/1995	TPE1-1	4	Cadmium	5.9	2.0	1.7	3.5
KM&S 1995	2/1/1995	TPE5-2	0.5	Cadmium	5.7	2.0	1.7	3.4
GeoEngineers 1996	1/30/1996	B3, #1	0 (slag/native)	Cadmium	4.4	2.0	1.7	2.6
GeoEngineers 1996	2/2/1996	TP8, #2	2.5 (CKD)	Cadmium	3.7	2.0	1.7	2.2
GeoEngineers 1996	1/31/1996	TP3, #2	4.5 (CKD)	Cadmium	3.6	2.0	1.7	2.1
GeoEngineers 1996	1/31/1996	TP9, #2	2.5 (CKD)	Cadmium	3.5	2.0	1.7	2.1

Table 15
Chemicals Detected Above Screening Levels in Soil
West Coast Equipment 2

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
GeoEngineers 1996	1/31/1996	TP5, #2	3.0 (CKD)	Cadmium	3.4	2.0	1.7	2.0
GeoEngineers 1996	1/31/1996	TP4, #2	3.0 (CKD)	Cadmium	3.3	2.0	1.7	1.9
GeoEngineers 1996	1/31/1996	TP7, #2	3.0 (CKD)	Cadmium	3.2	2.0	1.7	1.9
GeoEngineers 1996	1/31/1996	TP10, #2	2.5 (CKD)	Cadmium	3.0	2.0	1.7	1.8
KM&S 1995	2/1/1995	TPE4-2	0.5	Cadmium	2.9	2.0	1.7	1.7
GeoEngineers 1996	1/31/1996	TP2, #2	3.0 (CKD)	Cadmium	2.8	2.0	1.7	1.6
KM&S 1995	2/1/1995	TPE1-2	0.5	Cadmium	1.9	2.0	1.7	1.1
KM&S 1995	2/1/1995	TPE2-2	0.5	Cadmium	1.9	2.0	1.7	1.1
KM&S 1995	2/1/1995	TPE2-2	0.5	Chromium	2,700		270	10
KM&S 1995	2/1/1995	TPE5-2	0.5	Chromium	2,200		270	8.1
GeoEngineers 1996	1/31/1996	TP9, #1	0.5 (slag/native)	Chromium	2,000		270	7.4
GeoEngineers 1996	1/31/1996	TP10, #1	0.5 (slag/native)	Chromium	1,900		270	7.0
GeoEngineers 1996	1/31/1996	TP5, #1	0.5 (slag/native)	Chromium	1,900		270	7.0
GeoEngineers 1996	1/31/1996	TP4, #1	0.5 (slag/native)	Chromium	1,700		270	6.3
KM&S 1995	2/1/1995	TPE1-2	0.5	Chromium	1,200		270	4.4
KM&S 1995	2/1/1995	TPE4-2	0.5	Chromium	940		270	3.5
GeoEngineers 1996	1/30/1996	TP2, #1	0.5 (slag)	Chromium	790		270	2.9
GeoEngineers 1996	1/30/1996	TP1, #1	0.5 (slag)	Chromium	320		270	1.2
GeoEngineers 1996	1/31/1996	TP5, #3	6.5 (CKD)	Lead	4,600	250	67	69
KM&S 1995	2/1/1995	TPE4-1	4	Lead	2,400	250	67	36
GeoEngineers 1996	1/30/1996	B3, #1	0 (slag/native)	Lead	2,200	250	67	33
KM&S 1995	2/1/1995	TPE2-1	4	Lead	1,900	250	67	28
KM&S 1995	2/1/1995	TPE1-1	4	Lead	1,100	250	67	16
KM&S 1995	2/1/1995	TPE5-1	4	Lead	1,100	250	67	16
GeoEngineers 1996	1/31/1996	TP4, #2	3.0 (CKD)	Lead	870	250	67	13
GeoEngineers 1996	1/31/1996	TP9, #2	2.5 (CKD)	Lead	830	250	67	12
GeoEngineers 1996	1/31/1996	TP5, #2	3.0 (CKD)	Lead	740	250	67	11
GeoEngineers 1996	1/31/1996	TP2, #2	3.0 (CKD)	Lead	720	250	67	11
GeoEngineers 1996	1/31/1996	TP3, #2	4.5 (CKD)	Lead	720	250	67	11

Table 15
Chemicals Detected Above Screening Levels in Soil
West Coast Equipment 2

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
GeoEngineers 1996	1/31/1996	TP10, #2	2.5 (CKD)	Lead	650	250	67	10
GeoEngineers 1996	1/31/1996	TP6, #2	2.0 (CKD)	Lead	640	250	67	10
GeoEngineers 1996	1/31/1996	TP7, #2	3.0 (CKD)	Lead	610	250	67	9.1
KM&S 1995	2/1/1995	TPE5-2	0.5	Lead	480	250	67	7.2
GeoEngineers 1996	2/2/1996	TP8, #2	2.5 (CKD)	Lead	410	250	67	6.1
GeoEngineers 1996	1/30/1996	TP2, #1	0.5 (slag)	Lead	360	250	67	5.4
GeoEngineers 1996	1/30/1996	B2, #1	0 (slag/native)	Lead	220	250	67	3.3
GeoEngineers 1996	1/30/1996	TP1, #1	0.5 (slag)	Lead	200	250	67	3.0
GeoEngineers 1996	1/30/1996	B2, #2	2.5 (CKD)	Lead	150	250	67	2.2
GeoEngineers 1996	1/31/1996	TP9, #1	0.5 (slag/native)	Lead	140	250	67	2.1
GeoEngineers 1996	1/31/1996	TP5, #1	0.5 (slag/native)	Lead	120	250	67	1.8
GeoEngineers 1996	1/31/1996	TP4, #1	0.5 (slag/native)	Lead	98	250	67	1.5
KM&S 1995	2/1/1995	TPE1-2	0.5	Lead	93	250	67	1.4
KM&S 1995	2/1/1995	TPE4-2	0.5	Lead	86	250	67	1.3
GeoEngineers 1996	1/31/1996	TP10, #1	0.5 (slag/native)	Lead	71	250	67	1.1
GeoEngineers 1996	2/2/1996	TP8, #1	0.5 (slag/native)	Lead	68	250	67	1.0
GeoEngineers 1996	1/31/1996	TP4, #1	0.5 (slag/native)	Mercury	0.17	2.0	0.030	5.7
KM&S 1995	2/1/1995	TPE1-2	0.5	Mercury	0.13	2.0	0.030	4.3
GeoEngineers 1996	1/30/1996	B2, #1	0 (slag/native)	Mercury	0.11	2.0	0.030	3.7
GeoEngineers 1996	1/31/1996	TP3, #2	4.5 (CKD)	Silver	9.5		0.61	16
GeoEngineers 1996	1/31/1996	TP7, #2	3.0 (CKD)	Silver	8.8		0.61	14
GeoEngineers 1996	1/31/1996	TP5, #2	3.0 (CKD)	Silver	8.3		0.61	14
GeoEngineers 1996	2/2/1996	TP8, #2	2.5 (CKD)	Silver	8.2		0.61	13
GeoEngineers 1996	1/31/1996	TP2, #2	3.0 (CKD)	Silver	8.0		0.61	13
GeoEngineers 1996	1/31/1996	TP10, #2	2.5 (CKD)	Silver	7.8		0.61	13
GeoEngineers 1996	1/31/1996	TP4, #2	3.0 (CKD)	Silver	7.5		0.61	12
GeoEngineers 1996	1/30/1996	B3, #1	0 (slag/native)	Silver	6.8		0.61	11
GeoEngineers 1996	1/31/1996	TP6, #2	2.0 (CKD)	Silver	6.3		0.61	10
GeoEngineers 1996	1/31/1996	TP3, #1	0.5 (slag/native)	Silver	5.6		0.61	9.2

Table 15
Chemicals Detected Above Screening Levels in Soil
West Coast Equipment 2

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
GeoEngineers 1996	1/30/1996	B2, #2	2.5 (CKD)	Silver	5.2		0.61	8.5
GeoEngineers 1996	1/31/1996	TP10, #1	0.5 (slag/native)	Silver	5.2		0.61	8.5
GeoEngineers 1996	1/31/1996	TP4, #1	0.5 (slag/native)	Silver	4.8		0.61	7.9
GeoEngineers 1996	1/31/1996	TP6, #1	0.5 (slag/native)	Silver	4.8		0.61	7.9
GeoEngineers 1996	2/2/1996	TP8, #1	0.5 (slag/native)	Silver	4.8		0.61	7.9
GeoEngineers 1996	1/31/1996	TP9, #1	0.5 (slag/native)	Silver	4.6		0.61	7.5
GeoEngineers 1996	1/30/1996	TP1, #1	0.5 (slag)	Silver	3.9		0.61	6.4
GeoEngineers 1996	1/30/1996	TP2, #1	0.5 (slag)	Silver	3.8		0.61	6.2
GeoEngineers 1996	1/31/1996	TP7, #1	0.5 (native)	Silver	3.5		0.61	5.7
GeoEngineers 1996	1/31/1996	TP5, #3	6.5 (CKD)	Silver	3.4		0.61	5.6
GeoEngineers 1996	1/30/1996	TP1, #2	2.0 (CKD)	Silver	1.7		0.61	2.8
GeoEngineers 1996	1/31/1996	TP5, #1	0.5 (slag/native)	Silver	1.7		0.61	2.8
GeoEngineers 1996	1/30/1996	B2, #1	0 (slag/native)	Silver	1.6		0.61	2.6
GeoEngineers 1996	2/2/1996	TP6, #3	6.5 (native)	Silver	1.5		0.61	2.5
GeoEngineers 1996	2/2/1996	TP7, #3	7.5 (native)	Silver	1.4		0.61	2.3
GeoEngineers 1996	2/2/1996	TP4, #3	6.5 (native)	Silver	1.1		0.61	1.8
GeoEngineers 1996	1/31/1996	TP9, #2	2.5 (CKD)	Silver	10		0.61	16
GeoEngineers 1996	2/2/1996	TP3, #3	7.0 (native)	Silver	1.7		0.61	2.8
GeoEngineers 1996	1/31/1996	TP9, #1	0.5 (slag/native)	TPH-Diesel	3,400	2,000		1.7
GeoEngineers 1996	1/31/1996	TP10, #1	0.5 (slag/native)	TPH-Diesel	2,800	2,000		1.4
GeoEngineers 1996	2/2/1996	TP8, #2	2.5 (CKD)	TPH-Gasoline[c]	210	30		7.0
GeoEngineers 1996	1/31/1996	TP9, #1	0.5 (slag/native)	TPH-Oil	5,500	2,000		2.8
GeoEngineers 1996	1/31/1996	TP10, #1	0.5 (slag/native)	TPH-Oil	4,200	2,000		2.1
KM&S 1995	2/1/1995	TPE4-1	4	Zinc	1,200	24,000	38	32
KM&S 1995	2/1/1995	TPE2-1	4	Zinc	960	24,000	38	25
KM&S 1995	2/1/1995	TPE1-1	4	Zinc	750	24,000	38	20
KM&S 1995	2/1/1995	TPE5-1	4	Zinc	690	24,000	38	18
KM&S 1995	2/1/1995	TPE5-2	0.5	Zinc	490	24,000	38	13
KM&S 1995	2/1/1995	TPE4-2	0.5	Zinc	260	24,000	38	6.8

Table 15
Chemicals Detected Above Screening Levels in Soil
West Coast Equipment 2

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
KM&S 1995	2/1/1995	TPE1-2	0.5	Zinc	120	24,000	38	3.2
KM&S 1995	2/1/1995	TPE2-2	0.5	Zinc	100	24,000	38	2.6

ft bgs - feet below ground surface

mg/kg - Milligrams per kilogram

MTCA - Model Toxics Control Act

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.

b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).

c - MTCA Method A cleanup level for TPH gasoline range organics with benzene present

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or the soil-to-sediment screening level, whichever level is lower.

Table 16
Chemicals Detected Above Screening Levels in Groundwater
West Coast Equipment 2

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
GeoEngineers 1996	2/2/1996	MW-9	Arsenic (total)	150	0.058	370	2,586
GeoEngineers 1996	2/2/1996	MW-9	Arsenic (dissolved)	120	0.058	370	2,069
GeoEngineers 1996	2/2/1996	MW-2	Arsenic (total)	65	0.058	370	1,121
GeoEngineers 1996	2/2/1996	MW-3	Arsenic (total)	53	0.058	370	914
GeoEngineers 1996	2/2/1996	MW-3	Arsenic (dissolved)	39	0.058	370	672
GeoEngineers 1996	2/2/1996	MW-2	Arsenic (dissolved)	7	0.058	370	121
GeoEngineers 1996	2/2/1996	MW-3	Benzene	0.85	0.80		1.1
GeoEngineers 1996	2/2/1996	MW-2	Chromium (total)	330	50	320	6.6
GeoEngineers 1996	2/2/1996	MW-9	Chromium (total)	180	50	320	3.6
GeoEngineers 1996	2/2/1996	MW-3	Chromium (total)	160	50	320	3.2
GeoEngineers 1996	2/2/1996	MW-9	Chromium (dissolved)	68	50	320	1.4
GeoEngineers 1996	2/2/1996	MW-3	Lead (total)	96	15	13	7.4
GeoEngineers 1996	2/2/1996	MW-2	Lead (total)	41	15	13	3.2
GeoEngineers 1996	2/2/1996	MW-9	Lead (total)	25	15	13	1.9
GeoEngineers 1996	2/2/1996	MW-9	Lead (dissolved)	20	15	13	1.5
GeoEngineers 1996	2/2/1996	MW-3	TPH-diesel	930	500		1.9
GeoEngineers 1996	2/2/1996	MW-2	TPH-diesel	680	500		1.4
GeoEngineers 1996	2/2/1996	MW-9	TPH-diesel	590	500		1.2
GeoEngineers 1996	2/2/1996	MW-3	TPH-oil	770	500		1.5

ug/L - Micrograms per liter

MTCA - Model Toxics Control Act

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.

b - Based on CSL (SAIC 2006)

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or groundwater-to-sediment screening level, whichever level is lower.

Table 17
Chemicals Detected Above Screening Levels in Soil
Kenyon Street Property

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
SES 2007	9/28/2006	B-04	4.0	Arsenic	327	0.67	590	488
SES 2007	9/28/2006	B-03	3.0	Arsenic	326	0.67	590	487
SES 2007	9/28/2006	B-06	8.0	Arsenic	326	0.67	590	487
SES 2007	9/28/2006	B-02	4.0	Arsenic	143	0.67	590	213
SES 2007	2/8/2007	B-12	7.5	Arsenic	110	0.67	590	164
SES 2007	9/28/2006	B-01	2.0	Arsenic	95	0.67	590	142
SES 2007	2/5/2007	B-09	8.0	Arsenic	30	0.67	590	45
SES 2007	2/5/2007	B-07	6.0	Arsenic	8.7	0.67	590	13
SES 2007	2/8/2007	B-10	10.5	Arsenic	6.6	0.67	590	9.9
SES 2007	2/8/2007	B-11	11.0	Arsenic	5.7	0.67	590	8.6
SES 2007	9/28/2006	B-04	11.0	Arsenic	5.7	0.67	590	8.5
SES 2007	2/5/2007	B-08	5.5	Arsenic	5.2	0.67	590	7.7
SES 2007	9/28/2006	B-04	14.5	Arsenic	4.3	0.67	590	6.3
SES 2007	2/8/2007	B-13	11.0	Arsenic	3.0	0.67	590	4.5
SES 2007	9/28/2006	B-06	8.0	Cadmium	9.1	2.0	1.7	5.3
SES 2007	9/28/2006	B-03	3.0	Cadmium	8.0	2.0	1.7	4.7
SES 2007	9/28/2006	B-04	4.0	Cadmium	6.8	2.0	1.7	4.0
SES 2007	2/5/2007	B-09	8.0	Cadmium	5.3	2.0	1.7	3.1
SES 2007	9/28/2006	B-02	4.0	Cadmium	4.4	2.0	1.7	2.6
SES 2007	2/5/2007	B-07	6.0	Cadmium	3.7	2.0	1.7	2.2
SES 2007	2/8/2007	B-12	7.5	Cadmium	2.3	2.0	1.7	1.3
SES 2007	9/28/2006	B-01	2.0	Cadmium	1.9	2.0	1.7	1.1
SES 2007	9/28/2006	B-06	8.0	Lead	2,550	250	67	38
SES 2007	9/28/2006	B-03	3.0	Lead	2,350	250	67	35
SES 2007	2/5/2007	B-09	8.0	Lead	2,100	250	67	31
SES 2007	9/28/2006	B-04	4.0	Lead	1,830	250	67	27
SES 2007	9/28/2006	B-02	4.0	Lead	1,320	250	67	20
SES 2007	2/8/2007	B-12	7.5	Lead	613	250	67	9.1
SES 2007	9/28/2006	B-01	2.0	Lead	546	250	67	8.1

Table 17
Chemicals Detected Above Screening Levels in Soil
Kenyon Street Property

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
SES 2007	9/28/2006	B-06	8.0	Silver	4.8	400	0.61	7.8
SES 2007	9/28/2006	B-04	4.0	Silver	3.9	400	0.61	6.4
SES 2007	9/28/2006	B-03	3.0	Silver	3.7	400	0.61	6.0
SES 2007	2/5/2007	B-09	8.0	Silver	2.3	400	0.61	3.7
SES 2007	9/28/2006	B-02	4.0	Silver	1.9	400	0.61	3.0
SES 2007	9/28/2006	B-01	2.0	Silver	1.2	400	0.61	1.9

ft bgs - feet below ground surface

mg/kg - Milligrams per kilogram

MTCA - Model Toxics Control Act

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.

b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or the soil-to-sediment screening level, whichever level is lower.

Table 18
Chemicals Detected Above Screening Levels in Groundwater
Kenyon Street Property

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
SES 2007	10/4/2006	MW-02	Arsenic	100	0.058	370	1724
SES 2007	2/12/2007	MW-04	Arsenic	99	0.058	370	1712
SES 2007	7/5/2007	MW-07	Arsenic	99	0.058	370	1703
SES 2007	7/5/2007	MW-04	Arsenic	85	0.058	370	1459
SES 2008	11/1/2007	MW-07	Arsenic	78	0.058	370	1343
SES 2007	4/20/2007	MW-04	Arsenic	56	0.058	370	962
SES 2007	7/5/2007	MW-02	Arsenic	56	0.058	370	959
SES 2008	11/1/2007	MW-02	Arsenic	41	0.058	370	703
SES 2007	7/5/2007	MW-06	Arsenic	36	0.058	370	628
SES 2008	11/1/2007	MW-06	Arsenic	28	0.058	370	474
SES 2007	7/5/2007	MW-05	Arsenic	23	0.058	370	402
SES 2007	10/4/2006	MW-01	Arsenic	23	0.058	370	391
SES 2007	10/4/2006	MW-03	Arsenic	21	0.058	370	362
SES 2008	11/1/2007	MW-05	Arsenic	17	0.058	370	286
SES 2008	11/1/2007	MW-01	Arsenic	15	0.058	370	264
SES 2007	7/5/2007	MW-08	Arsenic	15	0.058	370	252
SES 2007	2/12/2007	MW-05	Arsenic	14	0.058	370	236
SES 2008	11/1/2007	MW-08	Arsenic	13	0.058	370	222
SES 2007	4/20/2007	MW-05	Arsenic	11	0.058	370	186
SES 2007	2/6/2007	Stormwater-W	Arsenic	1.6	0.058	370	27
SES 2007	2/6/2007	Stormwater-E	Arsenic	1.5	0.058	370	27
SES 2007	2/6/2007	Stormwater-C	Arsenic	1.4	0.058	370	25
SES 2007	10/4/2006	MW-03	Chromium	71	50[c]	320	1.4
SES 2007	10/4/2006	MW-02	Lead	30	15	13	2.3
SES 2007	10/4/2006	MW-01	Lead	17	15	13	1.3

ug/L - Micrograms per liter

MTCA - Model Toxics Control Act

a - MTCA Method A cleanup level

b - Based on CSL (SAIC 2006)

c - MTCA Method A cleanup level for Cr Total

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or groundwater-to-sediment screening level, whichever level is lower.

Table 19
Chemicals Detected Above Screening Levels in Soil
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
Riley 2005c	Aug 2004	B-3	2 - 3	Arsenic	143	0.67	590	213
Riley 2005c	Aug 2004	B-1	2 - 3	Arsenic	44	0.67	590	66
Riley 2005c	Aug 2004	B-2	2.5 - 3.5	Arsenic	39	0.67	590	58
Riley 2005c	Aug 2004	B-1	5 - 6	Arsenic	37	0.67	590	55
Riley 2005c	Aug 2004	B-1	8.5 - 9.5	Arsenic	7.1	0.67	590	11
Riley 2005c	Aug 2004	B-5	5 - 6	Arsenic	4.3	0.67	590	6.5
Riley 2005c	Aug 2004	B-4	3 - 4	Arsenic	3.9	0.67	590	5.8
Riley 2005c	Aug 2004	B-3	4.5 - 5.5	Arsenic	3.7	0.67	590	5.5
Riley 2005c	Aug 2004	B-2	6.5 - 7.5	Arsenic	2.9	0.67	590	4.4
Riley 2005c	Aug 2004	B-4	6.5 - 7.5	Arsenic	2.1	0.67	590	3.1
Riley 2005c	Aug 2004	B-5	2 - 3	Arsenic	2.0	0.67	590	3.0
Riley 2005c	Aug 2004	B-2	9 - 10	Arsenic	1.3	0.67	590	1.9
Riley 1998b	9/2/1997	B2	12 (excavation floor)	Benzene	180	0.03		6,000
Riley 1998b	9/2/1997	SS2	8.0 (sidewall)	Benzene	84	0.03		2,800
Riley 1998b	9/2/1997	B3	12 (excavation floor)	Benzene	82	0.03		2,733
Riley 1998b	9/2/1997	ES1	8.0 (sidewall)	Benzene	56	0.03		1,867
Riley 1998b	9/2/1997	STP4	stockpile	Benzene	8.6	0.03		287
Riley 2005d	12/3/2004	B2	13	Benzene	0.45	0.03		15
Riley 2004c	5/31/1997	SB7	7.0	Benzene	0.42	0.03		14
Riley 2005d	12/3/2004	B10	6.0 (CKD)	Benzene	0.12	0.03		4.0
Riley 2005d	12/3/2004	B3	13	Benzene	0.061	0.03		2.0
Riley 2005d	12/3/2004	B5	6.0 (CKD)	Benzene	0.059	0.03		2.0
Riley 2005d	12/3/2004	B8	13	Benzene	0.032	0.03		1.1
Riley 2005c	Aug 2004	B-3	2 - 3	Cadmium	8.6	2.0	1.7	5.0
Riley 2005c	Aug 2004	B-1	2 - 3	Cadmium	2.9	2.0	1.7	1.7
Riley 2005c	Aug 2004	B-1	5 - 6	Cadmium	2.5	2.0	1.7	1.5

Table 19
Chemicals Detected Above Screening Levels in Soil
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
Riley 1998b	9/2/1997	B2	12 (excavation floor)	Ethylbenzene	330	6.0		55
Riley 1998b	9/2/1997	SS2	8.0 (sidewall)	Ethylbenzene	190	6.0		32
Riley 1998b	9/2/1997	B3	12 (excavation floor)	Ethylbenzene	180	6.0		30
Riley 1998b	9/2/1997	ES1	8.0 (sidewall)	Ethylbenzene	130	6.0		22
Riley 1998b	9/2/1997	STP4	stockpile	Ethylbenzene	41	6.0		6.8
Riley 1998b	9/2/1997	WS2	7.0 (sidewall)	Ethylbenzene	13	6.0		2.2
Riley 2005c	Aug 2004	B-3	2 - 3	Lead	2,210	250	67	33
Riley 2005c	Aug 2004	B-1	2 - 3	Lead	888	250	67	13
Riley 2005c	Aug 2004	B-1	5 - 6	Lead	719	250	67	11
Riley 2005c	Aug 2004	B-2	2.5 - 3.5	Lead	423	250	67	6.3
Riley 1998b	9/2/1997	B2	12 (excavation floor)	Toluene	590	7.0		84
Riley 1998b	9/2/1997	SS2	8.0 (sidewall)	Toluene	520	7.0		74
Riley 1998b	9/2/1997	B3	12 (excavation floor)	Toluene	450	7.0		64
Riley 1998b	9/2/1997	ES1	8.0 (sidewall)	Toluene	420	7.0		60
Riley 1998b	9/2/1997	STP4	stockpile	Toluene	110	7.0		16
Riley 1998b	9/2/1997	WS2	7.0 (sidewall)	Toluene	9.7	7.0		1.4
Riley 1998b	9/15/1997	SS4	8.0 (sidewall)	Total VPH[c]	1,890	30		63
Riley 1998b	9/15/1997	ES4	8.0 (sidewall)	Total VPH[c]	484	30		16
Riley 1998b	9/15/1997	WS2	7.0 (sidewall)	Total VPH[c]	406	30		14
Riley 2005d	12/3/2004	B2	13	TPH-Diesel	3,000	2,000		1.5
Riley 1998b	9/2/1997	B2	12 (excavation floor)	TPH-Gasoline[d]	17,000	30		567
Riley 1998b	9/2/1997	SS2	8.0 (sidewall)	TPH-Gasoline[d]	9,000	30		300
Riley 1998b	9/2/1997	B3	12 (excavation floor)	TPH-Gasoline[d]	8,800	30		293
Riley 1998b	9/2/1997	ES1	8.0 (sidewall)	TPH-Gasoline[d]	6,100	30		203
Riley 1998b	9/2/1997	STP4	stockpile	TPH-Gasoline[d]	2,600	30		87
Riley 1998b	9/2/1997	WS2	7.0 (sidewall)	TPH-Gasoline[d]	1,100	30		37
Riley 2005d	12/3/2004	B2	13	TPH-Gasoline[d]	190	30		6.3
Riley 2004c	5/31/1997	SB1	5.0	TPH-Gasoline[d]	85	30		2.8
Riley 2004c	5/31/1997	SB6	6.5	TPH-Oil	2,700	2,000		1.4

Table 19
Chemicals Detected Above Screening Levels in Soil
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
Riley 1998b	9/2/1997	B2	12 (excavation floor)	Xylenes	1,030	9.0		114
Riley 1998b	9/2/1997	SS2	8.0 (sidewall)	Xylenes	820	9.0		91
Riley 1998b	9/2/1997	B3	12 (excavation floor)	Xylenes	720	9.0		80
Riley 1998b	9/2/1997	ES1	8.0 (sidewall)	Xylenes	640	9.0		71
Riley 1998b	9/2/1997	STP4	stockpile	Xylenes	264	9.0		29
Riley 1998b	9/2/1997	WS2	7.0 (sidewall)	Xylenes	71	9.0		7.9
Riley 2005d	12/3/2004	B2	13	Xylenes	15	9.0		1.6

ft bgs - feet below ground surface
mg/kg - Milligrams per kilogram
MTCA - Model Toxics Control Act
VPH - volatile petroleum hydrocarbons

Sample location was excavated during remediation activities.

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.
b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).
c - Total VPH was compared to the MTCA cleanup level for TPH-Gasoline
d - MTCA Method A cleanup level for TPH gasoline range organics with benzene present
Table presents detected chemicals only.
Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or the soil-to-sediment screening level, whichever level is lower.

Table 20
Chemicals Detected Above Screening Levels in Groundwater
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
EPI 2006	5/18/2005	MW-11	Antimony (total)	9.0	6.4		1.4
EPI 2006	5/18/2005	MW-11	Antimony (dissolved)	8.0	6.4		1.3
EPI 2006	2/14/2006	MW-7R	Arsenic (dissolved)	91	0.058	370	1569
Riley 2005c	8/18/2004	MW-3	Arsenic (dissolved)	68	0.058	370	1172
Riley 2005c	8/18/2004	MW-4	Arsenic (dissolved)	59	0.058	370	1017
Riley 2005c	8/18/2004	MW-7	Arsenic (dissolved)	58	0.058	370	1000
EPI 2006	5/18/2005	MW-7R	Arsenic (total)	40	0.058	370	690
EPI 2006	5/18/2005	MW-11	Arsenic (total)	36	0.058	370	621
EPI 2006	2/14/2006	MW-1	Arsenic (dissolved)	35	0.058	370	603
EPI 2006	5/18/2005	MW-11	Arsenic (dissolved)	35	0.058	370	603
EPI 2006	5/18/2005	MW-3	Arsenic (total)	35	0.058	370	603
EPI 2006	5/18/2005	MW-3	Arsenic (dissolved)	34	0.058	370	586
EPI 2006	2/14/2006	MW-3	Arsenic (dissolved)	31	0.058	370	534
EPI 2006	8/30/2005	MW-7R	Arsenic (dissolved)	31	0.058	370	534
Riley 2005c	8/18/2004	MW-5	Arsenic (dissolved)	31	0.058	370	534
EPI 2006	2/14/2006	MW-5	Arsenic (dissolved)	30	0.058	370	517
Riley 2005c	Aug 2004	MW-4	Arsenic (dissolved)	30	0.058	370	517
EPI 2006	5/18/2005	MW-1	Arsenic (total)	30	0.058	370	517
EPI 2006	2/14/2006	MW-10	Arsenic (dissolved)	29	0.058	370	500
EPI 2006	8/30/2005	MW-11	Arsenic (dissolved)	29	0.058	370	500
EPI 2006	5/18/2005	MW-5	Arsenic (total)	29	0.058	370	500
EPI 2006	5/18/2005	MW-7R	Arsenic (dissolved)	28	0.058	370	483
Riley 2005c	8/18/2004	MW-2	Arsenic (dissolved)	27	0.058	370	466
EPI 2006	8/30/2005	MW-3	Arsenic (dissolved)	26	0.058	370	448
EPI 2006	5/18/2005	MW-4	Arsenic (total)	26	0.058	370	448
EPI 2006	8/30/2005	MW-5	Arsenic (dissolved)	24	0.058	370	414
Riley 2005c	Aug 2004	MW-2	Arsenic (dissolved)	24	0.058	370	410
EPI 2006	5/18/2005	MW-4	Arsenic (dissolved)	23	0.058	370	397
Riley 2005c	8/18/2004	MW-1	Arsenic (dissolved)	23	0.058	370	397

Table 20
Chemicals Detected Above Screening Levels in Groundwater
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
EPI 2006	11/22/2005	MW-3	Arsenic (total)	23	0.058	370	397
EPI 2006	5/18/2005	MW-1	Arsenic (dissolved)	22	0.058	370	379
EPI 2006	8/30/2005	MW-1	Arsenic (dissolved)	22	0.058	370	379
EPI 2006	11/22/2005	MW-7R	Arsenic (total)	22	0.058	370	379
EPI 2006	11/22/2005	MW-11	Arsenic (total)	22	0.058	370	379
EPI 2006	11/22/2005	MW-7R	Arsenic (dissolved)	21	0.058	370	362
EPI 2006	8/31/2005	MW-6	Arsenic (dissolved)	20	0.058	370	345
EPI 2006	2/14/2006	MW-9	Arsenic (dissolved)	20	0.058	370	345
EPI 2006	11/22/2005	MW-11	Arsenic (dissolved)	20	0.058	370	345
EPI 2006	5/18/2005	MW-10	Arsenic (total)	20	0.058	370	345
Riley 2005c	8/18/2004	MW-8	Arsenic (dissolved)	19	0.058	370	328
EPI 2006	11/22/2005	MW-1	Arsenic (total)	19	0.058	370	328
EPI 2006	11/22/2005	MW-3	Arsenic (dissolved)	18	0.058	370	310
EPI 2006	8/30/2005	MW-4	Arsenic (dissolved)	18	0.058	370	310
EPI 2006	11/22/2005	MW-10	Arsenic (total)	18	0.058	370	310
EPI 2006	11/22/2005	MW-6	Arsenic (total)	17	0.058	370	293
EPI 2006	11/22/2005	MW-1	Arsenic (dissolved)	16	0.058	370	276
EPI 2006	5/18/2005	MW-5	Arsenic (dissolved)	15	0.058	370	259
EPI 2006	11/22/2005	MW-10	Arsenic (dissolved)	15	0.058	370	259
EPI 2006	2/14/2006	MW-11	Arsenic (dissolved)	15	0.058	370	259
EPI 2006	5/18/2005	MW-9	Arsenic (total)	15	0.058	370	259
EPI 2006	11/22/2005	MW-5	Arsenic (dissolved)	14	0.058	370	241
EPI 2006	11/22/2005	MW-5	Arsenic (total)	14	0.058	370	241
EPI 2006	8/31/2005	MW-9	Arsenic (dissolved)	13	0.058	370	224
EPI 2006	5/18/2005	MW-2	Arsenic (total)	13	0.058	370	224
EPI 2006	5/18/2005	MW-2	Arsenic (dissolved)	12	0.058	370	207
EPI 2006	8/31/2005	MW-10	Arsenic (dissolved)	11	0.058	370	190
EPI 2006	11/22/2005	MW-4	Arsenic (total)	11	0.058	370	190
EPI 2006	11/22/2005	MW-9	Arsenic (total)	10	0.058	370	172

Table 20
Chemicals Detected Above Screening Levels in Groundwater
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Riley 2005c	Aug 2004	MW-1	Arsenic (dissolved)	9.9	0.058	370	171
EPI 2006	11/22/2005	MW-4	Arsenic (dissolved)	9.0	0.058	370	155
EPI 2006	5/18/2005	MW-9	Arsenic (dissolved)	9.0	0.058	370	155
EPI 2006	11/22/2005	MW-2	Arsenic (total)	9.0	0.058	370	155
EPI 2006	5/18/2005	MW-10	Arsenic (dissolved)	7.0	0.058	370	121
EPI 2006	11/22/2005	MW-9	Arsenic (dissolved)	5.0	0.058	370	86
Riley 2000a	11/10/1999	MW-1	Benzene	13,000	0.80		16,250
Riley 2000b	3/7/2000	MW-1	Benzene	6,100	0.80		7,625
Riley 1999a	3/23/1999	MW-2	Benzene	6,000	0.80		7,500
Riley 2000a	11/10/1999	MW-4	Benzene	2,800	0.80		3,500
Riley 2004a	7/27/2001	MW-1	Benzene	2,200	0.80		2,750
Riley 2004a	5/1/2001	MW-1	Benzene	1,500	0.80		1,875
Riley 1999a	3/23/1999	MW-3	Benzene	1,200	0.80		1,500
Riley 2000b	3/7/2000	MW-4	Benzene	510	0.80		638
Riley 2005i	7/9/1999	MW-1	Benzene	410	0.80		513
Riley 2005i	7/9/1999	MW-4	Benzene	320	0.80		400
Riley 2005i	7/9/1999	MW-2	Benzene	310	0.80		388
Riley 2000a	11/10/1999	MW-2	Benzene	110	0.80		138
Riley 2000b	3/7/2000	MW-2	Benzene	59	0.80		74
Riley 2005i	7/9/1999	MW-3	Benzene	54	0.80		68
Riley 1999a	3/23/1999	MW-4	Benzene	51	0.80		64
Riley 2004a	7/27/2001	MW-4	Benzene	13	0.80		16
Riley 2004a	5/1/2001	MW-2	Benzene	10	0.80		13
Riley 2005a	12/10/2004	MW-1	Benzene	8.6	0.80		11
Riley 2000b	3/7/2000	MW-3	Benzene	7.0	0.80		8.8
Riley 2004a	6/30/2003	MW-4	Benzene	6.8	0.80		8.5
Riley 2004a	6/11/2002	MW-4	Benzene	4.2	0.80		5.3
Riley 2004a	5/1/2001	MW-4	Benzene	4.0	0.80		5.0
Riley 2004a	1/28/2004	MW-4	Benzene	2.8	0.80		3.5

Table 20
Chemicals Detected Above Screening Levels in Groundwater
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Riley 2004a	6/30/2003	MW-2	Benzene	2.8	0.80		3.5
Riley 2004a	1/14/2003	MW-4	Benzene	2.7	0.80		3.4
Riley 2004a	6/11/2002	MW-1	Benzene	2.2	0.80		2.8
Riley 2005i	7/27/2001	MW-2	Benzene	2.0	0.80		2.5
Riley 2004a	6/30/2003	MW-1	Benzene	1.5	0.80		1.9
Riley 2005a	12/10/2004	MW-4	Benzene	1.4	0.80		1.8
Riley 2004a	1/14/2003	MW-1	Benzene	1.3	0.80		1.6
Riley 2004f	9/23/2004	MW-1	Benzene	1.1	0.80		1.4
EPI 2006	8/31/2005	MW-6	Cadmium (dissolved)	31	5.0	3.4	9.1
Riley 2000a	11/10/1999	MW-1	Ethylbenzene	1,100	700		1.6
Riley 2000b	3/7/2000	MW-1	Ethylbenzene	820	700		1.2
Riley 2004a	7/27/2001	MW-1	Ethylbenzene	720	700		1.0
EPI 2006	8/31/2005	MW-10	Lead (dissolved)	28	15	13	2.2
EPI 2006	5/18/2005	MW-3	Lead (total)	16	15	13	1.2
EPI 2006	5/18/2005	MW-7R	Lead (total)	15	15	13	1.2
EPI 2006	5/18/2005	MW-11	Mercury (total)	3.2	2.0	0.0074	432
EPI 2006	5/18/2005	MW-11	Mercury (dissolved)	1.1	2.0	0.0074	149
EPI 2006	5/18/2005	MW-2	Mercury (total)	0.40	2.0	0.0074	54
EPI 2006	5/18/2005	MW-10	Mercury (total)	0.20	2.0	0.0074	27
EPI 2006	5/18/2005	MW-2	Thallium (dissolved)	4.0			
EPI 2006	5/18/2005	MW-2	Thallium (total)	4.0			
Riley 2000a	11/10/1999	MW-1	Toluene	2,600	640		4.1
Riley 2005i	7/9/1999	MW-2	Toluene	840	640		1.3
Riley 1999a	3/23/1999	MW-2	Toluene	840	640		1.3
Riley 2000a	11/3/1999	MW-7	TPH-diesel	5,000	500		10
Riley 2000a	11/10/1999	MW-1	TPH-diesel	2,900	500		5.8
Riley 2000a	11/3/1999	MW-5	TPH-diesel	2,400	500		4.8
Riley 2005i	3/7/2000	MW-7	TPH-diesel	2,000	500		4.0
Riley 1999a	3/23/1999	MW-2	TPH-diesel	1,400	500		2.8

Table 20
Chemicals Detected Above Screening Levels in Groundwater
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Riley 2000b	3/7/2000	MW-1	TPH-diesel	1,100	500		2.2
Riley 2005a	12/10/2004	MW-7	TPH-diesel	1,000	500		2.0
Riley 2004a	5/1/2001	MW-7	TPH-diesel	720	500		1.4
Riley 2000a	11/10/1999	MW-4	TPH-diesel	690	500		1.4
Riley 2004a	5/1/2001	MW-1	TPH-diesel	560	500		1.1
Riley 2005i	7/9/1999	MW-1	TPH-diesel	510	500		1.0
Riley 2000a	11/10/1999	MW-1	TPH-gasoline	16,000	800		20
Riley 2000b	3/7/2000	MW-1	TPH-gasoline	5,500	800		6.9
Riley 1999a	3/23/1999	MW-2	TPH-gasoline	5,400	800		6.8
Riley 2004a	7/27/2001	MW-1	TPH-gasoline	3,100	800		3.9
Riley 2004a	5/1/2001	MW-1	TPH-gasoline	2,000	800		2.5
Riley 2005i	7/9/1999	MW-2	TPH-gasoline	1,200	800		1.5
Riley 2000a	11/10/1999	MW-4	TPH-gasoline	890	800		1.1
Riley 2005i	7/9/1999	MW-1	TPH-gasoline	820	800		1.0
Riley 2005a	12/10/2004	MW-7	TPH-oil	17,000	500		34
Riley 2004a	6/11/2002	MW-7	TPH-oil	3,800	500		7.6
Riley 2004a	6/30/2003	MW-7	TPH-oil	3,700	500		7.4
Riley 2004a	1/14/2003	MW-7	TPH-oil	2,900	500		5.8
Riley 2004a	1/28/2004	MW-7	TPH-oil	1,700	500		3.4
Riley 2004a	1/28/2004	MW-4	TPH-oil	1,300	500		2.6
Riley 1999a	3/23/1999	MW-2	TPH-oil	830	500		1.7
Riley 2005a	12/10/2004	MW-4	TPH-oil	810	500		1.6
Riley 2005i	7/9/1999	MW-1	TPH-oil	700	500		1.4
Riley 2005i	7/9/1999	MW-4	TPH-oil	650	500		1.3
Riley 2005i	7/9/1999	MW-2	TPH-oil	540	500		1.1
Riley 2005i	7/9/1999	MW-3	TPH-oil	530	500		1.1
Riley 1999a	3/23/1999	MW-1	TPH-oil	520	500		1.0
EPI 2006	5/18/2005	MW-11	Trichloroethylene	3.0	2.4		1.3
Riley 2000a	11/10/1999	MW-1	Xylenes	1,800	1,600		1.1

Table 20
Chemicals Detected Above Screening Levels in Groundwater
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor

ug/L - Micrograms per liter

MTCA - Model Toxics Control Act

Before groundwater remediation

a - MTCA Method A cleanup level

b - Based on CSL (SAIC 2006)

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or groundwater-to-sediment screening level, whichever level is lower.

Table 21
Chemicals Detected Above Screening Levels in Soil
Former Northwest Enviroservice Onsite Spill Area (Verification Sampling)

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
CH2M Hill 1997	Oct 1995	AP3	1.0	1,1,1-TCA	5.0	2.0		2.5
CH2M Hill 1997	Oct 1995	W2	3.0	Arsenic	8.0	0.67	590	12
CH2M Hill 1997	Oct 1995	W2	7.0	Benzene	3.0	0.03		100
CH2M Hill 1997	Oct 1995	E3	4.0	Benzene	0.50	0.03		17
CH2M Hill 1997	Oct 1995	W2	3.0	Ethylbenzene	16	6.0		2.7
CH2M Hill 1997	Oct 1995	W2	3.0	Toluene	75	7.0		11
CH2M Hill 1997	Oct 1995	W2	3.0	TPH	180	30		6.0
CH2M Hill 1997	Oct 1995	AP2	1.0	TPH	170	30		5.7
CH2M Hill 1997	Oct 1995	AP3	1.0	TPH	170	30		5.7
CH2M Hill 1997	Oct 1995	B3	7.0	TPH	140	30		4.7
CH2M Hill 1997	Oct 1995	Slope 2	2.5	TPH	120	30		4.0
CH2M Hill 1997	Oct 1995	AP2	2.0	TPH	120	30		4.0
CH2M Hill 1997	Oct 1995	Slope 1	2.0	TPH	97	30		3.2
CH2M Hill 1997	Oct 1995	SS-107	5.0	TPH	85	30		2.8
CH2M Hill 1997	Oct 1995	R4	5.0	TPH	52	30		1.7
CH2M Hill 1997	Oct 1995	SS-122	3.0	TPH	48	30		1.6
CH2M Hill 1997	Oct 1995	SS-141	Surface	TPH	39	30		1.3
CH2M Hill 1997	Oct 1995	AP5	1.0	TPH	32	30		1.1
CH2M Hill 1997	Oct 1995	W2	3.0	Xylenes	130	9.0		14

ft bgs - feet below ground surface
mg/kg - Milligrams per kilogram
MTCA - Model Toxics Control Act
VPH - volatile petroleum hydrocarbons

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.
b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).
MTCA Method A cleanup level for TPH gasoline range organics with benzene present
Table presents detected chemicals only.
Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or the soil-to-sediment screening level, whichever level is lower.

Table 22
Chemicals Detected Above Screening Levels in Soil
Kenyon Business Park

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
DEI 1992	3/11/1992	MW-6	3.5	Diesel-range hydrocarbons	15000	2000		7.5
DEI 1992	3/11/1992	MW-4	8.5	Diesel-range hydrocarbons	5800	2000		2.9
DEI 1992	3/11/1992	MW-5	8.5	Diesel-range hydrocarbons	5000	2000		2.5
DEI 1992	3/11/1992	MW-4	3.5	Diesel-range hydrocarbons	3800	2000		1.9
DEI 1992	3/11/1992	MW-6	8.5	Diesel-range hydrocarbons	2400	2000		1.2
BBL 1995	10/16/1995	MW-3A	6.5	Methylene Chloride	0.24 J	0.02		12
DEI 1992	3/11/1992	MW-4	8.5	Methylene Chloride	0.062	0.02		3.1
BBL 1995	10/16/1995	MW-1A	5	Methylene Chloride	0.051 J	0.02		2.6
DEI 1992	3/11/1992	MW-4	3.5	Methylene Chloride	0.047	0.02		2.4
BBL 1995	10/18/1995	HP-5	5	Methylene Chloride	0.047 J	0.02		2.4
BBL 1995	10/17/1995	HP-4	5	Methylene Chloride	0.039 J	0.02		2.0
DEI 1992	3/11/1992	B-2	8.5	Methylene Chloride	0.034	0.02		1.7
DEI 1992	3/11/1992	B-3	3	Methylene Chloride	0.021	0.02		1.1
DEI 1992	3/11/1992	MW-5	8.5	Methylene Chloride	0.021	0.02		1.1
BBL 1995	10/18/1995	HP-2	5	Trichloroethene	0.055 J	0.03		1.8
BBL 1995	10/18/1995	HP-1	5	Trichloroethene	0.044 J	0.03		1.5

ft bgs - feet below ground surface

mg/kg - Milligrams per kilogram

MTCA - Model Toxics Control Act

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.

b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or the soil-to-sediment screening level, whichever level is lower.

Table 23
Chemicals Detected Above Screening Levels in Groundwater
Kenyon Business Park

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
BBL 1995	9/25/1995	MW-6	cis-1,2-Dichloroethene	20	16		1.3
BBL 1995	10/17/1995	HP-5	Arsenic	5700	0.058	370	98276
BBL 1995	9/25/1995	MW-5	Arsenic	980	0.058	370	16897
BBL 1995	10/17/1995	HP-3	Arsenic	760	0.058	370	13103
BBL 1995	10/17/1995	HP-4	Arsenic	660	0.058	370	11379
BBL 1995	10/18/1995	HP-6	Arsenic	340	0.058	370	5862
BBL 1995	10/18/1995	HP-2	Arsenic	200	0.058	370	3448
BBL 1995	10/18/1995	HP-1	Arsenic	89	0.058	370	1534
BBL 1995	10/20/1995	MW-1A	Arsenic	40	0.058	370	690
BBL 1995	10/20/1995	MW-3A	Arsenic	35	0.058	370	603
BBL 1995	9/25/1995	MW-4	Arsenic	7.8	0.058	370	134
BBL 1995	9/25/1995	MW-7	Arsenic	7.3	0.058	370	126
BBL 1995	9/25/1995	MW-8	Arsenic	4.5	0.058	370	78
BBL 1995	10/17/1995	HP-4	Barium	35000	3200		11
BBL 1995	10/17/1995	HP-5	Barium	8900	3200		2.8
BBL 1995	10/17/1995	HP-3	Barium	8800	3200		2.8
BBL 1995	9/25/1995	MW-4	Barium	4600	3200		1.4
BBL 1995	10/20/1995	MW-3A	Barium	3500	3200		1.1
BBL 1995	9/25/1995	MW-2B	Benzene	670	5		134
DEI 1992	11/1/1989	MW-2B	Benzene	300	5		60
DEI 1992	4/14/1992	MW-2B	Benzene	210	5		42
BBL 1995	9/25/1995	MW-6	Benzene	15	5		3.0
BBL 1995	9/25/1995	MW-5	Benzene	14 J	5		2.8
BBL 1995	10/18/1995	HP-2	Benzene	6.8	5		1.4
BBL 1995	10/17/1995	HP-5	Cadmium	280	5	3.4	82
BBL 1995	10/17/1995	HP-4	Cadmium	270	5	3.4	79
BBL 1995	10/17/1995	HP-3	Cadmium	15	5	3.4	4.4
BBL 1995	10/20/1995	MW-3A	Cadmium	10	5	3.4	2.9

Table 23
Chemicals Detected Above Screening Levels in Groundwater
Kenyon Business Park

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
DEI 1992	11/1/1989	MW-2B	Chlorobenzene	3730	160		23
BBL 1995	9/25/1995	MW-2B	Chlorobenzene	1500	160		9.4
DEI 1992	4/14/1992	MW-2B	Chlorobenzene	320	160		2.0
BBL 1995	10/17/1995	HP-5	Chromium	3000	80	320	38
BBL 1995	10/17/1995	HP-3	Chromium	2900	80	320	36
BBL 1995	10/18/1995	HP-6	Chromium	2000	80	320	25
BBL 1995	10/17/1995	HP-4	Chromium	1300	80	320	16
BBL 1995	10/18/1995	HP-2	Chromium	510	80	320	6.4
BBL 1995	10/18/1995	HP-1	Chromium	330	80	320	4.1
BBL 1995	9/25/1995	MW-5	Chromium	120	80	320	1.5
BBL 1995	10/20/1995	MW-3A	Chromium	91	80	320	1.1
DEI 1992	3/11/1992	MW-2B	Diesel-range hydrocarbons	1,400	500		2.8
DEI 1992	3/11/1992	MW-5	Diesel-range hydrocarbons	670	500		1.3
BBL 1995	10/17/1995	HP-4	Lead	76000	15	13	5846
BBL 1995	10/17/1995	HP-5	Lead	9500	15	13	731
BBL 1995	10/17/1995	HP-3	Lead	2500	15	13	192
BBL 1995	10/20/1995	MW-3A	Lead	1500	15	13	115
BBL 1995	10/18/1995	HP-6	Lead	910	15	13	70
BBL 1995	10/18/1995	HP-1	Lead	180	15	13	14
BBL 1995	10/18/1995	HP-2	Lead	150	15	13	12
BBL 1995	9/25/1995	MW-5	Lead	130	15	13	10
BBL 1995	9/25/1995	MW-2B	Lead	110	15	13	8.5
BBL 1995	9/25/1995	MW-4	Lead	90	15	13	6.9
BBL 1995	10/20/1995	MW-1A	Lead	18	15	13	1.4

Table 23
Chemicals Detected Above Screening Levels in Groundwater
Kenyon Business Park

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
BBL 1995	9/25/1995	MW-6	Methylene Chloride	160	5		32
DEI 1992	11/1/1989	MW-2B	Methylene Chloride	70	5		14
BBL 1995	9/25/1995	MW-2B	Methylene Chloride	24	5		4.8
BBL 1995	9/25/1995	MW-8	Methylene Chloride	20	5		4.0
BBL 1995	9/25/1995	MW-4	Methylene Chloride	18	5		3.6
BBL 1995	9/25/1995	MW-7	Methylene Chloride	15	5		3.0
BBL 1995	9/25/1995	MW-5	Naphthalene	260	160		1.6
BBL 1995	10/17/1995	HP-4	Silver	95	80		1.2
BBL 1995	10/17/1995	HP-3	Total Petroleum Hydrocarbons	22000	800		28
BBL 1995	10/17/1995	HP-5	Total Petroleum Hydrocarbons	13000	800		16
BBL 1995	9/25/1995	MW-5	Total Petroleum Hydrocarbons	2400	800		3.0
BBL 1995	9/25/1995	MW-6	Vinyl Chloride	43	0.2		215
BBL 1995	10/20/1995	MW-3A	Vinyl Chloride	1.9 J	0.2		9.5
BBL 1995	10/18/1995	HP-1	Vinyl Chloride	0.55 J	0.2		2.8

ug/L - Micrograms per liter

MTCA - Model Toxics Control Act

a - MTCA Method A cleanup level

b - Based on CSL (SAIC 2006)

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or groundwater-to-sediment screening level, whichever level is lower.

Appendix A

Sediment Sampling Results

1st Avenue S SD
Source Control Area

Table A-1
Surface Sediment Sampling Results
1st Avenue S SD Source Control Area

Event Name	Location Name	Date Collected	Chemical	Concentration (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS*	CSL*	Units	SQS Exceedance Factor	CSL Exceedance Factor
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	1,2,3,4,6,7,8-HpCDD	3.11E-04	0.98						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	1,2,3,4,6,7,8-HpCDF	2.78E-05	0.98						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	1,2,3,4,7,8,9-HpCDF	1.81E-06 J	0.98						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	1,2,3,4,7,8-HxCDD	2.37E-06 J	0.98						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	1,2,3,4,7,8-HxCDF	2.92E-06 J	0.98						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	1,2,3,6,7,8-HxCDD	8.79E-06	0.98						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	1,2,3,6,7,8-HxCDF	1.01E-06 J	0.98						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	1,2,3,7,8,9-HxCDD	7.65E-06	0.98						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	1,2,3,7,8,9-HxCDF	1.04E-07 J	0.98						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	1,2,3,7,8-PeCDD	1.28E-06 J	0.98						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	1,2,3,7,8-PeCDF	3.85E-07 J	0.98						
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	1,4-Dichlorobenzene	6.80E-02	1.95	3.49E+00	3.1	9.0	mg/kg OC	1.1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	1,4-Dichlorobenzene	1.20E-02	1.24	9.68E-01	3.1	9.0	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	1-Methylnaphthalene	1.10E-02	0.89						
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	1-Methylnaphthalene	1.20E-02 J	0.43						
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	1-Methylnaphthalene	1.10E-02 J	1.95						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	2,3,7,8-TCDD	4.38E-07 J	0.98						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	2,3,7,8-TCDF	7.39E-07 J	0.98						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	2,3,4,7,8-PeCDF	8.37E-07 J	0.98						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	2,3,4,6,7,8-HxCDF	8.67E-07 J	0.98						
LDW RI Phase 2 Round 1	B6a	8/15/2004	2,4'-DDT	7.60E-03 JN	0.89						
LDW RI Phase 2 Round 1	C6	8/25/2004	2,4'-DDT	2.10E-03	1.24						
LDW RI Phase 2 Round 1	B6a	8/15/2004	2-Methylnaphthalene	1.50E-02	0.89	1.69E+00	38	64	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	2-Methylnaphthalene	3.70E-03 J	1.24	2.98E-01	38	64	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	2-Methylnaphthalene	1.20E-02 J	0.43	2.81E+00	0.67	1.4	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	2-Methylnaphthalene	9.50E-03 J	1.24	7.66E-01	38	64	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	2-Methylnaphthalene	1.50E-02 J	1.95	7.69E-01	38	64	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	4,4'-DDD	4.70E-03 JN	0.89						
LDW RI Phase 2 Round 1	C6	8/25/2004	4,4'-DDD	6.10E-04 J	1.24						
LDW RI Phase 2 Round 1	B6a	8/15/2004	4,4'-DDE	5.30E-03 JN	0.89						
LDW RI Phase 2 Round 1	C6	8/25/2004	4,4'-DDE	5.40E-04 J	1.24						
LDW RI Phase 2 Round 1	B6a	8/15/2004	4,4'-DDT	9.30E-03 JN	0.89						
LDW RI Phase 2 Round 1	C6	8/25/2004	4,4'-DDT	3.00E-03	1.24						
LDW RI Phase 2 Round 1	C6	8/25/2004	4-Chloro-3-methylphenol	6.40E-03 J	1.24						
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	4-Methylphenol	3.00E-01	1.42		670	670	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	4-Methylphenol	1.30E-01	1.95		670	670	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	4-Methylphenol	3.60E-02	1.24		670	670	ug/kg DW	<1	<1
EPA Site Inspection	DR135	8/13/1998	Acenaphthene	4.00E-02	2.04	1.96E+00	16	57	mg/kg OC	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Acenaphthene	3.30E-02	1.26	2.62E+00	16	57	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Acenaphthene	1.00E-02	0.89	1.12E+00	16	57	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Acenaphthene	4.60E-03 J	1.24	3.71E-01	16	57	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Acenaphthene	1.90E-02	1.24	1.53E+00	16	57	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Acenaphthene	1.60E-02 J	1.95	8.21E-01	16	57	mg/kg OC	<1	<1

Table A-1
Surface Sediment Sampling Results
1st Avenue S SD Source Control Area

Event Name	Location Name	Date Collected	Chemical	Concentration (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS*	CSL*	Units	SQS Exceedance Factor	CSL Exceedance Factor
LDW RI Phase 2 Round 1	B6a	8/15/2004	Acenaphthylene	9.80E-03	0.89	1.10E+00	66	66	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Acenaphthylene	5.30E-03	1.24	4.27E-01	66	66	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Acenaphthylene	6.80E-02	0.43	1.59E+01	1.3	1.3	mg/kg DW	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Aldrin	3.90E-04 J	1.24						
LDW RI Phase 2 Round 1	B6a	8/15/2004	alpha-Chlordane	2.50E-04 JN	0.89						
LDW RI Phase 2 Round 1	C6	8/25/2004	alpha-Endosulfan	2.90E-04 J	1.24						
EPA Site Inspection	DR135	8/13/1998	Aluminum	1.50E+04	2.04						
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Anthracene	4.30E-01	1.26	3.41E+01	220	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR135	8/13/1998	Anthracene	3.00E-02	2.04	1.47E+00	220	1200	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Anthracene	2.20E-02	0.89	2.47E+00	220	1200	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Anthracene	1.70E-02	1.24	1.37E+00	220	1200	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Anthracene	1.00E-01	0.43	2.34E+01	0.96	4.4	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Anthracene	2.30E-02	1.24	1.85E+00	220	1200	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Anthracene	5.60E-02	1.95	2.87E+00	220	1200	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Antimony	2.04E+00 J	1.24						
LDW RI Phase 2 Round 1	B6a	8/15/2004	Antimony	9.00E-01 J	0.89						
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Antimony	7.00E-01 J	1.26						
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Aroclor-1248	1.80E-02	1.32	1.36E+00					
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Aroclor-1248	1.10E-02	1.24	8.87E-01					
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Aroclor-1248	1.50E-02	1.95	7.69E-01					
EPA Site Inspection	DR135	8/13/1998	Aroclor-1254	1.80E-01	2.04	8.82E+00					
LDW RI Phase 2 Round 1	B6a	8/15/2004	Aroclor-1254	1.50E-01	0.89	1.69E+01					
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Aroclor-1254	9.00E-02	1.26	7.14E+00					
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Aroclor-1254	4.20E-02	1.32	3.18E+00					
LDW RI Phase 2 Round 1	C6	8/25/2004	Aroclor-1254	2.80E-02	1.24	2.26E+00					
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Aroclor-1254	1.90E-02	1.42	1.34E+00					
LDW Outfall Sampling	LDW-SS2512-U	3/7/2011	Aroclor-1254	4.80E-03	0.26	1.87E+00					
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Aroclor-1254	1.70E-02	1.24	1.37E+00					
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Aroclor-1254	2.40E-02	1.95	1.23E+00					
LDW RI Phase 2 Round 1	B6a	8/15/2004	Aroclor-1260	1.50E-01	0.89	1.69E+01					
EPA Site Inspection	DR135	8/13/1998	Aroclor-1260	8.00E-02 J	2.04	3.92E+00					
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Aroclor-1260	6.30E-02	1.26	5.00E+00					
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Aroclor-1260	3.70E-02 J	1.32	2.80E+00					
LDW RI Phase 2 Round 1	C6	8/25/2004	Aroclor-1260	3.30E-02	1.24	2.66E+00					
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Aroclor-1260	1.90E-02	1.42	1.34E+00					
LDW Outfall Sampling	LDW-SS2512-U	3/7/2011	Aroclor-1260	5.10E-03	0.26	1.98E+00					
LDW Outfall Sampling	LDW-SS2512-A	3/7/2011	Aroclor-1260	4.40E-03	0.48	9.21E-01					
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Aroclor-1260	1.20E-02	1.24	9.68E-01					
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Aroclor-1260	1.80E-02	1.95	9.23E-01					
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Arsenic	1.73E+01	1.26		57	93	mg/kg DW	<1	<1
EPA Site Inspection	DR135	8/13/1998	Arsenic	1.00E+01	2.04		57	93	mg/kg DW	<1	<1
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Arsenic	7.60E+00	1.32		57	93	mg/kg DW	<1	<1

Table A-1
Surface Sediment Sampling Results
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Event Name	Location Name	Date Collected	Chemical	Concentration (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS*	CSL*	Units	SQS Exceedance Factor	CSL Exceedance Factor
LDW RI Phase 2 Round 1	C6	8/25/2004	Arsenic	5.52E+00	1.24		57	93	mg/kg DW	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Arsenic	5.26E+00 J	0.89		57	93	mg/kg DW	<1	<1
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Arsenic	4.20E+00	1.42		57	93	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2512-U	3/7/2011	Arsenic	6.00E+00	0.26		57	93	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2512-A	3/7/2011	Arsenic	8.00E+00	0.48		57	93	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Arsenic	1.60E+01	1.24		57	93	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Arsenic	1.50E+01	1.95		57	93	mg/kg DW	<1	<1
EPA Site Inspection	DR135	8/13/1998	Barium	5.00E+01	2.04						
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Benzo(a)anthracene	8.30E-02	1.42	5.85E+00	110	270	mg/kg OC	<1	<1
EPA Site Inspection	DR135	8/13/1998	Benzo(a)anthracene	7.00E-02	2.04	3.43E+00	110	270	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Benzo(a)anthracene	5.60E-02 J	1.32	4.24E+00	110	270	mg/kg OC	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Benzo(a)anthracene	5.50E-02	1.26	4.37E+00	110	270	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Benzo(a)anthracene	4.10E-02	1.24	3.31E+00	110	270	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Benzo(a)anthracene	3.80E-02	0.89	4.27E+00	110	270	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2512-U	3/7/2011	Benzo(a)anthracene	1.20E-02 J	0.26	4.67E+00	1.3	1.6	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Benzo(a)anthracene	1.90E-01	0.43	4.45E+01	1.3	1.6	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Benzo(a)anthracene	6.20E-02	1.24	5.00E+00	110	270	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Benzo(a)anthracene	1.40E-01	1.95	7.18E+00	110	270	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Benzo(a)pyrene	8.60E-02	1.42	6.06E+00	99	210	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Benzo(a)pyrene	5.00E-02 J	1.32	3.79E+00	99	210	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Benzo(a)pyrene	4.20E-02	1.24	3.39E+00	99	210	mg/kg OC	<1	<1
EPA Site Inspection	DR135	8/13/1998	Benzo(a)pyrene	4.00E-02	2.04	1.96E+00	99	210	mg/kg OC	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Benzo(a)pyrene	3.60E-02	1.26	2.86E+00	99	210	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Benzo(a)pyrene	3.50E-02	0.89	3.93E+00	99	210	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Benzo(a)pyrene	1.50E-01	0.43	3.51E+01	1.6	3.0	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2512-A	3/7/2011	Benzo(a)pyrene	1.60E-02 J	0.48	3.35E+00	1.6	3	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Benzo(a)pyrene	6.20E-02	1.24	5.00E+00	99	210	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Benzo(a)pyrene	1.10E-01	1.95	5.64E+00	99	210	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Benzo(b)fluoranthene	1.10E-01	1.42						
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Benzo(b)fluoranthene	8.00E-02	1.32						
EPA Site Inspection	DR135	8/13/1998	Benzo(b)fluoranthene	8.00E-02	2.04						
LDW RI Phase 2 Round 1	C6	8/25/2004	Benzo(b)fluoranthene	5.80E-02	1.24						
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Benzo(b)fluoranthene	5.80E-02	1.26						
LDW RI Phase 2 Round 1	B6a	8/15/2004	Benzo(e)pyrene	4.60E-02	0.89						

Table A-1
Surface Sediment Sampling Results
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Event Name	Location Name	Date Collected	Chemical	Concentration (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS*	CSL*	Units	SQS Exceedance Factor	CSL Exceedance Factor
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Benzo(g,h,i)perylene	4.40E-02 J	1.42	3.10E+00	31	78	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Benzo(g,h,i)perylene	3.90E-02 J	1.32	2.95E+00	31	78	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Benzo(g,h,i)perylene	3.70E-02	1.24	2.98E+00	31	78	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Benzo(g,h,i)perylene	3.40E-02	0.89	3.82E+00	31	78	mg/kg OC	<1	<1
EPA Site Inspection	DR135	8/13/1998	Benzo(g,h,i)perylene	3.00E-02	2.04	1.47E+00	31	78	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Benzo(g,h,i)perylene	7.10E-02	0.43	1.66E+01	0.67	0.72	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Benzo(g,h,i)perylene	3.00E-02	1.24	2.42E+00	31	78	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Benzo(g,h,i)perylene	1.00E-01	1.95	5.13E+00	31	78	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Benzo(k)fluoranthene	7.70E-02	1.42						
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Benzo(k)fluoranthene	5.60E-02 J	1.32						
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Benzo(k)fluoranthene	4.80E-02	1.26						
LDW RI Phase 2 Round 1	C6	8/25/2004	Benzo(k)fluoranthene	4.70E-02	1.24						
LDW RI Phase 2 Round 1	B6a	8/15/2004	Benzo(k)fluoranthene	4.10E-02	0.89						
EPA Site Inspection	DR135	8/13/1998	Benzo(k)fluoranthene	3.00E-02	2.04						
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Benzofluoranthenes (total-calc'd)	1.90E-01	1.42	1.34E+01	230	450	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Benzofluoranthenes (total-calc'd)	1.36E-01 J	1.32	1.03E+01	230	450	mg/kg OC	<1	<1
EPA Site Inspection	DR135	8/13/1998	Benzofluoranthenes (total-calc'd)	1.10E-01	2.04	5.39E+00	230	450	mg/kg OC	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Benzofluoranthenes (total-calc'd)	1.06E-01	1.26	8.41E+00	230	450	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Benzofluoranthenes (total-calc'd)	1.05E-01	1.24	8.47E+00	230	450	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Benzofluoranthenes (total-calc'd)	9.40E-02	0.89	1.06E+01	230	450	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2512-U	3/7/2011	Benzofluoranthenes (total-calc'd)	1.90E-02	0.26	7.39E+00	3.2	3.6	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Benzofluoranthenes (total-calc'd)	2.70E-01	0.43	6.32E+01	3.2	3.6	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2512-A	3/7/2011	Benzofluoranthenes (total-calc'd)	1.80E-02 J	0.48	3.77E+00	3.2	3.6	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Benzofluoranthenes (total-calc'd)	1.60E-01	1.24	1.29E+01	230	450	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Benzofluoranthenes (total-calc'd)	3.30E-01	1.95	1.69E+01	230	450	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Benzoic acid	2.40E-01 J	1.95		650	650	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Benzoic acid	1.80E-01 J	1.24		650	650	ug/kg DW	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Benzoic acid	8.90E-02	1.24		650	650	ug/kg DW	<1	<1

Table A-1
Surface Sediment Sampling Results
1st Avenue S SD Source Control Area

Event Name	Location Name	Date Collected	Chemical	Concentration (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS*	CSL*	Units	SQS Exceedance Factor	CSL Exceedance Factor
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Benzyl alcohol	5.60E-02	1.24		57	73	ug/kg DW	9.8	7.7
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Benzyl alcohol	1.20E-01	1.95		57	73	ug/kg DW	2.1	1.6
LDW RI Phase 2 Round 1	C6	8/25/2004	Benzyl alcohol	2.30E-02	1.24		57	73	ug/kg DW	<1	<1
EPA Site Inspection	DR135	8/13/1998	Beryllium	4.60E-01	2.04						
LDW RI Phase 2 Round 1	B6a	8/15/2004	Biphenyl	4.00E-03 J	0.89						
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Bis(2-ethylhexyl)phthalate	4.90E+00	1.24	3.95E+02	47	78	mg/kg OC	8.4	5.1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Bis(2-ethylhexyl)phthalate	2.50E+00	1.95	1.28E+02	47	78	mg/kg OC	2.7	1.6
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Bis(2-ethylhexyl)phthalate	2.10E-01	1.32	1.59E+01	47	78	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Bis(2-ethylhexyl)phthalate	1.10E-01	1.42	7.75E+00	47	78	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Bis(2-ethylhexyl)phthalate	6.10E-02 J	0.89	6.85E+00	47	78	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Bis(2-ethylhexyl)phthalate	5.50E-02 J	1.24	4.44E+00	47	78	mg/kg OC	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Bis(2-ethylhexyl)phthalate	4.80E-02	1.26	3.81E+00	47	78	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2512-A	3/7/2011	Bis(2-ethylhexyl)phthalate	4.40E-02	0.48	9.21E+00	1.3	1.9	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Bis(2-ethylhexyl)phthalate	2.50E-02	0.43	5.85E+00	1.3	1.9	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2512-U	3/7/2011	Bis(2-ethylhexyl)phthalate	1.20E-02 J	0.26	4.67E+00	1.3	1.9	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Butyl benzyl phthalate	1.40E-01	1.95	7.18E+00	4.9	64	mg/kg OC	1.5	<1
LDW Outfall Sampling	LDW-SS2512-A	3/7/2011	Butyl benzyl phthalate	8.20E-02	0.48	1.72E+01	0.063	0.90	mg/kg DW	1.3	<1
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Butyl benzyl phthalate	2.40E-02	1.32	1.82E+00	4.9	64	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Butyl benzyl phthalate	1.60E-02 J	0.89	1.80E+00	4.9	64	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2512-U	3/7/2011	Butyl benzyl phthalate	1.30E-02	0.26	5.06E+00	0.063	0.9	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Butyl benzyl phthalate	1.30E-02	1.24	1.05E+00	4.9	64	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Butyl benzyl phthalate	8.60E-03	1.42	6.06E-01	4.9	64	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Butyl benzyl phthalate	7.00E-03 J	1.24	5.65E-01	4.9	64	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Cadmium	6.00E-01	1.95		5.1	6.7	mg/kg DW	<1	<1
EPA Site Inspection	DR135	8/13/1998	Cadmium	5.60E-01	2.04		5.1	6.7	mg/kg DW	<1	<1
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Cadmium	4.00E-01	1.42		5.1	6.7	mg/kg DW	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Cadmium	1.40E-01	0.89		5.1	6.7	mg/kg DW	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Cadmium	1.20E-01	1.24		5.1	6.7	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Carbazole	5.70E-02	0.43						
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Carbazole	4.00E-02	1.26						
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Carbazole	2.60E-02	1.95						
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Carbazole	1.20E-02 J	1.24						
LDW RI Phase 2 Round 1	B6a	8/15/2004	Carbazole	6.30E-03 J	0.89						
LDW RI Phase 2 Round 1	C6	8/25/2004	Carbazole	5.00E-03 J	1.24						
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Chromium	3.22E+01	1.95		260	270	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Chromium	2.40E+01	0.43		260	270	mg/kg DW	<1	<1
EPA Site Inspection	DR135	8/13/1998	Chromium	2.20E+01	2.04		260	270	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Chromium	2.13E+01	1.24		260	270	mg/kg DW	<1	<1
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Chromium	1.96E+01	1.32		260	270	mg/kg DW	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Chromium	1.49E+01	0.89		260	270	mg/kg DW	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Chromium	1.43E+01	1.26		260	270	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2512-U	3/7/2011	Chromium	1.42E+01	0.26		260	270	mg/kg DW	<1	<1

Table A-1
Surface Sediment Sampling Results
1st Avenue S SD Source Control Area

Event Name	Location Name	Date Collected	Chemical	Concentration (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS*	CSL*	Units	SQS Exceedance Factor	CSL Exceedance Factor
LDW Outfall Sampling	LDW-SS2512-A	3/7/2011	Chromium	1.40E+01	0.48		260	270	mg/kg DW	<1	<1
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Chromium	1.32E+01	1.42		260	270	mg/kg DW	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Chromium	1.20E+01	1.24		260	270	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Chrysene	2.50E-01	1.95	1.28E+01	110	460	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Chrysene	1.70E-01	0.43	3.98E+01	1.4	2.8	mg/kg DW	<1	<1
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Chrysene	1.60E-01	1.42	1.13E+01	110	460	mg/kg OC	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Chrysene	1.50E-01	1.26	1.19E+01	110	460	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Chrysene	9.70E-02	1.24	7.82E+00	110	460	mg/kg OC	<1	<1
EPA Site Inspection	DR135	8/13/1998	Chrysene	9.00E-02	2.04	4.41E+00	110	460	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Chrysene	8.90E-02	1.32	6.74E+00	110	460	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Chrysene	8.30E-02	0.89	9.33E+00	110	460	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Chrysene	7.10E-02	1.24	5.73E+00	110	460	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2512-A	3/7/2011	Chrysene	1.50E-02 J	0.48	3.14E+00	1.4	2.8	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2512-U	3/7/2011	Chrysene	1.30E-02 J	0.26	5.06E+00	1.4	2.8	mg/kg DW	<1	<1
EPA Site Inspection	DR135	8/13/1998	Cobalt	7.00E+00	2.04						
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Cobalt	5.40E+00	1.32						
LDW RI Phase 2 Round 1	B6a	8/15/2004	Cobalt	4.90E+00	0.89						
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Cobalt	4.50E+00	1.26						
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Cobalt	4.10E+00	1.42						
LDW RI Phase 2 Round 1	C6	8/25/2004	Cobalt	3.91E+00	1.24						
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Copper	4.38E+01	1.95		390	390	mg/kg DW	<1	<1
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Copper	3.55E+01	1.32		390	390	mg/kg DW	<1	<1
EPA Site Inspection	DR135	8/13/1998	Copper	3.50E+01	2.04		390	390	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Copper	3.33E+01	1.24		390	390	mg/kg DW	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Copper	2.55E+01	0.89		390	390	mg/kg DW	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Copper	2.45E+01	1.26		390	390	mg/kg DW	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Copper	2.21E+01	1.24		390	390	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2512-A	3/7/2011	Copper	1.96E+01	0.48		390	390	mg/kg DW	<1	<1
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Copper	1.90E+01	1.42		390	390	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Copper	1.62E+01	0.43		390	390	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2512-U	3/7/2011	Copper	1.27E+01	0.26		390	390	mg/kg DW	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	DDTs (total-calc'd)	2.69E-02 JN	0.89						
LDW RI Phase 2 Round 1	C6	8/25/2004	DDTs (total-calc'd)	6.30E-03 J	1.24						
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Dibenzo(a,h)anthracene	2.80E-02	1.95	1.44E+00	12	33	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Dibenzo(a,h)anthracene	2.40E-02	0.43	5.62E+00	0.23	0.54	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Dibenzo(a,h)anthracene	1.20E-02	1.24	9.68E-01	12	33	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Dibenzo(a,h)anthracene	1.00E-02	1.32	7.58E-01	12	33	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Dibenzo(a,h)anthracene	8.60E-03	1.42	6.06E-01	12	33	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Dibenzo(a,h)anthracene	7.50E-03	1.24	6.05E-01	12	33	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Dibenzo(a,h)anthracene	6.20E-03	0.89	6.97E-01	12	33	mg/kg OC	<1	<1

Table A-1
Surface Sediment Sampling Results
1st Avenue S SD Source Control Area

Event Name	Location Name	Date Collected	Chemical	Concentration (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS*	CSL*	Units	SQS Exceedance Factor	CSL Exceedance Factor
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Dibenzofuran	3.30E-02	0.43	7.73E+00	0.54	0.70	mg/kg DW	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Dibenzofuran	2.30E-02	1.26	1.83E+00	15	58	mg/kg OC	<1	<1
EPA Site Inspection	DR135	8/13/1998	Dibenzofuran	2.00E-02	2.04	9.80E-01	15	58	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Dibenzofuran	7.90E-03	0.89	8.88E-01	15	58	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Dibenzofuran	4.80E-03 J	1.24	3.87E-01	15	58	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Dibenzothiophene	4.10E-03 J	0.89						
LDW RI Phase 2 Round 1	B6a	8/15/2004	Dibutyltin as ion	2.60E-03	0.89						
LDW RI Phase 2 Round 1	C6	8/25/2004	Dibutyltin as ion	1.40E-03 J	1.24						
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Diethyl phthalate	1.10E-02 J	0.43	2.58E+00	0.20	1.2	mg/kg DW	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Diethyl phthalate	9.90E-03	1.26	7.86E-01	61	110	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Di-n-butyl phthalate	3.00E-02	1.95	1.54E+00	220	1700	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Di-n-butyl phthalate	7.70E-03 J	0.89	8.65E-01	220	1700	mg/kg OC	<1	<1
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	Dioxin/Furan TEQ - mammal (half DL)	9.06E-06 J	0.98						
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Fluoranthene	6.40E-01	0.43	1.50E+02	1.7	2.5	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Fluoranthene	3.80E-01	1.95	1.95E+01	160	1200	mg/kg OC	<1	<1
EPA Site Inspection	DR135	8/13/1998	Fluoranthene	2.30E-01	2.04	1.13E+01	160	1200	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Fluoranthene	2.00E-01	1.32	1.52E+01	160	1200	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Fluoranthene	1.80E-01	1.42	1.27E+01	160	1200	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Fluoranthene	1.60E-01	1.24	1.29E+01	160	1200	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Fluoranthene	1.40E-01	0.89	1.57E+01	160	1200	mg/kg OC	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Fluoranthene	1.30E-01	1.26	1.03E+01	160	1200	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Fluoranthene	9.70E-02	1.24	7.82E+00	160	1200	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2512-A	3/7/2011	Fluoranthene	3.00E-02	0.48	6.28E+00	1.7	2.5	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2512-U	3/7/2011	Fluoranthene	2.80E-02	0.26	1.09E+01	1.7	2.5	mg/kg DW	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Fluorene	8.00E-02	1.26	6.35E+00	23	79	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Fluorene	7.60E-02	0.43	1.78E+01	0.54	1.0	mg/kg DW	<1	<1
EPA Site Inspection	DR135	8/13/1998	Fluorene	4.00E-02	2.04	1.96E+00	23	79	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Fluorene	2.60E-02	1.95	1.33E+00	23	79	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Fluorene	1.70E-02 J	1.24	1.37E+00	23	79	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Fluorene	7.70E-03	0.89	8.65E-01	23	79	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Fluorene	5.50E-03	1.24	4.44E-01	23	79	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	gamma-BHC	1.80E-04 JN	0.89						
LDW RI Phase 2 Round 1	C6	8/25/2004	gamma-Chlordane	1.10E-03 J	1.24						
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Indeno(1,2,3-cd)pyrene	7.10E-02	0.43	1.66E+01	0.60	0.69	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Indeno(1,2,3-cd)pyrene	6.20E-02	1.95	3.18E+00	34	88	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Indeno(1,2,3-cd)pyrene	4.60E-02 J	1.42	3.24E+00	34	88	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Indeno(1,2,3-cd)pyrene	3.80E-02	1.24	3.06E+00	34	88	mg/kg OC	<1	<1

Table A-1
Surface Sediment Sampling Results
1st Avenue S SD Source Control Area

Event Name	Location Name	Date Collected	Chemical	Concentration (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS*	CSL*	Units	SQS Exceedance Factor	CSL Exceedance Factor
EPA Site Inspection	DR135	8/13/1998	Indeno(1,2,3-cd)pyrene	3.00E-02	2.04	1.47E+00	34	88	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Indeno(1,2,3-cd)pyrene	2.90E-02	0.89	3.26E+00	34	88	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Indeno(1,2,3-cd)pyrene	2.90E-02	1.24	2.34E+00	34	88	mg/kg OC	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Indeno(1,2,3-cd)pyrene	7.20E-03	1.26	5.71E-01	34	88	mg/kg OC	<1	<1
EPA Site Inspection	DR135	8/13/1998	Iron	1.90E+04 J	2.04						
LDW RI Phase 2 Round 1	C6	8/25/2004	Lead	9.15E+01 J	1.24		450	530	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Lead	6.40E+01	1.95		450	530	mg/kg DW	<1	<1
EPA Site Inspection	DR135	8/13/1998	Lead	4.60E+01	2.04		450	530	mg/kg DW	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Lead	4.46E+01 J	0.89		450	530	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2512-U	3/7/2011	Lead	4.30E+01	0.26		450	530	mg/kg DW	<1	<1
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Lead	3.40E+01	1.32		450	530	mg/kg DW	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Lead	2.40E+01	1.26		450	530	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Lead	2.30E+01	1.24		450	530	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2512-A	3/7/2011	Lead	1.70E+01	0.48		450	530	mg/kg DW	<1	<1
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Lead	1.60E+01	1.42		450	530	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Lead	9.00E+00	0.43		450	530	mg/kg DW	<1	<1
EPA Site Inspection	DR135	8/13/1998	Manganese	1.90E+02	2.04						
EPA Site Inspection	DR135	8/13/1998	Mercury	2.00E-01	2.04		0.41	0.59	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Mercury	1.40E-01	1.95		0.41	0.59	mg/kg DW	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Mercury	6.00E-02	1.26		0.41	0.59	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Mercury	6.00E-02	1.24		0.41	0.59	mg/kg DW	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Mercury	5.90E-02	0.89		0.41	0.59	mg/kg DW	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Mercury	3.80E-02	1.24		0.41	0.59	mg/kg DW	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Molybdenum	1.00E+00	1.26						
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Molybdenum	1.00E+00	1.32						
LDW RI Phase 2 Round 1	B6a	8/15/2004	Molybdenum	5.62E-01	0.89						
LDW RI Phase 2 Round 1	C6	8/25/2004	Molybdenum	5.43E-01 J	1.24						
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Molybdenum	3.00E-01	1.42						
LDW RI Phase 2 Round 1	C6	8/25/2004	Monobutyltin as ion	2.30E-03	1.24						
LDW RI Phase 2 Round 1	B6a	8/15/2004	Monobutyltin as ion	1.10E-03 J	0.89						
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Naphthalene	2.30E-02	1.95	1.18E+00	99	170	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Naphthalene	2.20E-02	0.43	5.15E+00	2.1	2.4	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Naphthalene	1.70E-02 J	1.24	1.37E+00	99	170	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Naphthalene	1.40E-02	0.89	1.57E+00	99	170	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Naphthalene	6.70E-03	1.24	5.40E-01	99	170	mg/kg OC	<1	<1
EPA Site Inspection	DR135	8/13/1998	Nickel	1.60E+01	2.04						
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Nickel	1.32E+01	1.32						
LDW RI Phase 2 Round 1	B6a	8/15/2004	Nickel	1.25E+01	0.89						
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Nickel	1.05E+01	1.42						
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Nickel	9.00E+00	1.26						
LDW RI Phase 2 Round 1	C6	8/25/2004	Nickel	8.96E+00	1.24						

Table A-1
Surface Sediment Sampling Results
1st Avenue S SD Source Control Area

Event Name	Location Name	Date Collected	Chemical	Concentration (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS*	CSL*	Units	SQS Exceedance Factor	CSL Exceedance Factor
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	N-Nitrosodimethylamine	5.60E-03 J	1.95						
LDW Outfall Sampling	LDW-SS2512-U	3/7/2011	N-Nitrosodi-n-propylamine	5.70E-02	0.26						
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	N-Nitrosodiphenylamine	6.60E-03	1.26	5.24E-01	11	11	mg/kg OC	<1	<1
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	OCDD	3.96E-03	0.98						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	OCDF	1.25E-04	0.98						
LDW RI Phase 2 Round 1	B6a	8/15/2004	PCBs (total calc'd)	3.00E-01	0.89	3.37E+01	12	65	mg/kg OC	2.8	<1
EPA Site Inspection	DR135	8/13/1998	PCBs (total calc'd)	2.60E-01 J	2.04	1.27E+01	12	65	mg/kg OC	1.1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	PCBs (total calc'd)	1.53E-01	1.26	1.21E+01	12	65	mg/kg OC	1.0	<1
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	PCBs (total calc'd)	9.70E-02 J	1.32	7.35E+00	12	65	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	PCBs (total calc'd)	6.10E-02	1.24	4.92E+00	12	65	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	PCBs (total calc'd)	5.70E-02	1.95	2.92E+00	12	65	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	PCBs (total calc'd)	4.00E-02	1.24	3.23E+00	12	65	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	PCBs (total calc'd)	3.80E-02	1.42	2.68E+00	12	65	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2512-U	3/7/2011	PCBs (total calc'd)	9.90E-03	0.26	3.85E+00	0.13	1.0	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2512-A	3/7/2011	PCBs (total calc'd)	4.40E-03	0.48	9.21E-01	0.13	1.0	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Pentachlorophenol	3.00E-02 J	1.95		360	690	ug/kg DW	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Perylene	3.90E-02	0.89						
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Phenanthrene	7.30E-01	0.43	1.71E+02	1.5	5.4	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Phenanthrene	2.20E-01	1.95	1.13E+01	100	480	mg/kg OC	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Phenanthrene	1.50E-01	1.26	1.19E+01	100	480	mg/kg OC	<1	<1
EPA Site Inspection	DR135	8/13/1998	Phenanthrene	1.50E-01	2.04	7.35E+00	100	480	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Phenanthrene	6.90E-02	1.24	5.56E+00	100	480	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Phenanthrene	5.40E-02 J	1.32	4.09E+00	100	480	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Phenanthrene	4.40E-02 J	1.42	3.10E+00	100	480	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Phenanthrene	3.80E-02	0.89	4.27E+00	100	480	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Phenanthrene	3.60E-02	1.24	2.90E+00	100	480	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2512-U	3/7/2011	Phenanthrene	1.60E-02 J	0.26	6.23E+00	1.5	5.4	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2512-A	3/7/2011	Phenanthrene	1.60E-02 J	0.48	3.35E+00	1.5	5.4	mg/kg DW	<1	<1
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Phenol	6.30E-02	1.42		420	1200	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Phenol	6.00E-02	1.95		420	1200	ug/kg DW	<1	<1
EPA Site Inspection	DR135	8/13/1998	Phenol	4.00E-02	2.04		420	1200	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Phenol	2.60E-02	1.24		420	1200	ug/kg DW	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Phenol	1.20E-02 J	1.24		420	1200	ug/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Pyrene	5.00E-01	0.43	1.17E+02	2.6	3.3	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Pyrene	3.50E-01	1.95	1.79E+01	1000	1400	mg/kg OC	<1	<1
EPA Site Inspection	DR135	8/13/1998	Pyrene	1.70E-01	2.04	8.33E+00	1000	1400	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Pyrene	1.60E-01	1.42	1.13E+01	1000	1400	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Pyrene	1.40E-01	1.24	1.13E+01	1000	1400	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Pyrene	1.30E-01	1.32	9.85E+00	1000	1400	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Pyrene	1.20E-01	0.89	1.35E+01	1000	1400	mg/kg OC	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Pyrene	1.10E-01	1.26	8.73E+00	1000	1400	mg/kg OC	<1	<1

Table A-1
Surface Sediment Sampling Results
1st Avenue S SD Source Control Area

Event Name	Location Name	Date Collected	Chemical	Concentration (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS*	CSL*	Units	SQS Exceedance Factor	CSL Exceedance Factor
LDW RI Phase 2 Round 1	C6	8/25/2004	Pyrene	8.70E-02	1.24	7.02E+00	1000	1400	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2512-U	3/7/2011	Pyrene	2.40E-02	0.26	9.34E+00	2.6	3.3	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2512-A	3/7/2011	Pyrene	2.40E-02	0.48	5.02E+00	2.6	3.3	mg/kg DW	<1	<1
EPA Site Inspection	DR135	8/13/1998	Selenium	7.00E+00	2.04						
LDW RI Phase 2 Round 1	B6a	8/15/2004	Selenium	5.00E-01	0.89						
LDW RI Phase 2 Round 1	C6	8/25/2004	Selenium	4.00E-01 J	1.24						
EPA Site Inspection	DR135	8/13/1998	Silver	3.00E-01	2.04		6.1	6.1	mg/kg DW	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Silver	8.80E-02	0.89		6.1	6.1	mg/kg DW	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Silver	8.30E-02	1.24		6.1	6.1	mg/kg DW	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Sulfides (total)	1.10E+02	1.26						
EPA Site Inspection	DR135	8/13/1998	Thallium	1.00E-01	2.04						
LDW RI Phase 2 Round 1	B6a	8/15/2004	Thallium	5.50E-02	0.89						
LDW RI Phase 2 Round 1	C6	8/25/2004	Thallium	4.70E-02	1.24						
EPA Site Inspection	DR135	8/13/1998	Tin	3.00E+00	2.04						
LDW RI Phase 2 Round 1	C6	8/25/2004	Total aldrin/dieldrin (calc'd)	3.90E-04 J	1.24						
LDW RI Phase 2 Round 1	C6	8/25/2004	Total Chlordane (calc'd)	1.10E-03 J	1.24						
LDW RI Phase 2 Round 1	B6a	8/15/2004	Total Chlordane (calc'd)	2.50E-04 JN	0.89						
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Total HPAH (calc'd)	2.10E+00	0.43	4.92E+02	12	17	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Total HPAH (calc'd)	1.80E+00	1.95	9.23E+01	960	5300	mg/kg OC	<1	<1
EPA Site Inspection	DR135	8/13/1998	Total HPAH (calc'd)	7.70E-01	2.04	3.77E+01	960	5300	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Total HPAH (calc'd)	7.50E-01	1.24	6.05E+01	960	5300	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Total HPAH (calc'd)	7.10E-01 J	1.32	5.38E+01	960	5300	mg/kg OC	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Total HPAH (calc'd)	5.90E-01	1.26	4.68E+01	960	5300	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Total HPAH (calc'd)	5.80E-01	0.89	6.52E+01	960	5300	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Total HPAH (calc'd)	5.26E-01	1.24	4.24E+01	960	5300	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2512-A	3/7/2011	Total HPAH (calc'd)	1.00E-01 J	0.48	2.09E+01	12	17	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2512-U	3/7/2011	Total HPAH (calc'd)	9.60E-02 J	0.26	3.74E+01	12	17	mg/kg DW	<1	<1
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	Total HpCDD	7.32E-04	0.98						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	Total HpCDF	9.10E-05	0.98						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	Total HxCDD	7.78E-05	0.98						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	Total HxCDF	4.18E-05	0.98						
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Total LPAH (calc'd)	1.00E+00	0.43	2.34E+02	5.2	13	mg/kg DW	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Total LPAH (calc'd)	6.90E-01	1.26	5.48E+01	370	780	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Total LPAH (calc'd)	3.40E-01 J	1.95	1.74E+01	370	780	mg/kg OC	<1	<1
EPA Site Inspection	DR135	8/13/1998	Total LPAH (calc'd)	2.60E-01	2.04	1.27E+01	370	780	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Total LPAH (calc'd)	1.50E-01 J	1.24	1.21E+01	370	780	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Total LPAH (calc'd)	1.02E-01	0.89	1.15E+01	370	780	mg/kg OC	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Total LPAH (calc'd)	7.50E-02 J	1.24	6.05E+00	370	780	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Total LPAH (calc'd)	5.40E-02 J	1.32	4.09E+00	370	780	mg/kg OC	<1	<1
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Total LPAH (calc'd)	4.40E-02 J	1.42	3.10E+00	370	780	mg/kg OC	<1	<1
LDW Outfall Sampling	LDW-SS2512-U	3/7/2011	Total LPAH (calc'd)	1.60E-02 J	0.26	6.23E+00	5.2	13	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2512-A	3/7/2011	Total LPAH (calc'd)	1.60E-02 J	0.48	3.35E+00	5.2	13	mg/kg DW	<1	<1

Table A-1
Surface Sediment Sampling Results
1st Avenue S SD Source Control Area

Event Name	Location Name	Date Collected	Chemical	Concentration (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS*	CSL*	Units	SQS Exceedance Factor	CSL Exceedance Factor
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	Total PeCDD	6.11E-06	0.98						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	Total PeCDF	1.44E-05	0.98						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	Total TCDD	2.60E-06	0.98						
LDW Dioxin Sampling	LDW-SS523-010	12/15/2009	Total TCDF	8.75E-06	0.98						
LDW RI Phase 2 Round 1	B6a	8/15/2004	Tributyltin as ion	2.30E-03	0.89						
LDW RI Phase 2 Round 1	C6	8/25/2004	Tributyltin as ion	1.80E-03	1.24						
EPA Site Inspection	DR135	8/13/1998	Vanadium	4.60E+01	2.04						
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Vanadium	4.57E+01	1.32						
LDW RI Phase 2 Round 1	C6	8/25/2004	Vanadium	4.51E+01	1.24						
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Vanadium	4.14E+01	1.26						
LDW RI Phase 2 Round 1	B6a	8/15/2004	Vanadium	3.73E+01	0.89						
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Vanadium	3.63E+01	1.42						
LDW Outfall Sampling	LDW-SS2506-A	3/7/2011	Zinc	1.30E+02	1.95		410	960	mg/kg DW	<1	<1
LDW RI Phase 2 Round 3	LDW-SS331	10/2/2006	Zinc	9.10E+01	1.32		410	960	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2506-D	3/7/2011	Zinc	8.00E+01	1.24		410	960	mg/kg DW	<1	<1
EPA Site Inspection	DR135	8/13/1998	Zinc	7.40E+01	2.04		410	960	mg/kg DW	<1	<1
LDW RI Phase 2 Round 1	B6a	8/15/2004	Zinc	6.56E+01	0.89		410	960	mg/kg DW	<1	<1
LDW RI Phase 2 Round 1	C6	8/25/2004	Zinc	6.48E+01 J	1.24		410	960	mg/kg DW	<1	<1
LDW RI Phase 2 Round 3	LDW-SS332	10/2/2006	Zinc	5.70E+01	1.42		410	960	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2512-A	3/7/2011	Zinc	5.30E+01	0.48		410	960	mg/kg DW	<1	<1
LDW RI Phase 2 Round 2	LDW-SSB6a	3/15/2005	Zinc	5.22E+01	1.26		410	960	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2512-U	3/7/2011	Zinc	4.40E+01	0.26		410	960	mg/kg DW	<1	<1
LDW Outfall Sampling	LDW-SS2505-A	3/7/2011	Zinc	4.40E+01	0.43		410	960	mg/kg DW	<1	<1

mg/kg - milligram per kilogram
ug/kg - microgram per kilogram
DW - Dry weight
TOC - Total Organic Carbon
OC - Organic carbon normalized

SQS - SMS Sediment Quality Standard
CSL - SMS Cleanup Screening Level
PAH - Polycyclic aromatic hydrocarbon
SMS - Sediment Management Standards
AET - Apparent Effects Threshold

* Samples with TOC <0.5% were compared to dry weight SMS or AET criteria.

Table presents detected chemicals only.
Exceedance factors are the ratio of the detected concentrations to the CSL or SQS; exceedance factors are shown only if they are greater than 1.
Chemicals with exceedance factors greater than 1 are shaded.
Sampling events are listed in Table 2.

Table A-2
Subsurface Sediment Sampling Results
1st Avenue S SD Source Control Area

Event Name	Location Name	Date Collected	Sample Depth (feet)	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	SQS Exceedance Factor	CSL Exceedance Factor
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	1-Methylnaphthalene	1.20E-01 J	1.5	8.00E+00					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	2-Methylnaphthalene	1.20E-01 J	1.5	8.00E+00	38	64	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Acenaphthene	8.10E-01 J	1.5	5.40E+01	16	57	mg/kg OC	3.4	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Acenaphthene	2.10E-01	1.3	1.62E+01	16	57	mg/kg OC	1.0	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Acenaphthene	1.30E-02 J	1.37	9.49E-01	16	57	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Acenaphthylene	1.00E-02 J	1.5	6.67E-01	66	66	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Anthracene	2.30E-01 J	1.5	1.53E+01	220	1200	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Aroclor-1248	1.30E+00	1.5	8.67E+01					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Aroclor-1248	2.30E-01	1.37	1.68E+01					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Aroclor-1248	1.30E-01	1.95	6.67E+00					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Aroclor-1254	1.40E+00	1.5	9.33E+01					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Aroclor-1254	3.10E-01	1.37	2.26E+01					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Aroclor-1254	2.00E-01	1.95	1.03E+01					
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Aroclor-1254	1.40E-02	1.3	1.08E+00					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Aroclor-1260	7.40E-01	1.5	4.93E+01					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Aroclor-1260	1.70E-01	1.37	1.24E+01					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Aroclor-1260	1.20E-01	1.95	6.15E+00					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Arsenic	1.30E+01	1.5	8.67E+02	57	93	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Arsenic	1.10E+01	1.95	5.64E+02	57	93	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Arsenic	1.00E+01	1.37	7.30E+02	57	93	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Benzo(a)anthracene	1.30E-01 J	1.5	8.67E+00	110	270	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Benzo(a)anthracene	1.40E-02 J	1.37	1.02E+00	110	270	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Benzo(a)anthracene	1.20E-02 J	1.95	6.15E-01	110	270	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Benzo(a)anthracene	1.20E-02 J	1.3	9.23E-01	110	270	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Benzo(a)pyrene	3.90E-02 J	1.5	2.60E+00	99	210	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Benzo(a)pyrene	1.10E-02 J	1.3	8.46E-01	99	210	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Benzo(b)fluoranthene	8.40E-02 J	1.5	5.60E+00					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Benzo(b)fluoranthene	1.30E-02 J	1.95	6.67E-01					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Benzo(b)fluoranthene	1.20E-02 J	1.37	8.76E-01					
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Benzo(b)fluoranthene	9.90E-03 J	1.3	7.62E-01					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Benzo(k)fluoranthene	7.40E-02 J	1.5	4.93E+00					
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Benzo(k)fluoranthene	1.30E-02 J	1.3	1.00E+00					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Benzo(k)fluoranthene	1.20E-02 J	1.37	8.76E-01					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Benzo(k)fluoranthene	1.10E-02 J	1.95	5.64E-01					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Benzofluoranthenes (total-calc'd)	1.58E-01 J	1.5	1.05E+01	230	450	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Benzofluoranthenes (total-calc'd)	2.40E-02 J	1.95	1.23E+00	230	450	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Benzofluoranthenes (total-calc'd)	2.40E-02 J	1.37	1.75E+00	230	450	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Benzofluoranthenes (total-calc'd)	2.30E-02 J	1.3	1.77E+00	230	450	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Benzoic acid	7.70E-02 J	1.5	5.13E+00	650	650	ug/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Benzoic acid	5.80E-02 J	1.3	4.46E+00	650	650	ug/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Benzoic acid	5.70E-02 J	1.95	2.92E+00	650	650	ug/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Bis(2-ethylhexyl)phthalate	8.00E-02 J	1.5	5.33E+00	47	78	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Bis(2-ethylhexyl)phthalate	2.20E-02	1.95	1.13E+00	47	78	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Bis(2-ethylhexyl)phthalate	1.30E-02 J	1.37	9.49E-01	47	78	mg/kg OC	<1	<1

Table A-2
Subsurface Sediment Sampling Results
1st Avenue S SD Source Control Area

Event Name	Location Name	Date Collected	Sample Depth (feet)	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	SQS Exceedance Factor	CSL Exceedance Factor
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Butyl benzyl phthalate	1.00E-02	1.5	6.67E-01	4.9	64	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Butyl benzyl phthalate	6.40E-03	1.3	4.92E-01	4.9	64	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Cadmium	5.00E-01	1.5	3.33E+01	5.1	6.7	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Chromium	2.68E+01	1.5	1.79E+03	260	270	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Chromium	2.34E+01	1.95	1.20E+03	260	270	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Chromium	2.20E+01	1.37	1.61E+03	260	270	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Chromium	1.24E+01	1.3	9.54E+02	260	270	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Chrysene	1.30E-01 J	1.5	8.67E+00	110	460	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Chrysene	1.30E-02 J	1.37	9.49E-01	110	460	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Chrysene	1.20E-02 J	1.95	6.15E-01	110	460	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Chrysene	1.20E-02 J	1.3	9.23E-01	110	460	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Cobalt	7.40E+00	1.95	3.79E+02					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Cobalt	6.90E+00	1.5	4.60E+02					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Cobalt	6.90E+00	1.37	5.04E+02					
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Cobalt	6.20E+00	1.3	4.77E+02					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Copper	3.85E+01	1.5	2.57E+03	390	390	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Copper	3.47E+01	1.95	1.78E+03	390	390	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Copper	3.15E+01	1.37	2.30E+03	390	390	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Copper	2.01E+01	1.3	1.55E+03	390	390	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Dibenzofuran	2.50E-01 J	1.5	1.67E+01	15	58	mg/kg OC	1.1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Di-n-butyl phthalate	1.30E-02 J	1.5	8.67E-01	220	1700	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Di-n-butyl phthalate	1.20E-02 J	1.3	9.23E-01	220	1700	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Di-n-butyl phthalate	1.00E-02 J	1.95	5.13E-01	220	1700	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Fluoranthene	1.30E+00 J	1.5	8.67E+01	160	1200	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Fluoranthene	4.90E-02 J	1.37	3.58E+00	160	1200	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Fluoranthene	3.60E-02	1.95	1.85E+00	160	1200	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Fluoranthene	3.60E-02	1.3	2.77E+00	160	1200	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Fluorene	2.90E-01 J	1.5	1.93E+01	23	79	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Lead	3.60E+01	1.5	2.40E+03	450	530	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Lead	2.80E+01	1.95	1.44E+03	450	530	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Lead	1.90E+01	1.37	1.39E+03	450	530	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Lead	8.00E+00	1.3	6.15E+02	450	530	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Mercury	4.50E-01	1.5	3.00E+01	0.41	0.59	mg/kg dw	1.1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Mercury	3.10E-01	1.95	1.59E+01	0.41	0.59	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Mercury	2.70E-01	1.37	1.97E+01	0.41	0.59	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Molybdenum	9.00E-01	1.3	6.92E+01					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Naphthalene	3.30E-01 J	1.5	2.20E+01	99	170	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Nickel	1.80E+01	1.3	1.38E+03					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Nickel	1.50E+01	1.95	7.69E+02					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Nickel	1.50E+01	1.5	1.00E+03					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Nickel	1.40E+01	1.37	1.02E+03					

Table A-2
Subsurface Sediment Sampling Results
1st Avenue S SD Source Control Area

Event Name	Location Name	Date Collected	Sample Depth (feet)	Chemical	Conc'n (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS	CSL	Units	SQS Exceedance Factor	CSL Exceedance Factor
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	PCBs (total calc'd)	3.40E+00	1.5	2.27E+02	12	65	mg/kg OC	19	3.5
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	PCBs (total calc'd)	7.10E-01	1.37	5.18E+01	12	65	mg/kg OC	4.3	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	PCBs (total calc'd)	4.50E-01	1.95	2.31E+01	12	65	mg/kg OC	1.9	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	PCBs (total calc'd)	1.40E-02	1.3	1.08E+00	12	65	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Pentachlorophenol	2.60E-02 J	1.5	1.73E+00	360	690	ug/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Phenanthrene	9.60E-01 J	1.5	6.40E+01	100	480	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Phenanthrene	1.60E-02 J	1.37	1.17E+00	100	480	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Phenanthrene	1.20E-02 J	1.95	6.15E-01	100	480	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Phenanthrene	1.00E-02 J	1.3	7.69E-01	100	480	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Pyrene	6.60E-01 J	1.5	4.40E+01	1000	1400	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Pyrene	4.50E-02 J	1.37	3.28E+00	1000	1400	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Pyrene	4.00E-02	1.3	3.08E+00	1000	1400	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Pyrene	3.80E-02	1.95	1.95E+00	1000	1400	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Total HPAH (calc'd)	2.40E+00 J	1.5	1.60E+02	960	5300	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Total HPAH (calc'd)	1.45E-01 J	1.37	1.06E+01	960	5300	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Total HPAH (calc'd)	1.34E-01 J	1.3	1.03E+01	960	5300	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Total HPAH (calc'd)	1.22E-01 J	1.95	6.26E+00	960	5300	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Total LPAH (calc'd)	2.63E+00 J	1.5	1.75E+02	370	780	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Total LPAH (calc'd)	2.20E-01 J	1.3	1.69E+01	370	780	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Total LPAH (calc'd)	2.90E-02 J	1.37	2.12E+00	370	780	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Total LPAH (calc'd)	1.20E-02 J	1.95	6.15E-01	370	780	mg/kg OC	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Vanadium	5.71E+01	1.5	3.81E+03					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Vanadium	5.71E+01	1.37	4.17E+03					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Vanadium	5.67E+01	1.95	2.91E+03					
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Vanadium	3.94E+01	1.3	3.03E+03					
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	2 - 3	Zinc	7.68E+01	1.5	5.12E+03	410	960	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	0 - 1	Zinc	6.41E+01	1.95	3.29E+03	410	960	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38a	2/20/2006	1 - 2	Zinc	5.45E+01	1.37	3.98E+03	410	960	mg/kg dw	<1	<1
LDW Subsurface Sediment 2006	LDW-SC38b	2/20/2006	3 - 3.3	Zinc	3.04E+01	1.3	2.34E+03	410	960	mg/kg dw	<1	<1

mg/kg - Milligram per kilogram
ug/kg - Microgram per kilogram
DW - Dry weight
TOC - Total Organic Carbon
OC - Organic carbon normalized
SQS - SMS Sediment Quality Standard
CSL - SMS Cleanup Screening Level

Total HPAH - Total high molecular weight PAH
Total LPAH - Total low molecular weight PAH
PCB - Polychlorinated biphenyl
J - Estimated value between the method detection limit and the laboratory reporting lim
SMS - Sediment Management Standard (Washington Administrative Code 173-204)

Table presents detected chemicals only.
Exceedance factors are the ratio of the detected concentrations to the CSL or SQS; exceedance factors are shown only if they are greater than
Chemicals with exceedance factors are shaded
Sampling events are listed in Table 2.

Appendix B

Storm Drain Solids and Wetlands Sediment Sampling Results

1st Avenue S SD Source Control Area

Table B-1
Selected Storm Drain Solids and Wetland Sediment Sampling Results
1st Avenue S SD Source Control Area

Source	Location Name	Date Collected	Chemical	Concentration (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS*	CSL*	Units	SQS Exceedance Factor	CSL Exceedance Factor
Seattle Housing Authority											
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	2-Methylnaphthalene	8.60E-02 J	6.32	NA	0.67	0.67	mg/kg DW	<1	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	2-Methylphenol	1.10E-01 J	6.32	NA	0.063	0.072	mg/kg DW	1.7	1.5
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	4-Methylphenol	1.30E+01	6.32	NA	0.67	0.67	mg/kg DW	19	19
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Aroclor 1254	7.80E-02	6.32	NA	NA	NA	mg/kg DW		
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Aroclor 1260	5.70E-02	6.32	NA	NA	NA	mg/kg DW		
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Arsenic	3.00E+01 J	6.32	NA	57	93	mg/kg DW	<1	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	BBP	6.50E+00	6.32	NA	0.063	0.90	mg/kg DW	103	7.2
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	BEHP	1.60E+01 B	6.32	NA	1.3	1.9	mg/kg DW	12	8.4
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Benzo(a)anthracene	2.70E-01	6.32	NA	1.3	1.6	mg/kg DW	<1	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Benzo(a)pyrene	2.80E-01 J	6.32	NA	1.6	3.0	mg/kg DW	<1	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Benzo(b)fluoranthene	3.10E-01 J	6.32	NA	3.2	3.6	mg/kg DW	<1	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Benzo(g,h,i)perylene	3.10E-01 J	6.32	NA	0.67	0.72	mg/kg DW	<1	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Benzo(k)fluoranthene	3.10E-01 J	6.32	NA	3.2	3.6	mg/kg DW	<1	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Benzoic acid	1.90E+00	6.32	NA	0.65	0.65	mg/kg DW	2.9	2.9
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Chrysene	5.40E-01	6.32	NA	1.4	2.8	mg/kg DW	<1	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Copper	1.81E+02 J	6.32	NA	390	390	mg/kg DW	<1	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Dimethylphthalate	5.40E-01	6.32	NA	0.071	0.16	mg/kg DW	7.6	3.4
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Di-n-butylphthalate	2.80E+00	6.32	NA	1.4	5.1	mg/kg DW	2.0	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Di-n-octyl phthalate	1.80E+00	6.32	NA	6.2	NA	mg/kg DW	<1	
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Fluoranthene	1.00E+00	6.32	NA	1.7	2.5	mg/kg DW	<1	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Indeno(1,2,3-cd)pyrene	2.20E-01 J	6.32	NA	0.60	0.69	mg/kg DW	<1	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Lead	1.10E+02 J	6.32	NA	450	530	mg/kg DW	<1	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Mercury	1.70E-01 J	6.32	NA	0.41	0.49	mg/kg DW	<1	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Phenanthrene	3.40E-01	6.32	NA	2.1	2.4	mg/kg DW	<1	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Phenol	1.00E+00	6.32	NA	0.42	1.2	mg/kg DW	2.4	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Pyrene	5.40E-01	6.32	NA	2.6	3.3	mg/kg DW	<1	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Total HPAH	3.78E+00 J	6.32	NA	12	17	mg/kg DW	<1	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Total LPAH	3.40E-01	6.32	NA	5.2	10.4	mg/kg DW	<1	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Total PCBs	1.35E-01	6.32	NA	0.13	1.0	mg/kg DW	1.0	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	TPH-Diesel**	1.30E+03	6.32	NA	2,000	2,000	mg/kg DW	<1	<1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	TPH-Oil**	8.20E+03	6.32	NA	2,000	2,000	mg/kg DW	4.1	4.1
SPU 2010z	CB150 (Seattle Housing Authority)	5/28/2009	Zinc	2.14E+03 J	6.32	NA	410	960	mg/kg DW	5.2	2.2
SR 509 Wetlands - NWES Offsite Spill Investigation											
CH2M Hill 1994c	W5-1-0.5 (Wetland #5 sediment)	4/11/1994	1,1,1-TCA	2.60E-03 J	4.80	NA					
CH2M Hill 1994c	W5-1-0.5 (Wetland #5 sediment)	4/11/1994	1,1-DCA	1.00E-02	4.80	NA					
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	1,1-DCA	2.40E-03 J	7.10	NA					
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	2-Methylnaphthalene	6.60E-01	7.10	NA	0.67	0.67	mg/kg DW	1.0	1.0
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	2-Methylnaphthalene	6.50E-01	5.60	NA	0.67	0.67	mg/kg DW	1.0	1.0
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Anthracene	1.80E-01	0.95	1.89E+01	220	1200	mg/kg OC	0.1	0.0
CH2M Hill 1994c	W1-6-0.5 (Wetland #1 sediment)	4/11/1994	Arsenic	3.50E+01	7.40	NA	57	93	mg/kg DW	0.6	0.4
CH2M Hill 1994c	W1-9-0.5 (Wetland #1 sediment)	4/11/1994	Arsenic	3.00E+01	9.90	NA	57	93	mg/kg DW	0.5	0.3
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	Arsenic	2.40E+01	7.10	NA	57	93	mg/kg DW	0.4	0.3
CH2M Hill 1994c	W5-1-0.5 (Wetland #5 sediment)	4/11/1994	Arsenic	2.40E+01	4.80	NA	57	93	mg/kg DW	0.4	0.3

Table B-1
Selected Storm Drain Solids and Wetland Sediment Sampling Results
1st Avenue S SD Source Control Area

Source	Location Name	Date Collected	Chemical	Concentration (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS*	CSL*	Units	SQS Exceedance Factor	CSL Exceedance Factor
CH2M Hill 1994c	W1-8-0.5 (Wetland #1 sediment)	4/11/1994	Arsenic	2.10E+01	3.90	NA	57	93	mg/kg DW	0.4	0.2
CH2M Hill 1994c	W1-3-0.5 (Wetland #1 sediment)	4/11/1994	Arsenic	2.00E+01	2.20	NA	57	93	mg/kg DW	0.4	0.2
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	Arsenic	1.90E+01	5.60	NA	57	93	mg/kg DW	0.3	0.2
CH2M Hill 1994c	C-2B-0.5 (Wetland #1 bank material)	4/11/1994	Arsenic	1.60E+01	6.30	NA	57	93	mg/kg DW	0.3	0.2
CH2M Hill 1994c	C-4B-0.5 (Wetland #1 bank material)	4/11/1994	Arsenic	1.60E+01	1.70	NA	57	93	mg/kg DW	0.3	0.2
CH2M Hill 1994c	W3-1-0.5 (Wetland #3 sediment)	4/11/1994	Arsenic	8.90E+00	9.90	NA	57	93	mg/kg DW	0.2	0.1
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Arsenic	8.80E+00	0.95	NA	57	93	mg/kg DW	0.2	0.1
CH2M Hill 1994c	W1-4-0.5 (Wetland #1 sediment)	4/11/1994	Arsenic	8.10E+00	1.25	NA	57	93	mg/kg DW	0.1	0.1
CH2M Hill 1994c	W1-2-0.5 (Wetland #1 sediment)	4/11/1994	Arsenic	7.90E+00	1.60	NA	57	93	mg/kg DW	0.1	0.1
CH2M Hill 1994c	W1-7B-0.5 (Wetland #1 sediment)	4/11/1994	Arsenic	7.40E+00	1.50	NA	57	93	mg/kg DW	0.1	0.1
CH2M Hill 1994c	C-1B-0.5 (Wetland #1 bank material)	4/11/1994	Arsenic	6.90E+00	2.60	NA	57	93	mg/kg DW	0.1	0.1
CH2M Hill 1994c	C-5C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Arsenic	5.80E+00	0.60	NA	57	93	mg/kg DW	0.1	0.1
CH2M Hill 1994c	C-3B-0.5 (Wetland #1 bank material)	4/11/1994	Arsenic	2.00E+00	5.25	NA	57	93	mg/kg DW	0.0	0.0
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	Barium	9.50E+01	7.10	NA					
CH2M Hill 1994c	W5-1-0.5 (Wetland #5 sediment)	4/11/1994	Barium	9.00E+01	4.80	NA					
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	Barium	8.90E+01	5.60	NA					
CH2M Hill 1994c	C-3B-0.5 (Wetland #1 bank material)	4/11/1994	Barium	8.00E+01	5.25	NA					
CH2M Hill 1994c	C-1B-0.5 (Wetland #1 bank material)	4/11/1994	Barium	7.30E+01	2.60	NA					
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Barium	7.20E+01	0.95	NA					
CH2M Hill 1994c	W1-4-0.5 (Wetland #1 sediment)	4/11/1994	Barium	6.00E+01	1.25	NA					
CH2M Hill 1994c	W1-7-0.5 (Wetland #1 sediment)	4/11/1994	Barium	5.50E+01	2.10	NA					
CH2M Hill 1994c	W1-2-0.5 (Wetland #1 sediment)	4/11/1994	Barium	5.30E+01	1.60	NA					
CH2M Hill 1994c	W1-7B-0.5 (Wetland #1 sediment)	4/11/1994	Barium	5.10E+01	1.50	NA					
CH2M Hill 1994c	C-4B-0.5 (Wetland #1 bank material)	4/11/1994	Barium	4.90E+01	1.70	NA					
CH2M Hill 1994c	W1-6-0.5 (Wetland #1 sediment)	4/11/1994	Barium	4.60E+01	7.40	NA					
CH2M Hill 1994c	W1-9-0.5 (Wetland #1 sediment)	4/11/1994	Barium	3.60E+01	9.90	NA					
CH2M Hill 1994c	W1-5-0.5 (Wetland #1 sediment)	4/11/1994	Barium	3.40E+01	5.50	NA					
CH2M Hill 1994c	BG-3-0.5 (Wetland #4 sediment)	4/11/1994	Barium	3.20E+01	2.20	NA					
CH2M Hill 1994c	W1-8-0.5 (Wetland #1 sediment)	4/11/1994	Barium	3.20E+01	3.90	NA					
CH2M Hill 1994c	W1-3-0.5 (Wetland #1 sediment)	4/11/1994	Barium	2.50E+01	2.20	NA					
CH2M Hill 1994c	C-5C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Barium	2.40E+01	0.60	NA					
CH2M Hill 1994c	W3-1-0.5 (Wetland #3 sediment)	4/11/1994	Barium	2.40E+01	2.80	NA					
CH2M Hill 1994c	C-2B-0.5 (Wetland #1 bank material)	4/11/1994	Barium	6.60E+01	6.30	NA					
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	BBP	5.40E-01	0.95	5.68E+01	4.9	64	mg/kg OC	12	0.9
CH2M Hill 1994c	C-1B-0.5 (Wetland #1 bank material)	4/11/1994	BBP	1.80E-01	2.60	6.92E+00	4.9	64	mg/kg OC	1.4	0.1
CH2M Hill 1994c	C-2B-0.5 (Wetland #1 bank material)	4/11/1994	BEHP	8.40E+00	6.30	NA	1.3	1.9	mg/kg DW	6.5	4.4
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	BEHP	7.90E+00	7.10	NA	1.3	1.9	mg/kg DW	6.1	4.2
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	BEHP	7.80E+00	5.60	NA	1.3	1.9	mg/kg DW	6.0	4.1
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	BEHP	2.00E+00	0.95	2.11E+02	47	78	mg/kg OC	4.5	2.7
CH2M Hill 1994c	C-3B-0.5 (Wetland #1 bank material)	4/11/1994	BEHP	5.50E+00	5.25	NA	1.3	1.9	mg/kg DW	4.2	2.9
CH2M Hill 1994c	C-1B-0.5 (Wetland #1 bank material)	4/11/1994	BEHP	2.80E+00	2.60	1.08E+02	47	78	mg/kg OC	2.3	1.4
CH2M Hill 1994c	W5-1-0.5 (Wetland #5 sediment)	4/11/1994	BEHP	2.90E+00	4.80	NA	1.3	1.9	mg/kg DW	2.2	1.5
CH2M Hill 1994c	W1-5-0.5 (Wetland #1 sediment)	4/11/1994	BEHP	2.40E+00	5.50	NA	1.3	1.9	mg/kg DW	1.8	1.3
CH2M Hill 1994c	C-5C-0.5 (Wetland #1 bottom sediment)	4/11/1994	BEHP	4.30E-01	0.60	7.17E+01	47	78	mg/kg OC	1.5	0.9
CH2M Hill 1994c	W1-7-0.5 (Wetland #1 sediment)	4/11/1994	BEHP	1.30E+00	2.10	6.19E+01	47	78	mg/kg OC	1.3	0.8

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Selected Storm Drain Solids and Wetland Sediment Sampling Results
1st Avenue S SD Source Control Area

Source	Location Name	Date Collected	Chemical	Concentration (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS*	CSL*	Units	SQS Exceedance Factor	CSL Exceedance Factor
CH2M Hill 1994c	C-4B-0.5 (Wetland #1 bank material)	4/11/1994	BEHP	8.00E-01	1.70	4.71E+01	47	78	mg/kg OC	1.0	0.6
CH2M Hill 1994c	W3-1-0.5 (Wetland #3 sediment)	4/11/1994	BEHP	8.70E-01	2.80	3.11E+01	47	78	mg/kg OC	0.7	0.4
CH2M Hill 1994c	W1-6-0.5 (Wetland #1 sediment)	4/11/1994	BEHP	7.70E-01	7.40	NA	1.3	1.9	mg/kg DW	0.6	0.4
CH2M Hill 1994c	W5-1-0.5 (Wetland #5 sediment)	4/11/1994	Benzene	2.80E-02	4.80	NA					
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Benzo(a)anthracene	4.80E-01	0.95	5.05E+01	110	270	mg/kg OC	0.5	0.2
CH2M Hill 1994c	C-2B-0.5 (Wetland #1 bank material)	4/11/1994	Benzo(a)anthracene	4.00E-01	6.30	NA	1.3	1.6	mg/kg DW	0.3	0.3
CH2M Hill 1994c	C-1B-0.5 (Wetland #1 bank material)	4/11/1994	Benzo(a)anthracene	3.10E-01	2.60	1.19E+01	110	270	mg/kg OC	0.1	0.0
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Benzo(a)pyrene	3.20E-01	0.95	3.37E+01	99	210	mg/kg OC	0.3	0.2
CH2M Hill 1994c	C-1B-0.5 (Wetland #1 bank material)	4/11/1994	Benzo(a)pyrene	2.70E-01	2.60	1.04E+01	99	210	mg/kg OC	0.1	0.0
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Benzo(b)fluoranthene	7.90E-01	0.95	8.32E+01	230	450	mg/kg OC	0.4	0.2
CH2M Hill 1994c	C-2B-0.5 (Wetland #1 bank material)	4/11/1994	Benzo(b)fluoranthene	1.00E+00	6.30	NA	3.2	3.6	mg/kg DW	0.3	0.3
CH2M Hill 1994c	C-1B-0.5 (Wetland #1 bank material)	4/11/1994	Benzo(b)fluoranthene	6.50E-01	2.60	2.50E+01	230	450	mg/kg OC	0.1	0.1
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Benzo(g,h,i)perylene	2.70E-01	0.95	2.84E+01	31	78	mg/kg OC	0.9	0.4
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Benzo(k)fluoranthene	6.30E-01	0.95	6.63E+01	230	450	mg/kg OC	0.3	0.1
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	Cadmium	4.40E+00	7.10	NA	5.1	6.7	mg/kg DW	0.9	0.7
CH2M Hill 1994c	W1-5-0.5 (Wetland #1 sediment)	4/11/1994	Cadmium	3.60E+00	5.50	NA	5.1	6.7	mg/kg DW	0.7	0.5
CH2M Hill 1994c	C-3B-0.5 (Wetland #1 bank material)	4/11/1994	Cadmium	3.50E+00	5.25	NA	5.1	6.7	mg/kg DW	0.7	0.5
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	Cadmium	3.30E+00	5.60	NA	5.1	6.7	mg/kg DW	0.6	0.5
CH2M Hill 1994c	W1-9-0.5 (Wetland #1 sediment)	4/11/1994	Cadmium	3.20E+00	9.90	NA	5.1	6.7	mg/kg DW	0.6	0.5
CH2M Hill 1994c	W1-6-0.5 (Wetland #1 sediment)	4/11/1994	Cadmium	3.00E+00	7.40	NA	5.1	6.7	mg/kg DW	0.6	0.4
CH2M Hill 1994c	C-2B-0.5 (Wetland #1 bank material)	4/11/1994	Cadmium	2.80E+00	6.30	NA	5.1	6.7	mg/kg DW	0.5	0.4
CH2M Hill 1994c	W1-7-0.5 (Wetland #1 sediment)	4/11/1994	Cadmium	2.80E+00	2.10	NA	5.1	6.7	mg/kg DW	0.5	0.4
CH2M Hill 1994c	W5-1-0.5 (Wetland #5 sediment)	4/11/1994	Cadmium	2.70E+00	4.80	NA	5.1	6.7	mg/kg DW	0.5	0.4
CH2M Hill 1994c	C-4B-0.5 (Wetland #1 bank material)	4/11/1994	Cadmium	2.30E+00	1.70	NA	5.1	6.7	mg/kg DW	0.5	0.3
CH2M Hill 1994c	C-1B-0.5 (Wetland #1 bank material)	4/11/1994	Cadmium	1.80E+00	2.60	NA	5.1	6.7	mg/kg DW	0.4	0.3
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Cadmium	1.80E+00	0.95	NA	5.1	6.7	mg/kg DW	0.4	0.3
CH2M Hill 1994c	W1-8-0.5 (Wetland #1 sediment)	4/11/1994	Cadmium	1.80E+00	3.90	NA	5.1	6.7	mg/kg DW	0.4	0.3
CH2M Hill 1994c	W1-2-0.5 (Wetland #1 sediment)	4/11/1994	Cadmium	1.60E+00	1.60	NA	5.1	6.7	mg/kg DW	0.3	0.2
CH2M Hill 1994c	W1-7B-0.5 (Wetland #1 sediment)	4/11/1994	Cadmium	1.60E+00	1.50	NA	5.1	6.7	mg/kg DW	0.3	0.2
CH2M Hill 1994c	W1-4-0.5 (Wetland #1 sediment)	4/11/1994	Cadmium	1.50E+00	1.25	NA	5.1	6.7	mg/kg DW	0.3	0.2
CH2M Hill 1994c	C-5C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Cadmium	1.40E+00	0.60	NA	5.1	6.7	mg/kg DW	0.3	0.2
CH2M Hill 1994c	W1-3-0.5 (Wetland #1 sediment)	4/11/1994	Cadmium	1.40E+00	2.20	NA	5.1	6.7	mg/kg DW	0.3	0.2
CH2M Hill 1994c	W3-1-0.5 (Wetland #3 sediment)	4/11/1994	Cadmium	1.30E+00	2.80	NA	5.1	6.7	mg/kg DW	0.3	0.2
CH2M Hill 1994c	BG-3-0.5 (Wetland #4 sediment)	4/11/1994	Cadmium	1.20E+00	2.20	NA	5.1	6.7	mg/kg DW	0.2	0.2
CH2M Hill 1994c	W5-1-0.5 (Wetland #5 sediment)	4/11/1994	Chloroform	8.00E-03 J	4.80	NA					
CH2M Hill 1994c	W1-8-0.5 (Wetland #1 sediment)	4/11/1994	Chloroform	3.90E-03 J	3.90	NA					
CH2M Hill 1994c	W1-6-0.5 (Wetland #1 sediment)	4/11/1994	Chromium	6.30E+01	7.40	NA	260	270	mg/kg DW	0.2	0.2
CH2M Hill 1994c	W1-9-0.5 (Wetland #1 sediment)	4/11/1994	Chromium	6.10E+01	9.90	NA	260	270	mg/kg DW	0.2	0.2
CH2M Hill 1994c	W1-7-0.5 (Wetland #1 sediment)	4/11/1994	Chromium	5.70E+01	2.10	NA	260	270	mg/kg DW	0.2	0.2
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	Chromium	5.60E+01	7.10	NA	260	270	mg/kg DW	0.2	0.2
CH2M Hill 1994c	C-3B-0.5 (Wetland #1 bank material)	4/11/1994	Chromium	4.90E+01	5.25	NA	260	270	mg/kg DW	0.2	0.2
CH2M Hill 1994c	C-4B-0.5 (Wetland #1 bank material)	4/11/1994	Chromium	4.50E+01	1.70	NA	260	270	mg/kg DW	0.2	0.2
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	Chromium	4.50E+01	5.60	NA	260	270	mg/kg DW	0.2	0.2
CH2M Hill 1994c	W5-1-0.5 (Wetland #5 sediment)	4/11/1994	Chromium	4.30E+01	4.80	NA	260	270	mg/kg DW	0.2	0.2
CH2M Hill 1994c	W1-8-0.5 (Wetland #1 sediment)	4/11/1994	Chromium	4.10E+01	3.90	NA	260	270	mg/kg DW	0.2	0.2

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1st Avenue S SD Source Control Area

Source	Location Name	Date Collected	Chemical	Concentration (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS*	CSL*	Units	SQS Exceedance Factor	CSL Exceedance Factor
CH2M Hill 1994c	C-2B-0.5 (Wetland #1 bank material)	4/11/1994	Chromium	4.00E+01	6.30	NA	260	270	mg/kg DW	0.2	0.1
CH2M Hill 1994c	W1-5-0.5 (Wetland #1 sediment)	4/11/1994	Chromium	3.60E+01	5.50	NA	260	270	mg/kg DW	0.1	0.1
CH2M Hill 1994c	C-1B-0.5 (Wetland #1 bank material)	4/11/1994	Chromium	3.00E+01	2.60	NA	260	270	mg/kg DW	0.1	0.1
CH2M Hill 1994c	W1-4-0.5 (Wetland #1 sediment)	4/11/1994	Chromium	2.80E+01	1.25	NA	260	270	mg/kg DW	0.1	0.1
CH2M Hill 1994c	W1-7B-0.5 (Wetland #1 sediment)	4/11/1994	Chromium	2.50E+01	1.50	NA	260	270	mg/kg DW	0.1	0.1
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Chromium	2.20E+01	0.95	NA	260	270	mg/kg DW	0.1	0.1
CH2M Hill 1994c	W3-1-0.5 (Wetland #3 sediment)	4/11/1994	Chromium	2.10E+01	2.80	NA	260	270	mg/kg DW	0.1	0.1
CH2M Hill 1994c	W1-3-0.5 (Wetland #1 sediment)	4/11/1994	Chromium	2.00E+01	2.20	NA	260	270	mg/kg DW	0.1	0.1
CH2M Hill 1994c	W1-2-0.5 (Wetland #1 sediment)	4/11/1994	Chromium	1.80E+01	1.60	NA	260	270	mg/kg DW	0.1	0.1
CH2M Hill 1994c	C-5C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Chromium	1.70E+01	0.60	NA	260	270	mg/kg DW	0.1	0.1
CH2M Hill 1994c	BG-3-0.5 (Wetland #4 sediment)	4/11/1994	Chromium	1.40E+01	2.20	NA	260	270	mg/kg DW	0.1	0.1
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Chrysene	6.80E-01	0.95	7.16E+01	110	460	mg/kg OC	0.7	0.2
CH2M Hill 1994c	C-2B-0.5 (Wetland #1 bank material)	4/11/1994	Chrysene	7.30E-01	6.30	NA	1.4	2.8	mg/kg DW	0.5	0.3
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	Chrysene	6.80E-01	7.10	NA	1.4	2.8	mg/kg DW	0.5	0.2
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	Chrysene	6.70E-01	5.60	NA	1.4	2.8	mg/kg DW	0.5	0.2
CH2M Hill 1994c	C-1B-0.5 (Wetland #1 bank material)	4/11/1994	Chrysene	4.70E-01	2.60	1.81E+01	110	460	mg/kg OC	0.2	0.0
CH2M Hill 1994c	C-3B-0.5 (Wetland #1 bank material)	4/11/1994	Copper	9.10E+01	5.25	NA	390	390	mg/kg DW	0.2	0.2
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	Copper	8.80E+01	7.10	NA	390	390	mg/kg DW	0.2	0.2
CH2M Hill 1994c	W1-6-0.5 (Wetland #1 sediment)	4/11/1994	Copper	8.40E+01	7.40	NA	390	390	mg/kg DW	0.2	0.2
CH2M Hill 1994c	C-2B-0.5 (Wetland #1 bank material)	4/11/1994	Copper	8.20E+01	6.30	NA	390	390	mg/kg DW	0.2	0.2
CH2M Hill 1994c	W1-9-0.5 (Wetland #1 sediment)	4/11/1994	Copper	8.10E+01	9.90	NA	390	390	mg/kg DW	0.2	0.2
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	Copper	7.20E+01	5.60	NA	390	390	mg/kg DW	0.2	0.2
CH2M Hill 1994c	W1-5-0.5 (Wetland #1 sediment)	4/11/1994	Copper	7.10E+01	5.50	NA	390	390	mg/kg DW	0.2	0.2
CH2M Hill 1994c	W5-1-0.5 (Wetland #5 sediment)	4/11/1994	Copper	6.90E+01	4.80	NA	390	390	mg/kg DW	0.2	0.2
CH2M Hill 1994c	W1-8-0.5 (Wetland #1 sediment)	4/11/1994	Copper	5.80E+01	3.90	NA	390	390	mg/kg DW	0.1	0.1
CH2M Hill 1994c	W1-7-0.5 (Wetland #1 sediment)	4/11/1994	Copper	4.90E+01	2.10	NA	390	390	mg/kg DW	0.1	0.1
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Copper	4.60E+01	0.95	NA	390	390	mg/kg DW	0.1	0.1
CH2M Hill 1994c	C-4B-0.5 (Wetland #1 bank material)	4/11/1994	Copper	4.40E+01	1.70	NA	390	390	mg/kg DW	0.1	0.1
CH2M Hill 1994c	C-1B-0.5 (Wetland #1 bank material)	4/11/1994	Copper	3.60E+01	2.60	NA	390	390	mg/kg DW	0.1	0.1
CH2M Hill 1994c	W1-3-0.5 (Wetland #1 sediment)	4/11/1994	Copper	2.80E+01	2.20	NA	390	390	mg/kg DW	0.1	0.1
CH2M Hill 1994c	W1-4-0.5 (Wetland #1 sediment)	4/11/1994	Copper	2.80E+01	1.25	NA	390	390	mg/kg DW	0.1	0.1
CH2M Hill 1994c	W3-1-0.5 (Wetland #3 sediment)	4/11/1994	Copper	2.80E+01	2.80	NA	390	390	mg/kg DW	0.1	0.1
CH2M Hill 1994c	BG-3-0.5 (Wetland #4 sediment)	4/11/1994	Copper	2.50E+01	2.20	NA	390	390	mg/kg DW	0.1	0.1
CH2M Hill 1994c	W1-7B-0.5 (Wetland #1 sediment)	4/11/1994	Copper	2.50E+01	1.50	NA	390	390	mg/kg DW	0.1	0.1
CH2M Hill 1994c	W1-2-0.5 (Wetland #1 sediment)	4/11/1994	Copper	2.30E+01	1.60	NA	390	390	mg/kg DW	0.1	0.1
CH2M Hill 1994c	C-5C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Copper	1.20E+01	0.60	NA	390	390	mg/kg DW	0.0	0.0
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Dimethylphthalate	2.50E-01	0.95	2.63E+01	53	53	mg/kg OC	0.5	0.5
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	Di-n-octyl phthalate	2.70E-01	5.60	NA	6.2	NA	mg/kg DW	0.0	
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	Di-n-octyl phthalate	2.70E-01	7.10	NA	6.2	NA	mg/kg DW	0.0	
CH2M Hill 1994c	W3-1-0.5 (Wetland #3 sediment)	4/11/1994	Ethylbenzene	1.20E-01	2.80	4.29E+00					
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	Ethylbenzene	6.90E-02	5.60	NA					
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	Ethylbenzene	4.80E-02	7.10	NA					
CH2M Hill 1994c	C-5C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Ethylbenzene	3.70E-02	0.60	6.17E+00					
CH2M Hill 1994c	W1-5-0.5 (Wetland #1 sediment)	4/11/1994	Ethylbenzene	2.10E-02	5.50	NA					
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Ethylbenzene	1.40E-02	0.95	1.47E+00					

Table B-1
Selected Storm Drain Solids and Wetland Sediment Sampling Results
1st Avenue S SD Source Control Area

Source	Location Name	Date Collected	Chemical	Concentration (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS*	CSL*	Units	SQS Exceedance Factor	CSL Exceedance Factor
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Fluoranthene	2.20E+00	0.95	2.32E+02	160	1200	mg/kg OC	1.4	0.2
CH2M Hill 1994c	C-2B-0.5 (Wetland #1 bank material)	4/11/1994	Fluoranthene	1.20E+00	6.30	NA	1.7	2.5	mg/kg DW	0.7	0.5
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	Fluoranthene	7.80E-01	7.10	NA	1.7	2.5	mg/kg DW	0.5	0.3
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	Fluoranthene	7.60E-01	5.60	NA	1.7	2.5	mg/kg DW	0.4	0.3
CH2M Hill 1994c	C-3B-0.5 (Wetland #1 bank material)	4/11/1994	Fluoranthene	4.00E-01	5.25	NA	1.7	2.5	mg/kg DW	0.2	0.2
CH2M Hill 1994c	C-1B-0.5 (Wetland #1 bank material)	4/11/1994	Fluoranthene	9.20E-01	2.60	3.54E+01	160	1200	mg/kg OC	0.2	0.0
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Indeno(1,2,3-cd)pyrene	2.10E-01	0.95	2.21E+01	34	88	mg/kg OC	0.7	0.3
CH2M Hill 1994c	C-1B-0.5 (Wetland #1 bank material)	4/11/1994	Indeno(1,2,3-cd)pyrene	2.60E-01	2.60	1.00E+01	34	88	mg/kg OC	0.3	0.1
CH2M Hill 1994c	W5-1-0.5 (Wetland #5 sediment)	4/11/1994	Lead	1.10E+03	4.80	NA	450	530	mg/kg DW	2.4	2.1
CH2M Hill 1994c	W1-9-0.5 (Wetland #1 sediment)	4/11/1994	Lead	5.60E+02	9.90	NA	450	530	mg/kg DW	1.2	1.1
CH2M Hill 1994c	W1-6-0.5 (Wetland #1 sediment)	4/11/1994	Lead	4.40E+02	7.40	NA	450	530	mg/kg DW	1.0	0.8
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	Lead	2.20E+02	7.10	NA	450	530	mg/kg DW	0.5	0.4
CH2M Hill 1994c	W1-8-0.5 (Wetland #1 sediment)	4/11/1994	Lead	2.20E+02	3.90	NA	450	530	mg/kg DW	0.5	0.4
CH2M Hill 1994c	C-2B-0.5 (Wetland #1 bank material)	4/11/1994	Lead	2.00E+02	6.30	NA	450	530	mg/kg DW	0.4	0.4
CH2M Hill 1994c	C-3B-0.5 (Wetland #1 bank material)	4/11/1994	Lead	1.80E+02	5.25	NA	450	530	mg/kg DW	0.4	0.3
CH2M Hill 1994c	C-1B-0.5 (Wetland #1 bank material)	4/11/1994	Lead	1.70E+02	2.60	NA	450	530	mg/kg DW	0.4	0.3
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Lead	1.60E+02	0.95	NA	450	530	mg/kg DW	0.4	0.3
CH2M Hill 1994c	C-4B-0.5 (Wetland #1 bank material)	4/11/1994	Lead	1.60E+02	1.70	NA	450	530	mg/kg DW	0.4	0.3
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	Lead	1.60E+02	5.60	NA	450	530	mg/kg DW	0.4	0.3
CH2M Hill 1994c	W1-5-0.5 (Wetland #1 sediment)	4/11/1994	Lead	1.30E+02	5.50	NA	450	530	mg/kg DW	0.3	0.2
CH2M Hill 1994c	W3-1-0.5 (Wetland #3 sediment)	4/11/1994	Lead	9.30E+01	2.80	NA	450	530	mg/kg DW	0.2	0.2
CH2M Hill 1994c	W1-3-0.5 (Wetland #1 sediment)	4/11/1994	Lead	4.50E+01	2.20	NA	450	530	mg/kg DW	0.1	0.1
CH2M Hill 1994c	C-5C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Lead	3.60E+01	0.60	NA	450	530	mg/kg DW	0.1	0.1
CH2M Hill 1994c	W1-7-0.5 (Wetland #1 sediment)	4/11/1994	Lead	3.00E+01	2.10	NA	450	530	mg/kg DW	0.1	0.1
CH2M Hill 1994c	BG-3-0.5 (Wetland #4 sediment)	4/11/1994	Lead	2.90E+01	2.20	NA	450	530	mg/kg DW	0.1	0.1
CH2M Hill 1994c	W1-7B-0.5 (Wetland #1 sediment)	4/11/1994	Lead	2.80E+01	1.50	NA	450	530	mg/kg DW	0.1	0.1
CH2M Hill 1994c	W1-2-0.5 (Wetland #1 sediment)	4/11/1994	Lead	2.20E+01	1.60	NA	450	530	mg/kg DW	0.0	0.0
CH2M Hill 1994c	W1-4-0.5 (Wetland #1 sediment)	4/11/1994	Lead	1.80E+01	1.25	NA	450	530	mg/kg DW	0.0	0.0
CH2M Hill 1994c	W1-9-0.5 (Wetland #1 sediment)	4/11/1994	Mercury	4.60E-01	9.90	NA	0.41	0.49	mg/kg DW	1.1	0.9
CH2M Hill 1994c	C-3B-0.5 (Wetland #1 bank material)	4/11/1994	Mercury	3.80E-01	5.25	NA	0.41	0.49	mg/kg DW	0.9	0.8
CH2M Hill 1994c	C-2B-0.5 (Wetland #1 bank material)	4/11/1994	Mercury	2.90E-01	6.30	NA	0.41	0.49	mg/kg DW	0.7	0.6
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	Mercury	2.80E-01	5.60	NA	0.41	0.49	mg/kg DW	0.7	0.6
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	Mercury	2.70E-01	7.10	NA	0.41	0.49	mg/kg DW	0.7	0.6
CH2M Hill 1994c	W5-1-0.5 (Wetland #5 sediment)	4/11/1994	Mercury	2.10E-01	4.80	NA	0.41	0.49	mg/kg DW	0.5	0.4
CH2M Hill 1994c	W1-8-0.5 (Wetland #1 sediment)	4/11/1994	Mercury	1.90E-01	3.90	NA	0.41	0.49	mg/kg DW	0.5	0.4
CH2M Hill 1994c	W3-1-0.5 (Wetland #3 sediment)	4/11/1994	Mercury	1.80E-01	2.80	NA	0.41	0.49	mg/kg DW	0.4	0.4
CH2M Hill 1994c	W1-3-0.5 (Wetland #1 sediment)	4/11/1994	Mercury	1.70E-01	2.20	NA	0.41	0.49	mg/kg DW	0.4	0.3
CH2M Hill 1994c	C-4B-0.5 (Wetland #1 bank material)	4/11/1994	Mercury	1.30E-01	1.70	NA	0.41	0.49	mg/kg DW	0.3	0.3
CH2M Hill 1994c	W5-1-0.5 (Wetland #5 sediment)	4/11/1994	Methylene chloride	1.50E-02	4.80	NA					
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	Naphthalene	7.00E-01	7.10	NA	2.1	2.4	mg/kg DW	0.3	0.3
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	Naphthalene	6.90E-01	5.60	NA	2.1	2.4	mg/kg DW	0.3	0.3
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Pentachlorophenol	8.30E-01	0.95	NA					
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Phenanthrene	1.10E+00	0.95	1.16E+02	100	480	mg/kg OC	1.2	0.2
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	Phenanthrene	4.80E-01	7.10	NA	2.1	2.4	mg/kg DW	0.2	0.2
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	Phenanthrene	4.70E-01	5.60	NA	2.1	2.4	mg/kg DW	0.2	0.2

Table B-1
Selected Storm Drain Solids and Wetland Sediment Sampling Results
1st Avenue S SD Source Control Area

Source	Location Name	Date Collected	Chemical	Concentration (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS*	CSL*	Units	SQS Exceedance Factor	CSL Exceedance Factor
CH2M Hill 1994c	C-1B-0.5 (Wetland #1 bank material)	4/11/1994	Phenanthrene	4.60E-01	2.60	1.77E+01	100	480	mg/kg OC	0.2	0.0
CH2M Hill 1994c	C-2B-0.5 (Wetland #1 bank material)	4/11/1994	Phenanthrene	3.60E-01	6.30	NA	2.1	2.4	mg/kg DW	0.2	0.2
CH2M Hill 1994c	C-2B-0.5 (Wetland #1 bank material)	4/11/1994	Pyrene	1.30E+00	6.30	NA	2.6	3.3	mg/kg DW	0.5	0.4
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	Pyrene	7.50E-01	7.10	NA	2.6	3.3	mg/kg DW	0.3	0.2
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	Pyrene	7.30E-01	5.60	NA	2.6	3.3	mg/kg DW	0.3	0.2
CH2M Hill 1994c	C-3B-0.5 (Wetland #1 bank material)	4/11/1994	Pyrene	4.60E-01	5.25	NA	2.6	3.3	mg/kg DW	0.2	0.1
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Pyrene	1.50E+00	0.95	1.58E+02	1000	1400	mg/kg OC	0.2	0.1
CH2M Hill 1994c	C-1B-0.5 (Wetland #1 bank material)	4/11/1994	Pyrene	7.30E-01	2.60	2.81E+01	1000	1400	mg/kg OC	0.0	0.0
CH2M Hill 1994c	C-3B-0.5 (Wetland #1 bank material)	4/11/1994	Silver	2.00E+00	5.25	NA	6.1	6.1	mg/kg DW	0.3	0.3
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	Silver	1.90E+00	7.10	NA	6.1	6.1	mg/kg DW	0.3	0.3
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	Silver	1.80E+00	5.60	NA	6.1	6.1	mg/kg DW	0.3	0.3
CH2M Hill 1994c	W1-7-0.5 (Wetland #1 sediment)	4/11/1994	Silver	1.60E+00	2.10	NA	6.1	6.1	mg/kg DW	0.3	0.3
CH2M Hill 1994c	C-2B-0.5 (Wetland #1 bank material)	4/11/1994	Silver	1.50E+00	6.30	NA	6.1	6.1	mg/kg DW	0.2	0.2
CH2M Hill 1994c	C-4B-0.5 (Wetland #1 bank material)	4/11/1994	Silver	1.20E+00	1.70	NA	6.1	6.1	mg/kg DW	0.2	0.2
CH2M Hill 1994c	W1-8-0.5 (Wetland #1 sediment)	4/11/1994	Silver	9.60E-01	3.90	NA	6.1	6.1	mg/kg DW	0.2	0.2
CH2M Hill 1994c	W1-4-0.5 (Wetland #1 sediment)	4/11/1994	Silver	6.40E-01	1.25	NA	6.1	6.1	mg/kg DW	0.1	0.1
CH2M Hill 1994c	W1-2-0.5 (Wetland #1 sediment)	4/11/1994	Silver	6.10E-01	1.60	NA	6.1	6.1	mg/kg DW	0.1	0.1
CH2M Hill 1994c	C-5C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Tetrachloroethane	5.70E-03 J	0.60	NA					
CH2M Hill 1994c	W3-1-0.5 (Wetland #3 sediment)	4/11/1994	Tetrachloroethane	4.00E-03 J	2.80	NA					
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Toluene	2.10E-02	0.95	NA					
CH2M Hill 1994c	BG-3-0.5 (Wetland #4 sediment)	4/11/1994	Toluene	4.90E-03 J	2.20	NA					
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	Toluene	2.70E-03 J	7.10	NA					
CH2M Hill 1994c	W3-1-0.5 (Wetland #3 sediment)	4/11/1994	Toluene	1.50E-03 J	2.80	NA					
CH2M Hill 1994c	C-2B-0.5 (Wetland #1 bank material)	4/11/1994	Total HPAH	1.96E+01	6.30	NA	12	17	mg/kg DW	1.6	1.2
CH2M Hill 1994c	C-3B-0.5 (Wetland #1 bank material)	4/11/1994	Total HPAH	1.79E+01	5.25	NA	12	17	mg/kg DW	1.5	1.1
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	Total HPAH	1.79E+01	7.10	NA	12	17	mg/kg DW	1.5	1.1
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	Total HPAH	1.76E+01	5.60	NA	12	17	mg/kg DW	1.5	1.0
CH2M Hill 1994c	W5-1-0.5 (Wetland #5 sediment)	4/11/1994	Total HPAH	1.65E+01	4.80	NA	12	17	mg/kg DW	1.4	1.0
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Total HPAH	1.23E+01	0.95	1.29E+03	960	5300	mg/kg OC	1.3	0.2
CH2M Hill 1994c	W1-5-0.5 (Wetland #1 sediment)	4/11/1994	Total HPAH	1.45E+01	5.50	NA	12	17	mg/kg DW	1.2	0.9
CH2M Hill 1994c	W1-6-0.5 (Wetland #1 sediment)	4/11/1994	Total HPAH	1.35E+01	7.40	NA	12	17	mg/kg DW	1.1	0.8
CH2M Hill 1994c	C-5C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Total HPAH	4.67E+00	0.60	7.78E+02	960	5300	mg/kg OC	0.8	0.1
CH2M Hill 1994c	C-1B-0.5 (Wetland #1 bank material)	4/11/1994	Total HPAH	9.97E+00	2.60	3.83E+02	960	5300	mg/kg OC	0.4	0.1
CH2M Hill 1994c	C-4B-0.5 (Wetland #1 bank material)	4/11/1994	Total HPAH	6.26E+00	1.70	3.68E+02	960	5300	mg/kg OC	0.4	0.1
CH2M Hill 1994c	W1-7-0.5 (Wetland #1 sediment)	4/11/1994	Total HPAH	7.08E+00	2.10	3.37E+02	960	5300	mg/kg OC	0.4	0.1
CH2M Hill 1994c	W3-1-0.5 (Wetland #3 sediment)	4/11/1994	Total HPAH	5.39E+00	2.80	1.93E+02	960	5300	mg/kg OC	0.2	0.0
CH2M Hill 1994c	C-2B-0.5 (Wetland #1 bank material)	4/11/1994	TPH-Oil**	8.30E+03	6.30	NA	2000	2000	mg/kg DW	4.2	4.2
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	TPH-Oil**	7.20E+03	7.10	NA	2000	2000	mg/kg DW	3.6	3.6
CH2M Hill 1994c	C-3B-0.5 (Wetland #1 bank material)	4/11/1994	TPH-Oil**	6.70E+03	5.25	NA	2000	2000	mg/kg DW	3.4	3.4
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	TPH-Oil**	6.00E+03	5.60	NA	2000	2000	mg/kg DW	3.0	3.0
CH2M Hill 1994c	C-1B-0.5 (Wetland #1 bank material)	4/11/1994	TPH-Oil**	1.90E+03	2.60	NA	2000	2000	mg/kg DW	1.0	1.0
CH2M Hill 1994c	W1-8-0.5 (Wetland #1 sediment)	4/11/1994	TPH-Oil**	1.50E+03	3.90	NA	2000	2000	mg/kg DW	0.8	0.8
CH2M Hill 1994c	W1-6-0.5 (Wetland #1 sediment)	4/11/1994	TPH-Oil**	1.40E+03	7.40	NA	2000	2000	mg/kg DW	0.7	0.7
CH2M Hill 1994c	W3-1-0.5 (Wetland #3 sediment)	4/11/1994	TPH-Oil**	1.40E+03	2.80	NA	2000	2000	mg/kg DW	0.7	0.7
CH2M Hill 1994c	W1-5-0.5 (Wetland #1 sediment)	4/11/1994	TPH-Oil**	1.30E+03	5.50	NA	2000	2000	mg/kg DW	0.7	0.7

Table B-1
Selected Storm Drain Solids and Wetland Sediment Sampling Results
1st Avenue S SD Source Control Area

Source	Location Name	Date Collected	Chemical	Concentration (mg/kg DW)		TOC %	Conc'n (mg/kg OC)	SQS*	CSL*	Units	SQS Exceedance Factor	CSL Exceedance Factor
CH2M Hill 1994c	W5-1-0.5 (Wetland #5 sediment)	4/11/1994	TPH-Oil**	1.00E+03		4.80	NA	2000	2000	mg/kg DW	0.5	0.5
CH2M Hill 1994c	W1-7-0.5 (Wetland #1 sediment)	4/11/1994	TPH-Oil**	9.90E+02		2.10	NA	2000	2000	mg/kg DW	0.5	0.5
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	TPH-Oil**	9.10E+02		0.95	NA	2000	2000	mg/kg DW	0.5	0.5
CH2M Hill 1994c	W1-7B-0.5 (Wetland #1 sediment)	4/11/1994	TPH-Oil**	8.90E+02		1.50	NA	2000	2000	mg/kg DW	0.4	0.4
CH2M Hill 1994c	W1-9-0.5 (Wetland #1 sediment)	4/11/1994	TPH-Oil**	6.60E+02		9.90	NA	2000	2000	mg/kg DW	0.3	0.3
CH2M Hill 1994c	C-4B-0.5 (Wetland #1 bank material)	4/11/1994	TPH-Oil**	4.70E+02		1.70	NA	2000	2000	mg/kg DW	0.2	0.2
CH2M Hill 1994c	C-5C-0.5 (Wetland #1 bottom sediment)	4/11/1994	TPH-Oil**	3.20E+02		0.60	NA	2000	2000	mg/kg DW	0.2	0.2
CH2M Hill 1994c	BG-3-0.5 (Wetland #4 sediment)	4/11/1994	TPH-Oil**	1.50E+02		2.20	NA	2000	2000	mg/kg DW	0.1	0.1
CH2M Hill 1994c	W1-3-0.5 (Wetland #1 sediment)	4/11/1994	TPH-Oil**	1.50E+02		2.20	NA	2000	2000	mg/kg DW	0.1	0.1
CH2M Hill 1994c	W1-2-0.5 (Wetland #1 sediment)	4/11/1994	TPH-Oil**	1.20E+02		1.60	NA	2000	2000	mg/kg DW	0.1	0.1
CH2M Hill 1994c	W3-1-0.5 (Wetland #3 sediment)	4/11/1994	Xylenes, total	6.80E-01		2.80	NA					
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	Xylenes, total	4.50E-01		5.60	NA					
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	Xylenes, total	4.10E-01		7.10	NA					
CH2M Hill 1994c	W1-5-0.5 (Wetland #1 sediment)	4/11/1994	Xylenes, total	1.20E-01		5.50	NA					
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Xylenes, total	8.50E-02		0.95	NA					
CH2M Hill 1994c	W1-7B-0.5 (Wetland #1 sediment)	4/11/1994	Xylenes, total	5.20E-03	J	1.50	NA					
CH2M Hill 1994c	C-4B-0.5 (Wetland #1 bank material)	4/11/1994	Xylenes, total	3.80E-03	J	1.70	NA					
CH2M Hill 1994c	C-2B-0.5 (Wetland #1 bank material)	4/11/1994	Xylenes, total	2.50E-03	J	6.30	NA					
CH2M Hill 1994c	C-5C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Xylenes, total	1.80E-03	J	0.60	NA					
CH2M Hill 1994c	W1-1-0,5 (Wetland #1 sediment)	4/11/1994	Zinc	4.00E+02		7.10	NA	410	960	mg/kg DW	1.0	0.4
CH2M Hill 1994c	W5-1-0.5 (Wetland #5 sediment)	4/11/1994	Zinc	3.50E+02		4.80	NA	410	960	mg/kg DW	0.9	0.4
CH2M Hill 1994c	C-3B-0.5 (Wetland #1 bank material)	4/11/1994	Zinc	2.90E+02		5.25	NA	410	960	mg/kg DW	0.7	0.3
CH2M Hill 1994c	C-2B-0.5 (Wetland #1 bank material)	4/11/1994	Zinc	2.80E+02		6.30	NA	410	960	mg/kg DW	0.7	0.3
CH2M Hill 1994c	C-5B-0.5 (Wetland #1 bank material)	4/11/1994	Zinc	2.80E+02		5.60	NA	410	960	mg/kg DW	0.7	0.3
CH2M Hill 1994c	W1-5-0.5 (Wetland #1 sediment)	4/11/1994	Zinc	2.40E+02		5.50	NA	410	960	mg/kg DW	0.6	0.3
CH2M Hill 1994c	W1-9-0.5 (Wetland #1 sediment)	4/11/1994	Zinc	2.10E+02		9.90	NA	410	960	mg/kg DW	0.5	0.2
CH2M Hill 1994c	C-1B-0.5 (Wetland #1 bank material)	4/11/1994	Zinc	2.00E+02		2.60	NA	410	960	mg/kg DW	0.5	0.2
CH2M Hill 1994c	C-1C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Zinc	2.00E+02		0.95	NA	410	960	mg/kg DW	0.5	0.2
CH2M Hill 1994c	W1-6-0.5 (Wetland #1 sediment)	4/11/1994	Zinc	2.00E+02		7.40	NA	410	960	mg/kg DW	0.5	0.2
CH2M Hill 1994c	W1-8-0.5 (Wetland #1 sediment)	4/11/1994	Zinc	1.50E+02		3.90	NA	410	960	mg/kg DW	0.4	0.2
CH2M Hill 1994c	W1-7-0.5 (Wetland #1 sediment)	4/11/1994	Zinc	1.30E+02		2.10	NA	410	960	mg/kg DW	0.3	0.1
CH2M Hill 1994c	C-4B-0.5 (Wetland #1 bank material)	4/11/1994	Zinc	1.10E+02		1.70	NA	410	960	mg/kg DW	0.3	0.1
CH2M Hill 1994c	W3-1-0.5 (Wetland #3 sediment)	4/11/1994	Zinc	8.60E+01		2.80	NA	410	960	mg/kg DW	0.2	0.1
CH2M Hill 1994c	W1-3-0.5 (Wetland #1 sediment)	4/11/1994	Zinc	7.50E+01		2.20	NA	410	960	mg/kg DW	0.2	0.1
CH2M Hill 1994c	C-5C-0.5 (Wetland #1 bottom sediment)	4/11/1994	Zinc	7.20E+01		0.60	NA	410	960	mg/kg DW	0.2	0.1
CH2M Hill 1994c	BG-3-0.5 (Wetland #4 sediment)	4/11/1994	Zinc	6.90E+01		2.20	NA	410	960	mg/kg DW	0.2	0.1
CH2M Hill 1994c	W1-4-0.5 (Wetland #1 sediment)	4/11/1994	Zinc	6.30E+01		1.25	NA	410	960	mg/kg DW	0.2	0.1
CH2M Hill 1994c	W1-7B-0.5 (Wetland #1 sediment)	4/11/1994	Zinc	6.30E+01		1.50	NA	410	960	mg/kg DW	0.2	0.1
CH2M Hill 1994c	W1-2-0.5 (Wetland #1 sediment)	4/11/1994	Zinc	5.70E+01		1.60	NA	410	960	mg/kg DW	0.1	0.1
Waste Management 1st Avenue S												
CH2M Hill 1994c	MH1 (Eastern edge of NWES facility)	6/7/1994	Arsenic	9.90E+00		0.69	NA	57	93	mg/kg DW	<1	<1
CH2M Hill 1994c	MH1 (Eastern edge of NWES facility)	6/7/1994	Barium	3.40E+01		0.69	NA					
CH2M Hill 1994c	MH1 (Eastern edge of NWES facility)	6/7/1994	BEHP	1.20E+00		0.69	NA	1.3	1.9	mg/kg DW	<1	<1
CH2M Hill 1994c	MH1 (Eastern edge of NWES facility)	6/7/1994	Cadmium	2.40E+00		0.69	NA	5.1	6.7	mg/kg DW	<1	<1
CH2M Hill 1994c	MH1 (Eastern edge of NWES facility)	6/7/1994	Chromium	1.30E+01		0.69	NA	260	270	mg/kg DW	<1	<1

Table B-1
Selected Storm Drain Solids and Wetland Sediment Sampling Results
1st Avenue S SD Source Control Area

Source	Location Name	Date Collected	Chemical	Concentration (mg/kg DW)	TOC %	Conc'n (mg/kg OC)	SQS*	CSL*	Units	SQS Exceedance Factor	CSL Exceedance Factor
CH2M Hill 1994c	MH1 (Eastern edge of NWES facility)	6/7/1994	Copper	4.40E+01	0.69	NA	390	390	mg/kg DW	<1	<1
CH2M Hill 1994c	MH1 (Eastern edge of NWES facility)	6/7/1994	Lead	1.50E+01	0.69	NA	450	530	mg/kg DW	<1	<1
CH2M Hill 1994c	MH1 (Eastern edge of NWES facility)	6/7/1994	Silver	8.80E-01	0.69	NA	6.1	6.1	mg/kg DW	<1	<1
CH2M Hill 1994c	MH1 (Eastern edge of NWES facility)	6/7/1994	TPH-Oil**	1.80E+03	0.69	NA	2000	2000	mg/kg DW	<1	<1
CH2M Hill 1994c	MH1 (Eastern edge of NWES facility)	6/7/1994	Zinc	1.80E+02	0.69	NA	410	960	mg/kg DW	<1	<1

mg/kg - milligram per kilogram
ug/kg - microgram per kilogram
DW - Dry weight
TOC - Total Organic Carbon
OC - Organic carbon normalized

SQS - SMS Sediment Quality Standard
CSL - SMS Cleanup Screening Level
PAH - Polycyclic aromatic hydrocarbon
SMS - Sediment Management Standards
AET - Apparent Effects Threshold

* Samples with TOC <0.5% of >4% were compared to dry weight SMS or AET criteria.
** TPH-Oil and TPH-Diesel samples were compared to MTCA soil cleanup levels.
Table presents detected chemicals only.
Exceedance factors are the ratio of the detected concentrations to the CSL or SQS; exceedance factors are shown only if they are greater than 1.
Chemicals with exceedance factors greater than 1 are shaded.
Sampling events are listed in Table 2.

Appendix C

Soil and Groundwater Sampling Results at Upland Properties

1st Avenue S SD Source Control Area

Table C-1
Chemicals Detected in Soil
Waste Management Eastmont Transfer Station

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Soil Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
SCS Engineers 1992	3/19/1992	B-3	5.0	Arsenic	1.1	0.67	590	1.6
SCS Engineers 1992	3/19/1992	B-1	2.5	Barium	45	16,000		<1
SCS Engineers 1992	3/19/1992	B-2	4.0	Barium	42	16,000		<1
SCS Engineers 1992	3/19/1992	B-3	5.0	Barium	40	16,000		<1
SCS Engineers 1993	9/21/1992	Bin 9	Composite	Benzo(a)anthracene	1.7		0.27	6.1
SCS Engineers 1993	9/21/1992	Bin 9	Composite	Benzo(a)pyrene	2.3		0.21	11
SCS Engineers 1993	9/21/1992	Bin 9	Composite	Benzo(b)fluoranthene	3.6		0.45	8.0
SCS Engineers 1992	3/19/1992	B-2	4.0	Chromium	29		270	<1
SCS Engineers 1992	3/19/1992	B-1	2.5	Chromium	26		270	<1
SCS Engineers 1992	3/19/1992	B-3	5.0	Chromium	24		270	<1
SCS Engineers 1993	9/21/1992	Bin 9	Composite	Chrysene	1.7		0.46	3.6
SCS Engineers 1993	9/21/1992	Bin 9	Composite	Fluoranthene	3.6		1.2	3.0
SCS Engineers 1992	3/19/1992	B-2	4.0	Lead	472	250	67	1.9
SCS Engineers 1992	3/19/1992	B-3	5.0	Lead	273	250	67	1.1
SCS Engineers 1992	3/19/1992	B-1	2.5	Lead	12	250	67	<1
SCS Engineers 1993	9/21/1992	Bin 9	Composite	Phenanthrene	1.0		0.49	2.1
SCS Engineers 1993	9/21/1992	Bin 9	Composite	Pyrene	4.0		1.4	2.9
SCS Engineers 1993	9/21/1992	West sidewall	Composite	Total petroleum hydrocarbons[c]	20,700	2,000		10
SCS Engineers 1993	9/21/1992	Bin 9	Composite	Total petroleum hydrocarbons[c]	20,400	2,000		10
SCS Engineers 1992	4/29/1992	B-4	5.5	Total petroleum hydrocarbons[c]	14,100	2,000		7.1
SCS Engineers 1993	9/21/1992	2.0 ft below tank	Composite	Total petroleum hydrocarbons[c]	12,000	2,000		6.0
SCS Engineers 1992	4/29/1992	B-4	10.0	Total petroleum hydrocarbons[c]	10,300	2,000		5.2
SCS Engineers 1992	4/29/1992	B-5	9.5	Total petroleum hydrocarbons[c]	8,910	2,000		4.5
SCS Engineers 1993	9/21/1992	Bin 3	Composite	Total petroleum hydrocarbons[c]	5,180	2,000		2.6
SCS Engineers 1993	9/21/1992	Bin 6	Composite	Total petroleum hydrocarbons[c]	3,390	2,000		1.7
SCS Engineers 1993	9/21/1992	East sidewall	Composite	Total petroleum hydrocarbons[c]	2,860	2,000		1.4
SCS Engineers 1993	9/21/1992	Bin 5	Composite	Total petroleum hydrocarbons[c]	1,640	2,000		<1
SCS Engineers 1993	9/21/1992	Bin 2	Composite	Total petroleum hydrocarbons[c]	1,230	2,000		<1
SCS Engineers 1992	3/19/1992	B-3	5.0	Total petroleum hydrocarbons[c]	1,210	2,000		<1
SCS Engineers 1993	9/21/1992	Bin 4	Composite	Total petroleum hydrocarbons[c]	1,090	2,000		<1
SCS Engineers 1992	4/29/1992	B-5	5.5	Total petroleum hydrocarbons[c]	852	2,000		<1

Table C-1
Chemicals Detected in Soil
Waste Management Eastmont Transfer Station

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Soil Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
SCS Engineers 1993	9/21/1992	0.5 ft below tank	Composite	Total petroleum hydrocarbons[c]	847	2,000		<1
SCS Engineers 1993	9/21/1992	Bin 8	Composite	Total petroleum hydrocarbons[c]	700	2,000		<1
SCS Engineers 1993	9/21/1992	Bin 1	Composite	Total petroleum hydrocarbons[c]	692	2,000		<1
SCS Engineers 1993	9/21/1992	Bin 7	Composite	Total petroleum hydrocarbons[c]	259	2,000		<1
SCS Engineers 1992	3/19/1992	B-2	4.0	Total petroleum hydrocarbons[c]	98	2,000		<1
Omega Services 1995	7/11/1995	Below Pump Island	2	TPH-Diesel	18,000	2,000		9.0
Omega Services 1995	7/11/1995	UST 3 East End	6	TPH-Diesel	15,000	2,000		7.5
Omega Services 1995	7/11/1995	Overburden Soil	NA	TPH-Diesel	6,700	2,000		3.4
Omega Services 1995	7/11/1995	UST 2 East End	6	TPH-Diesel	3,400	2,000		1.7
Omega Services 1995	7/11/1995	UST 1 East End	8	TPH-Diesel	170	2,000		<1
Omega Services 1995	7/11/1995	Below Product Line	2	TPH-Diesel	51	2,000		<1
Omega Services 1995	7/11/1995	East Sidewall	6	Xylenes	0.11	9.0		<1

ft bgs - feet below ground surface
mg/kg - Milligrams per kilogram
MTCA - Model Toxics Control Act

(grey box) Sample location was excavated during remediation activities.
(yellow box) Sample concentration exceeded MTCA Cleanup Level or Soil-to-Sediment Screening Level.

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.
b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).
c - The MTCA cleanup level for petroleum hydrocarbons is the value for diesel-range and heavy oil-range hydrocarbons.
Table presents detected chemicals only.
Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or the soil-to-sediment screening level, whichever level is lower.

Table C-2
Chemicals Detected in Soil
Jones Stevedoring

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Soil Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
O'Sullivan Omega 1994a	8/22/1994	UST #2 - Center Bottom	8.0	Heavy oil	Present			
O'Sullivan Omega 1994a	8/22/1994	JS-6 - West Sidewall	6.0-8.0	Heavy oil	Present			
O'Sullivan Omega 1994a	8/22/1994	JS-10	NA	Dispenser stockpile	Present			
O'Sullivan Omega 1994a	8/24/1994	JS-11 - Dispenser Area	6.0-8.0	Total petroleum hydrocarbons[c]	65	2,000		<1
O'Sullivan Omega 1994a	8/24/1994	JS-12 - Stockpile	NA	Total petroleum hydrocarbons[c]	450	2,000		<1

ft bgs - feet below ground surface

mg/kg - Milligrams per kilogram

MTCA - Model Toxics Control Act

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.

b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).

c - The MTCA cleanup level for petroleum hydrocarbons is the value for diesel-range and heavy oil-range hydrocarbons.

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or the soil-to-sediment screening level, whichever level is lower.

Table C-3
Chemicals Detected in Soil
Seattle Housing Authority

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Soil Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
RZA 1990b	1/31/1990	B-5 (S-27)	2.5-4.0	Tetrachloroethylene	0.75	0.05		15
RZA 1990b	1/31/1990	B-6 (S-33)	2.5-4.0	Tetrachloroethylene	0.69	0.05		14
RZA 1990b	1/31/1990	B-4 (S-22)	5.0-6.5	Tetrachloroethylene	0.42	0.05		8.4
RZA 1990b	1/31/1990	Catch Basin Sludge	--	Toluene	0.14	7.0		<1
RZA 1990b	1/31/1990	Catch Basin Sludge	--	Total petroleum hydrocarbons[c]	3,942	2,000		2.0
RZA 1990b	1/31/1990	Catch Basin Sludge	--	Total petroleum hydrocarbons[c]	3,374	2,000		1.7
RZA 1990b	1/31/1990	B-5 (S-27)	2.5-8.0	Total petroleum hydrocarbons[c]	16.2	2,000		<1
RZA 1990b	1/31/1990	B-6 (S-33)	2.5-8.0	Total petroleum hydrocarbons[c]	7.8	2,000		<1
RZA 1990b	1/31/1990	B-6 (S-33) - DUP	2.5-8.0	Total petroleum hydrocarbons[c]	7.5	2,000		<1
RZA 1990b	1/31/1990	B-4 (S-22)	5.0-6.5	Total petroleum hydrocarbons[c]	5.2	2,000		<1
RZA 1990b	1/31/1990	Catch Basin Sludge	--	Xylenes	0.09	9.0		<1

ft bgs - feet below ground surface

mg/kg - Milligrams per kilogram

MTCA - Model Toxics Control Act

Sample concentration exceeded MTCA Cleanup Level or Soil-to-Sediment Screening Level.

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.

b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).

c - The MTCA cleanup level for petroleum hydrocarbons is the value for diesel-range and heavy oil-range hydrocarbons.

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or the soil-to-sediment screening level, whichever level is lower.

The MTCA cleanup level for petroleum hydrocarbons is the value for diesel-range and heavy oil-range hydrocarbons.

Table C-4
Chemicals Detected in Groundwater
Seattle Housing Authority

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level (ug/L)	Exceedance Factor
RZA 1990b	1/31/1990	MW-4	Total petroleum hydrocarbons[c]	6,000	500		12
RZA 1990b	1/31/1990	MW-5	Total petroleum hydrocarbons[c]	6,000	500		12

ug/L - Micrograms per liter

MTCA - Model Toxics Control Act

(Shaded) Sample concentration exceeded MTCA Cleanup Level or Groundwater-to-Sediment Screening Level.

a - The lower of the MTCA Method A or B cleanup levels was selected, from CLARC database

b - Based on CSL (SAIC 2006)

c - MTCA Method A cleanup level for diesel-range petroleum hydrocarbons

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or groundwater-to-sediment screening level, whichever level is lower.

Table C-5
Chemicals Detected in Soil
Burkheimer Family Property

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
WT Services 1999b	2/9/1999	2-1 and 2-2 (Composite)	2 - 3.5	Arsenic	150	0.67	590	224
WT Services 1999b	2/9/1999	2-1 and 2-2 (Composite)	2 - 3.5	Barium	41	16,000		<1
WT Services 1999b	2/9/1999	2-1 and 2-2 (Composite)	2 - 3.5	Chromium	23	16,000	270	<1
WT Services 1997	6/27/1997	2	2	Diesel-range hydrocarbons	1,200	2,000		<1
WT Services 1997	6/27/1997	1	6	Diesel-range hydrocarbons	560	2,000		<1
WT Services 1997	8/4/1997	15	4	Diesel-range hydrocarbons	340	2,000		<1
WT Services 1997	7/11/1997	7	7	Diesel-range hydrocarbons	230	2,000		<1
WT Services 1997	6/27/1997	5	2	Diesel-range hydrocarbons	110	2,000		<1
WT Services 1999b	4/12/1999	E-3		Diesel-range hydrocarbons	98	2,000		<1
WT Services 1997	7/11/1997	12	6.5	Diesel-range hydrocarbons	70	2,000		<1
WT Services 1999b	2/9/1999	2-2	3.5	Heavy oil	390	2,000		<1
WT Services 1999b	2/9/1999	2-1	2	Heavy oil	2,800	2,000		1.4
WT Services 1999b	2/9/1999	2-1 and 2-2 (Composite)	2 - 3.5	Lead	110	250	67	1.6
WT Services 1997	7/11/1997	7	7	Motor oil	430	2,000		<1
WT Services 1997	6/27/1997	2	2	Motor oil	350	2,000		<1
RZA 1990a	1/25/1990	B-3/S-15	5 - 6.5	Tetrachloroethylene	0.64	0.05		13
RZA 1990a	1/25/1990	B-2/S-9	2.5 - 4	Tetrachloroethylene	0.57	0.05		11
RZA 1990a	1/25/1990	B-1/S-4	7.5 - 9	Tetrachloroethylene	0.36	0.05		7.2
RZA 1990a	1/25/1990	B-3/S-15	5 - 6.5	Total petroleum hydrocarbons[c]	7.8	100		<1
RZA 1990a	1/25/1990	B-1/S-4	7.5 - 9	Total petroleum hydrocarbons[c]	7.2	100		<1
RZA 1990a	1/25/1990	B-2/S-9	2.5 - 4	Total petroleum hydrocarbons[c]	5.7	100		<1
RZA 1990a	1/25/1990	B-2/S-9	2.5 - 4	Trichloroethylene	0.42	0.03		14

ft bgs - feet below ground surface
mg/kg - Milligrams per kilogram
MTCA - Model Toxics Control Act

Sample location was excavated during remediation activities.
Sample concentration exceeded MTCA Cleanup Level or Soil-to-Sediment Screening Level.

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.
b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).
c - The MTCA cleanup level for petroleum hydrocarbons is the value for diesel-range and heavy oil-range hydrocarbons.
Table presents detected chemicals only.
Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or the soil-to-sediment screening level, whichever level is lower.
The MTCA cleanup level for petroleum hydrocarbons is the value for diesel-range and heavy oil-range hydrocarbons.

Table C-6
Chemicals Detected in Groundwater
Burkheimer Family Property

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
RZA 1990a	2/2/1990	MW-3	Barium[c]	1.7	3200		<1
RZA 1990a	2/2/1990	MW-2	Barium[c]	1.3	3200		<1
RZA 1990a	2/2/1990	MW-2	Silver[c]	0.1	80	1.5	<1
RZA 1990a	2/2/1990	MW-3	Total petroleum hydrocarbons[d]	8.0	500		<1
RZA 1990a	2/2/1990	MW-1	Total petroleum hydrocarbons[d]	6.0	500		<1
RZA 1991	6/27/1991	MW-2	Vinyl chloride	41	0.20		205
RZA 1990a	2/2/1990	MW-3	Xylenes, m&p	0.002	1600		<1
RZA 1990a	2/2/1990	MW-1	Xylenes, m&p	0.001	1600		<1

ug/L - Micrograms per liter

MTCA - Model Toxics Control Act

(Highlighted) Sample concentration exceeded MTCA Cleanup Level or Groundwater-to-Sediment Screening Level.

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.

b - Based on CSL (SAIC 2006)

c - MTCA Method B cleanup level (Method A level not available)

d - MTCA Method A cleanup level for diesel-range petroleum hydrocarbons

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or the groundwater-to-sediment screening level, whichever level is lower.

Table C-7
Chemicals Detected in Soil
Former Eastern Suppy Company

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
Dalton Olmsted 1993	8/1/1991	B-2 (Bottom of excavation)	NA	1,2-Dichloroethene, total	31	720		<1
Dalton Olmsted 1993	8/1/1991	W-1b (North wall)	5 - 7	1,2-Dichloroethene, total	11	720		<1
Dalton Olmstead 1996b	2/27/1991	TP-4 (S-2)	5 - 6	1,2-Dichloroethene, total	4.3	720		<1
Dalton Olmsted 1991	10/12/1990	MW-3	9.5	1,2-Dichloroethene, total	3.3	720		<1
Dalton Olmsted 1993	8/1/1991	W-3b (West wall)	6 - 8	1,2-Dichloroethene, total	1.6	720		<1
Dalton Olmstead 1996b	2/27/1991	TP-10 (S-2)	5 - 6	1,2-Dichloroethene, total	0.78	720		<1
Dalton Olmstead 1996b	2/27/1991	TP-5 (S-2)	5 - 6	1,2-Dichloroethene, total	0.62	720		<1
Dalton Olmsted 1993	8/1/1991	B-3 (Bottom of excavation)	NA	1,2-Dichloroethene, total	0.49	720		<1
Dalton Olmstead 1996b	2/27/1991	TP-7 (S-2)	5 - 6	1,2-Dichloroethene, total	0.44	720		<1
E&E 1991	10/10/1990	MW-7	6	1,2-Dichloroethene, total	0.28	720		<1
Dalton Olmsted 1991	10/11/1990	SD-1	Surface	1,2-Dichloroethene, total	0.19	720		<1
Dalton Olmsted 1993	8/1/1991	B-1 (Bottom of excavation)	NA	1,2-Dichloroethene, total	0.19	720		<1
Dalton Olmstead 1996b	2/27/1991	TP-8 (S-2)	5 - 6	1,2-Dichloroethene, total	0.084	720		<1
Dalton Olmstead 1996b	2/27/1991	TP-9 (S-2)	5 - 6	1,2-Dichloroethene, total	0.064	720		<1
Dalton Olmsted 1991	10/11/1990	MW-2	9.5	2-Butanone (methyl ethyl ketone)	0.67	48,000		<1
E&E 1991	10/10/1990	SD-1	Surface	Acetone	29	72,000		<1
E&E 1991	10/11/1990	BH-1	24.5	Acetone	16	72,000		<1
E&E 1991	10/12/1990	MW-8	4.5	Acetone	7.0	72,000		<1
E&E 1991	10/10/1990	MW-7	12	Acetone	0.25	72,000		<1
E&E 1991	10/10/1990	MW-7	29.5	Acetone	0.24	72,000		<1
E&E 1991	10/10/1990	MW-7	6	Acetone	0.20	72,000		<1
E&E 1991	10/10/1990	SD-5	Surface (Ditch)	Acetone	0.10	72,000		<1
E&E 1991	10/12/1990	SD-5	Surface	Acetone	0.10	72,000		<1
E&E 1991	10/10/1990	MW-7	42	Acetone	0.099	72,000		<1
E&E 1991	10/11/1990	BH-1	9.5	Acetone	0.080	72,000		<1
Dalton Olmstead 1996b	2/27/1991	TP-10 (S-1)	1 - 2	Chloroform	0.091	800		<1
Dalton Olmsted 1991	10/11/1990	SD-3	Surface	Tetrachloroethene	8,500	0.05		170,000
Dalton Olmstead 1996b	2/27/1991	TP-2 (S-1)	1 - 2	Tetrachloroethene	4,900	0.05		98,000
Dalton Olmstead 1996b	2/27/1991	TP-1 (S-1)	1 - 2	Tetrachloroethene	3,800	0.05		76,000
Dalton Olmstead 1996b	2/27/1991	TP-1 (S-2)	5 - 6	Tetrachloroethene	2,700	0.05		54,000
Dalton Olmsted 1993	8/1/1991	W-2a (East wall)	5 - 7	Tetrachloroethene	1,700	0.05		34,000
E&E 1991	10/12/1990	MW-8	4.5	Tetrachloroethene	110	0.05		2,200
E&E 1991	10/10/1990	SD-1	Surface	Tetrachloroethene	55	0.05		1,100
Dalton Olmstead 1996b	2/27/1991	TP-5 (S-2)	5 - 6	Tetrachloroethene	47	0.05		940

Table C-7
Chemicals Detected in Soil
Former Eastern Suppy Company

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
E&E 1991	10/11/1990	SD-3	Surface	Tetrachloroethene	30	0.05		600
Dalton Olmsted 1991	10/12/1990	MW-3	4.5	Tetrachloroethene	25	0.05		500
Dalton Olmsted 1993	8/1/1991	W-3b (West wall)	6 - 8	Tetrachloroethene	23	0.05		460
Dalton Olmsted 1993	8/1/1991	W-4a (South wall)	1 - 3	Tetrachloroethene	12	0.05		240
Dalton Olmsted 1991	10/11/1990	SD-1	Surface	Tetrachloroethene	11	0.05		220
Dalton Olmsted 1991	10/12/1990	MW-3	9.5	Tetrachloroethene	9.7	0.05		194
Dalton Olmsted 1993	8/1/1991	W-2a (East wall)	1 - 3	Tetrachloroethene	6.0	0.05		120
E&E 1991	10/12/1990	MW-8	9.5	Tetrachloroethene	5.3	0.05		106
Dalton Olmstead 1996b	2/27/1991	TP-5 (S-1)	1 - 2	Tetrachloroethene	4.5	0.05		90
Dalton Olmstead 1996b	2/27/1991	TP-3 (S-2)	5 - 6	Tetrachloroethene	3.1	0.05		62
Dalton Olmstead 1996b	2/27/1991	TP-7 (S-1)	1 - 2	Tetrachloroethene	1.6	0.05		32
Dalton Olmstead 1996b	2/27/1991	TP-8 (S-1)	1 - 2	Tetrachloroethene	1.5	0.05		30
Dalton Olmstead 1996b	2/27/1991	TP-6 (S-1)	1 - 2	Tetrachloroethene	1.1	0.05		22
Dalton Olmsted 1993	8/1/1991	W-1a (North wall)	1 - 3	Tetrachloroethene	0.66	0.05		13
Dalton Olmstead 1996b	2/27/1991	TP-4 (S-2)	5 - 6	Tetrachloroethene	0.44	0.05		8.8
Dalton Olmstead 1996b	2/27/1991	TP-8 (S-2)	5 - 6	Tetrachloroethene	0.40	0.05		8.0
Dalton Olmsted 1993	8/1/1991	W-3a (West wall)	1 - 3	Tetrachloroethene	0.36	0.05		7.2
E&E 1991	10/11/1990	BH-1	9.5	Tetrachloroethene	0.31	0.05		6.2
E&E 1991	10/10/1990	MW-7	1.5	Tetrachloroethene	0.30	0.05		6.0
Dalton Olmstead 1996b	2/27/1991	TP-3 (S-1)	1 - 2	Tetrachloroethene	0.28	0.05		5.6
Dalton Olmstead 1996b	2/27/1991	TP-10 (S-1)	1 - 2	Tetrachloroethene	0.23	0.05		4.6
Dalton Olmsted 1993	8/1/1991	B-2 (Bottom of excavation)	NA	Tetrachloroethene	0.22	0.05		4.4
Dalton Olmstead 1996b	2/27/1991	TP-6 (S-2)	5 - 6	Tetrachloroethene	0.20	0.05		4.0
Dalton Olmstead 1996b	2/27/1991	TP-7 (S-2)	5 - 6	Tetrachloroethene	0.18	0.05		3.6
Dalton Olmsted 1991	10/11/1990	MW-2	9.5	Tetrachloroethene	0.17	0.05		3.4
Dalton Olmstead 1996b	2/27/1991	TP-10 (S-2)	5 - 6	Tetrachloroethene	0.14	0.05		2.8
Dalton Olmstead 1996b	2/27/1991	TP-4 (S-1)	1 - 2	Tetrachloroethene	0.13	0.05		2.6
Dalton Olmsted 1993	8/1/1991	B-1 (Bottom of excavation)	NA	Tetrachloroethene	0.13	0.05		2.6
E&E 1991	10/11/1990	SD-2	Surface	Tetrachloroethene	0.019	0.05		<1

Table C-7
Chemicals Detected in Soil
Former Eastern Suppy Company

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
Dalton Olmsted 1991	10/11/1990	MW-2	9.5	Toluene	0.45	7.0		<1
E&E 1991	10/12/1990	SD-5	Surface	Total petroleum hydrocarbons[c]	220	2,000		<1
E&E 1991	10/12/1990	SD-4	Surface	Total petroleum hydrocarbons[c]	95	2,000		<1
Dalton Olmstead 1996b	2/27/1991	TP-3 (S-2)	5 - 6	Trichloroethylene	51	0.03		1,700
Dalton Olmsted 1993	8/1/1991	W-3b (West wall)	6 - 8	Trichloroethylene	0.77	0.03		26
Dalton Olmsted 1991	10/11/1990	SD-1	Surface	Trichloroethylene	0.17	0.03		5.7
Dalton Olmsted 1993	8/1/1991	B-1 (Bottom of excavation)	NA	Trichloroethylene	0.066	0.03		2.2
Dalton Olmstead 1996b	2/27/1991	TP-10 (S-2)	5 - 6	Trichloroethylene	0.065	0.03		2.2
Dalton Olmsted 1993	8/1/1991	B-2 (Bottom of excavation)	NA	Vinyl chloride	4.6	240		<1
Dalton Olmsted 1993	8/1/1991	B-3 (Bottom of excavation)	NA	Vinyl chloride	2.8	240		<1
E&E 1991	10/10/1990	MW-7	6	Vinyl chloride	0.29	240		<1
E&E 1991	10/11/1990	BH-1	9.5	Vinyl chloride	0.26	240		<1
E&E 1991	10/10/1990	MW-7	12	Vinyl chloride	0.037	240		<1

ft bgs - feet below ground surface
mg/kg - Milligrams per kilogram
MTCA - Model Toxics Control Act

Sample location was excavated during remediation activities.
Sample concentration exceeded MTCA Cleanup Level or Soil-to-Sediment Screening Level.

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.
b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).
c - The MTCA cleanup level for petroleum hydrocarbons is the value for diesel-range and heavy oil-range hydrocarbons.
Table presents detected chemicals only.
Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or the soil-to-sediment screening level, whichever level is lower.

Table C-8
Chemicals Detected in Groundwater
Former Eastern Supply Company

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Ecology 1990c	3/23/1990	Surface Water - Transfer Area	1,1,1-Trichloroethane	2 J	200		<1
Dalton Olmsted 2007	5/3/2007	MW-25	1,1,2-Trichloroethane	0.32	0.77		<1
Dalton Olmsted 1996	6/28/1995	MW-12S	1,1-Dichloroethane	5.0	1,600		<1
Dalton Olmsted 1996b	6/28/1995	MW-10	1,1-Dichloroethane	3	1,600		<1
Dalton Olmsted 1996b	6/28/1995	MW-16	1,1-Dichloroethane	2.0	1,600		<1
Dalton Olmsted 2002	5/4/2001	MW-12S	1,1-Dichloroethane	2	1,600		<1
Dalton Olmsted 1996b	1/18/1995	MW-16	1,1-Dichloroethane	1.5	1,600		<1
Dalton Olmsted 2005	4/5/2005	MW-12S	1,1-Dichloroethane	1.4	1,600		<1
Dalton Olmsted 2007	5/3/2007	MW-12S	1,1-Dichloroethane	0.60	1,600		<1
Dalton Olmsted 1996b	6/28/1995	MW-12S	1,1-Dichloroethene	77	400		<1
Dalton Olmsted 1996b	1/18/1994	MW-12S	1,1-Dichloroethene	60	400		<1
Dalton Olmsted 1996b	1/18/1995	MW-12S	1,1-Dichloroethene	33	400		<1
Dalton Olmsted 2000	5/2/2000	MW-26	1,1-Dichloroethene	28	400		<1
Dalton Olmsted 1996b	6/28/1995	MW-10	1,1-Dichloroethene	21	400		<1
Dalton Olmsted 2002	5/4/2001	MW-25	1,1-Dichloroethene	20	400		<1
Dalton Olmsted 1996b	1/18/1995	MW-11	1,1-Dichloroethene	18	400		<1
Dalton Olmsted 1996b	1/18/1995	MW-14	1,1-Dichloroethene	14	400		<1
Dalton Olmsted 2000	5/2/2000	MW-12S	1,1-Dichloroethene	13	400		<1
Dalton Olmsted 2000	5/2/2000	MW-25	1,1-Dichloroethene	13	400		<1
Dalton Olmsted 2000	5/2/2000	MW-27	1,1-Dichloroethene	8.5	400		<1
Dalton Olmsted 2002	5/4/2001	MW-12S	1,1-Dichloroethene	7	400		<1
Dalton Olmsted 2005	3/17/2004	MW-25	1,1-Dichloroethene	6	400		<1
Dalton Olmsted 2002	5/4/2001	MW-26	1,1-Dichloroethene	5	400		<1
Dalton Olmsted 1996b	6/28/1995	MW-14	1,1-Dichloroethene	3.6	400		<1
Dalton Olmsted 2005	9/10/2004	MW-26	1,1-Dichloroethene	3.5	400		<1
Dalton Olmsted 2005	3/17/2004	MW-27	1,1-Dichloroethene	3.2	400		<1
Dalton Olmsted 2005	7/11/2003	MW-26	1,1-Dichloroethene	3.0	400		<1
Dalton Olmsted 2005	9/10/2004	MW-27	1,1-Dichloroethene	3	400		<1
Dalton Olmsted 2003	4/1/2003	MW-26	1,1-Dichloroethene	2.6	400		<1
Dalton Olmsted 1996b	1/18/1994	MW-7	1,1-Dichloroethene	2.6	400		<1

Table C-8
Chemicals Detected in Groundwater
Former Eastern Supply Company

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dalton Olmsted 1994b	10/15/1994	MW-16	1,1-Dichloroethene	2.5	400		<1
Dalton Olmsted 2000	5/2/2000	MW-24	1,1-Dichloroethene	2.4	400		<1
Dalton Olmsted 2006	4/19/2006	MW-25	1,1-Dichloroethene	2	400		<1
Dalton Olmsted 2005	3/17/2004	MW-26	1,1-Dichloroethene	2	400		<1
Dalton Olmsted 2002	5/4/2001	MW-27	1,1-Dichloroethene	2	400		<1
Dalton Olmsted 2007	5/3/2007	MW-25	1,1-Dichloroethene	1.9	400		<1
Dalton Olmsted 2002	12/3/2001	MW-27	1,1-Dichloroethene	1.8	400		<1
Dalton Olmsted 2002	5/4/2001	MW-28	1,1-Dichloroethene	1.7	400		<1
Dalton Olmsted 2002	5/4/2001	MW-15	1,1-Dichloroethene	1.6	400		<1
Dalton Olmsted 2005	7/11/2003	MW-27	1,1-Dichloroethene	1.4	400		<1
Dalton Olmsted 2000	5/2/2000	MW-15	1,1-Dichloroethene	1.4	400		<1
Dalton Olmsted 2005	4/5/2005	MW-12S	1,1-Dichloroethene	1.4	400		<1
Dalton Olmsted 2002	5/4/2001	MW-14	1,1-Dichloroethene	1.4	400		<1
Dalton Olmsted 2003	4/1/2003	MW-27	1,1-Dichloroethene	1.4	400		<1
Dalton Olmsted 2003	4/1/2003	MW-28	1,1-Dichloroethene	1.2	400		<1
Dalton Olmsted 2000	5/2/2000	MW-13	1,1-Dichloroethene	1.2	400		<1
Dalton Olmsted 2005	7/11/2003	MW-28	1,1-Dichloroethene	1.1	400		<1
Dalton Olmsted 2007	5/3/2007	MW-25	1,2-Dichloroethane	0.50	0.48		1.0
Dalton Olmsted 1996b	6/28/1995	MW-19	1,2-Dichloroethene, cis-	30,000	16		1875
Dalton Olmsted 1994b	10/15/1994	MW-11	1,2-Dichloroethene, cis-	25,000	16		1563
Dalton Olmsted 1996b	1/18/1995	MW-11	1,2-Dichloroethene, cis-	21,000	16		1313
Dalton Olmsted 1993	1/15/1993	MW-8	1,2-Dichloroethene, cis-	20,000	16		1250
Dalton Olmsted 1996b	4/26/1994	MW-11	1,2-Dichloroethene, cis-	15,000	16		938
Dalton Olmsted 1996b	10/26/1993	MW-11	1,2-Dichloroethene, cis-	14,000	16		875
Dalton Olmsted 1994b	10/15/1994	MW-19	1,2-Dichloroethene, cis-	13,000	16		813
Dalton Olmsted 2000	5/2/2000	MW-27	1,2-Dichloroethene, cis-	11,800	16		738
Dalton Olmsted 1996b	6/28/1995	MW-11	1,2-Dichloroethene, cis-	11,000	16		688
Dalton Olmsted 2002	5/4/2001	MW-25	1,2-Dichloroethene, cis-	10,500	16		656
Dalton Olmsted 2000	5/2/2000	MW-26	1,2-Dichloroethene, cis-	8,850	16		553
Dalton Olmsted 1996b	1/18/1994	MW-11	1,2-Dichloroethene, cis-	8,200	16		513
Dalton Olmsted 1996b	6/28/1995	MW-20	1,2-Dichloroethene, cis-	7,800	16		488

Table C-8
Chemicals Detected in Groundwater
Former Eastern Supply Company

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dalton Olmsted 2002	12/3/2001	MW-25	1,2-Dichloroethene, cis-	7,200	16		450
Dalton Olmsted 2000	5/2/2000	MW-25	1,2-Dichloroethene, cis-	7,050	16		441
Dalton Olmsted 1996b	4/26/1994	MW-12S	1,2-Dichloroethene, cis-	6,300	16		394
Dalton Olmsted 1996b	1/18/1995	MW-20	1,2-Dichloroethene, cis-	6,300	16		394
Dalton Olmsted 2005	4/5/2005	MW-27	1,2-Dichloroethene, cis-	6,180	16		386
Dalton Olmsted 1996b	6/28/1995	MW-12S	1,2-Dichloroethene, cis-	5,800	16		363
Dalton Olmsted 1996b	6/28/1995	MW-10	1,2-Dichloroethene, cis-	5,700	16		356
Dalton Olmsted 1996b	1/18/1994	MW-12S	1,2-Dichloroethene, cis-	4,600	16		288
Dalton Olmsted 1996b	1/18/1995	MW-15	1,2-Dichloroethene, cis-	4,600	16		288
Dalton Olmsted 2002	5/4/2001	MW-26	1,2-Dichloroethene, cis-	4,210	16		263
Dalton Olmsted 1996b	4/26/1994	MW-10	1,2-Dichloroethene, cis-	4,200	16		263
Dalton Olmsted 1994b	10/15/1994	MW-20	1,2-Dichloroethene, cis-	4,100	16		256
Dalton Olmsted 2002	5/4/2001	MW-27	1,2-Dichloroethene, cis-	4,030	16		252
Dalton Olmsted 2007	5/3/2007	MW-25	1,2-Dichloroethene, cis-	3,700	16		231
Dalton Olmsted 2005	4/5/2005	MW-25	1,2-Dichloroethene, cis-	3,550	16		222
Dalton Olmsted 1996b	6/28/1995	MW-15	1,2-Dichloroethene, cis-	3,500	16		219
Dalton Olmsted 2005	3/17/2004	MW-25	1,2-Dichloroethene, cis-	3,450	16		216
Dalton Olmsted 1996b	10/26/1993	MW-10	1,2-Dichloroethene, cis-	3,400	16		213
Dalton Olmsted 2006	4/19/2006	MW-25	1,2-Dichloroethene, cis-	3,370	16		211
Dalton Olmsted 1996b	1/18/1995	MW-12S	1,2-Dichloroethene, cis-	3,000	16		188
Dalton Olmsted 2005	9/10/2004	MW-27	1,2-Dichloroethene, cis-	2,980	16		186
Dalton Olmsted 2005	3/17/2004	MW-27	1,2-Dichloroethene, cis-	2,850	16		178
Dalton Olmsted 1996b	1/18/1994	MW-10	1,2-Dichloroethene, cis-	2,800	16		175
Dalton Olmsted 1994b	10/15/1994	MW-12S	1,2-Dichloroethene, cis-	2,700	16		169
Dalton Olmsted 1996b	1/18/1995	MW-19	1,2-Dichloroethene, cis-	2,500	16		156
Dalton Olmsted 1993	1/15/1993	MW-10	1,2-Dichloroethene, cis-	2,300	16		144
Dalton Olmsted 1996b	1/18/1995	MW-14	1,2-Dichloroethene, cis-	2,200	16		138
Dalton Olmsted 2006	4/19/2006	MW-27	1,2-Dichloroethene, cis-	2,200	16		138
Dalton Olmsted 2005	9/10/2004	MW-26	1,2-Dichloroethene, cis-	2,140	16		134
Dalton Olmsted 1993	1/15/1993	D-10	1,2-Dichloroethene, cis-	2,100	16		131
Dalton Olmsted 1994b	10/15/1994	MW-15	1,2-Dichloroethene, cis-	2,100	16		131

Table C-8
Chemicals Detected in Groundwater
Former Eastern Supply Company

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dalton Olmsted 2005	4/5/2005	MW-26	1,2-Dichloroethene, cis-	1,810	16		113
Dalton Olmsted 2003	4/1/2003	MW-27	1,2-Dichloroethene, cis-	1,740	16		109
Dalton Olmsted 2000	5/2/2000	MW-24	1,2-Dichloroethene, cis-	1,730	16		108
Dalton Olmsted 2003	4/1/2003	MW-26	1,2-Dichloroethene, cis-	1,680	16		105
Dalton Olmsted 2005	7/11/2003	MW-27	1,2-Dichloroethene, cis-	1,620	16		101
Dalton Olmsted 2005	7/11/2003	MW-26	1,2-Dichloroethene, cis-	1,590	16		99
Dalton Olmsted 2006	4/19/2006	MW-13	1,2-Dichloroethene, cis-	1,540	16		96
Dalton Olmsted 2000	5/2/2000	MW-13	1,2-Dichloroethene, cis-	1,480	16		93
Dalton Olmsted 2007	5/3/2007	MW-13	1,2-Dichloroethene, cis-	1,360	16		85
Dalton Olmsted 2002	12/3/2001	MW-26	1,2-Dichloroethene, cis-	1,230	16		77
Dalton Olmsted 2005	3/17/2004	MW-26	1,2-Dichloroethene, cis-	1,190	16		74
Dalton Olmsted 2000	5/2/2000	MW-12S	1,2-Dichloroethene, cis-	1,100	16		69
Dalton Olmsted 2006	4/19/2006	MW-26	1,2-Dichloroethene, cis-	1,040	16		65
Dalton Olmsted 1996b	6/28/1995	MW-14	1,2-Dichloroethene, cis-	980	16		61
Dalton Olmsted 2000	5/2/2000	MW-15	1,2-Dichloroethene, cis-	941	16		59
Dalton Olmsted 2002	12/3/2001	MW-27	1,2-Dichloroethene, cis-	935	16		58
Dalton Olmsted 1996b	10/26/1993	MW-12S	1,2-Dichloroethene, cis-	760	16		48
Dalton Olmsted 2006	4/19/2006	MW-28	1,2-Dichloroethene, cis-	716	16		45
Dalton Olmsted 2002	5/4/2001	MW-12S	1,2-Dichloroethene, cis-	673	16		42
Dalton Olmsted 1996b	10/26/1993	MW-7	1,2-Dichloroethene, cis-	660	16		41
Dalton Olmsted 1996b	1/18/1994	MW-7	1,2-Dichloroethene, cis-	660	16		41
Dalton Olmsted 1996b	4/26/1994	MW-7	1,2-Dichloroethene, cis-	560	16		35
Dalton Olmsted 2000	5/2/2000	MW-28	1,2-Dichloroethene, cis-	535	16		33
Dalton Olmsted 2002	12/3/2001	MW-15	1,2-Dichloroethene, cis-	521	16		33
Dalton Olmsted 2005	4/5/2005	MW-12S	1,2-Dichloroethene, cis-	505	16		32
Dalton Olmsted 2005	4/5/2005	MW-28	1,2-Dichloroethene, cis-	470	16		29
Dalton Olmsted 2002	5/4/2001	MW-15	1,2-Dichloroethene, cis-	397	16		25
Dalton Olmsted 2002	12/3/2001	MW-12S	1,2-Dichloroethene, cis-	385	16		24
Dalton Olmsted 2005	9/10/2004	MW-28	1,2-Dichloroethene, cis-	356	16		22
Dalton Olmsted 2007	5/3/2007	MW-27	1,2-Dichloroethene, cis-	352	16		22
Dalton Olmsted 2006	4/19/2006	MW-12S	1,2-Dichloroethene, cis-	348	16		22

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Chemicals Detected in Groundwater
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Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dalton Olmsted 2007	5/3/2007	MW-26	1,2-Dichloroethene, cis-	309	16		19
Dalton Olmsted 2000	5/2/2000	MW-14	1,2-Dichloroethene, cis-	279	16		17
Dalton Olmsted 2002	5/4/2001	MW-14	1,2-Dichloroethene, cis-	278	16		17
Dalton Olmsted 2003	4/1/2003	MW-28	1,2-Dichloroethene, cis-	251	16		16
Dalton Olmsted 2005	3/17/2004	MW-28	1,2-Dichloroethene, cis-	250	16		16
Dalton Olmsted 2002	5/4/2001	MW-24	1,2-Dichloroethene, cis-	249	16		16
Dalton Olmsted 2002	5/4/2001	MW-28	1,2-Dichloroethene, cis-	247	16		15
Dalton Olmsted 2005	7/11/2003	MW-28	1,2-Dichloroethene, cis-	244	16		15
Dalton Olmsted 2007	5/3/2007	MW-28	1,2-Dichloroethene, cis-	216	16		14
Dalton Olmsted 2005	3/17/2004	MW-13	1,2-Dichloroethene, cis-	198	16		12
Dalton Olmsted 2002	12/3/2001	MW-28	1,2-Dichloroethene, cis-	193	16		12
Dalton Olmsted 2002	5/4/2001	MW-13	1,2-Dichloroethene, cis-	182	16		11
Dalton Olmsted 1994b	10/15/1994	MW-14	1,2-Dichloroethene, cis-	180	16		11
Dalton Olmsted 2005	4/5/2005	MW-13	1,2-Dichloroethene, cis-	174	16		11
Dalton Olmsted 2006	4/19/2006	MW-15	1,2-Dichloroethene, cis-	163	16		10
Dalton Olmsted 1993	1/15/1993	MW-7	1,2-Dichloroethene, cis-	120	16		7.5
Dalton Olmsted 2007	5/3/2007	MW-12S	1,2-Dichloroethene, cis-	119	16		7.4
Dalton Olmsted 2005	4/5/2005	MW-15	1,2-Dichloroethene, cis-	114	16		7.1
Dalton Olmsted 2005	3/17/2004	MW-12S	1,2-Dichloroethene, cis-	93	16		5.8
Dalton Olmsted 2007	5/3/2007	MW-15	1,2-Dichloroethene, cis-	67	16		4.2
Dalton Olmsted 2005	3/17/2004	MW-15	1,2-Dichloroethene, cis-	64	16		4.0
Dalton Olmsted 2002	12/3/2001	MW-14	1,2-Dichloroethene, cis-	48	16		3.0
Dalton Olmsted 1996b	6/28/1995	MW-13	1,2-Dichloroethene, cis-	40	16		2.5
Dalton Olmsted 2005	3/17/2004	MW-14	1,2-Dichloroethene, cis-	24	16		1.5
Dalton Olmsted 1996b	1/18/1995	MW-13	1,2-Dichloroethene, cis-	22	16		1.4
Dalton Olmsted 1996b	1/18/1994	MW-13	1,2-Dichloroethene, cis-	18	16		1.1
Dalton Olmsted 1996b	4/26/1994	MW-13	1,2-Dichloroethene, cis-	18	16		1.1
Dalton Olmsted 1994b	10/15/1994	MW-18	1,2-Dichloroethene, cis-	16	16		<1
Dalton Olmsted 2005	4/5/2005	MW-14	1,2-Dichloroethene, cis-	12	16		<1
Dalton Olmsted 1996b	1/18/1995	MW-18	1,2-Dichloroethene, cis-	11	16		<1
Dalton Olmsted 2003	11/7/2002	MW-24	1,2-Dichloroethene, cis-	11	16		<1

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Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dalton Olmsted 1996b	10/26/1993	MW-13	1,2-Dichloroethene, cis-	6	16		<1
Dalton Olmsted 1994b	10/15/1994	MW-13	1,2-Dichloroethene, cis-	4.9	16		<1
Dalton Olmsted 2006	4/19/2006	MW-24	1,2-Dichloroethene, cis-	1.9	16		<1
Dalton Olmsted 2005	3/17/2004	MW-24	1,2-Dichloroethene, cis-	1.1	16		<1
Dalton Olmsted 2006	4/19/2006	MW-14	1,2-Dichloroethene, cis-	1.1	16		<1
Dalton Olmsted 2007	5/3/2007	MW-14	1,2-Dichloroethene, cis-	0.77	16		<1
Dalton Olmsted 2007	5/3/2007	MW-24	1,2-Dichloroethene, cis-	0.34	16		<1
Dalton Olmsted 1993	7/15/1992	MW-8	1,2-Dichloroethene, total	19,000	72		264
Dalton Olmsted 1993	10/29/1992	MW-8	1,2-Dichloroethene, total	15,000	72		208
E&E 1991	10/25/1990	MW-8	1,2-Dichloroethene, total	4,800	72		67
Dalton Olmsted 1996b	7/15/1992	MW-10	1,2-Dichloroethene, total	2,500	72		35
Dalton Olmsted 1993	10/29/1992	MW-10	1,2-Dichloroethene, total	950	72		13
Dalton Olmsted 1996b	7/15/1992	D-7	1,2-Dichloroethene, total	50	72		<1
Dalton Olmsted 1993	7/15/1992	MW-7	1,2-Dichloroethene, total	46	72		<1
Dalton Olmsted 1993	10/29/1992	MW-7	1,2-Dichloroethene, total	29	72		<1
Dalton Olmsted 1991	10/25/1990	MW-3	1,2-Dichloroethene, total	6.1	72		<1
Ecology 1990c	3/23/1990	Surface Water - Transfer Area	1,2-Dichloroethene, total	6	72		<1
Dalton Olmsted 2002	5/4/2001	MW-25	1,2-Dichloroethene, trans-	283	160		1.8
Dalton Olmsted 2005	4/5/2005	MW-27	1,2-Dichloroethene, trans-	262	160		1.6
Dalton Olmsted 1996b	6/28/1995	MW-10	1,2-Dichloroethene, trans-	210	160		1.3
Dalton Olmsted 1996b	6/28/1995	MW-19	1,2-Dichloroethene, trans-	210	160		1.3
Dalton Olmsted 1996b	1/18/1994	MW-10	1,2-Dichloroethene, trans-	190	160		1.2
Dalton Olmsted 1993	1/15/1993	MW-10	1,2-Dichloroethene, trans-	170	160		1.1
Dalton Olmsted 1993	1/15/1993	D-10	1,2-Dichloroethene, trans-	160	160		<1
Dalton Olmsted 2005	9/10/2004	MW-27	1,2-Dichloroethene, trans-	148	160		<1
Dalton Olmsted 1994b	10/15/1994	MW-19	1,2-Dichloroethene, trans-	140	160		<1
Dalton Olmsted 1993	1/15/1993	MW-8	1,2-Dichloroethene, trans-	140	160		<1
Dalton Olmsted 1994b	10/15/1994	MW-11	1,2-Dichloroethene, trans-	130	160		<1
Dalton Olmsted 2002	5/4/2001	MW-26	1,2-Dichloroethene, trans-	130	160		<1
Dalton Olmsted 2000	5/2/2000	MW-26	1,2-Dichloroethene, trans-	118	160		<1

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Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dalton Olmsted 2005	3/17/2004	MW-27	1,2-Dichloroethene, trans-	113	160		<1
Dalton Olmsted 2002	5/4/2001	MW-27	1,2-Dichloroethene, trans-	100	160		<1
Dalton Olmsted 2003	4/1/2003	MW-26	1,2-Dichloroethene, trans-	92	160		<1
Dalton Olmsted 2003	4/1/2003	MW-27	1,2-Dichloroethene, trans-	87	160		<1
Dalton Olmsted 2002	12/3/2001	MW-27	1,2-Dichloroethene, trans-	80	160		<1
Dalton Olmsted 2005	7/11/2003	MW-27	1,2-Dichloroethene, trans-	77	160		<1
Dalton Olmsted 2005	9/10/2004	MW-26	1,2-Dichloroethene, trans-	71	160		<1
Dalton Olmsted 2002	12/3/2001	MW-25	1,2-Dichloroethene, trans-	67	160		<1
Dalton Olmsted 2000	5/2/2000	MW-24	1,2-Dichloroethene, trans-	67	160		<1
Dalton Olmsted 2000	5/2/2000	MW-25	1,2-Dichloroethene, trans-	67	160		<1
Dalton Olmsted 2006	4/19/2006	MW-27	1,2-Dichloroethene, trans-	65	160		<1
Dalton Olmsted 1996b	1/18/1995	MW-11	1,2-Dichloroethene, trans-	63	160		<1
Dalton Olmsted 2005	4/5/2005	MW-26	1,2-Dichloroethene, trans-	63	160		<1
Dalton Olmsted 2005	7/11/2003	MW-26	1,2-Dichloroethene, trans-	61	160		<1
Dalton Olmsted 2005	3/17/2004	MW-25	1,2-Dichloroethene, trans-	56	160		<1
Dalton Olmsted 1996b	1/18/1994	MW-12S	1,2-Dichloroethene, trans-	54	160		<1
Dalton Olmsted 1996b	6/28/1995	MW-20	1,2-Dichloroethene, trans-	52	160		<1
Dalton Olmsted 2007	5/3/2007	MW-25	1,2-Dichloroethene, trans-	46	160		<1
Dalton Olmsted 2005	3/17/2004	MW-26	1,2-Dichloroethene, trans-	44	160		<1
Dalton Olmsted 1996b	1/18/1995	MW-19	1,2-Dichloroethene, trans-	42	160		<1
Dalton Olmsted 1996	1/18/1995	MW-12S	1,2-Dichloroethene, trans-	41	160		<1
Dalton Olmsted 1996	1/18/1995	MW-20	1,2-Dichloroethene, trans-	36	160		<1
Dalton Olmsted 2006	4/19/2006	MW-25	1,2-Dichloroethene, trans-	29	160		<1
Dalton Olmsted 2002	12/3/2001	MW-26	1,2-Dichloroethene, trans-	28	160		<1
Dalton Olmsted 2002	5/4/2001	MW-24	1,2-Dichloroethene, trans-	28	160		<1
Dalton Olmsted 1996	1/18/1995	MW-15	1,2-Dichloroethene, trans-	26	160		<1
Dalton Olmsted 2006	4/19/2006	MW-26	1,2-Dichloroethene, trans-	26	160		<1
Dalton Olmsted 2002	5/4/2001	MW-12S	1,2-Dichloroethene, trans-	22	160		<1
Dalton Olmsted 1996	1/18/1995	MW-14	1,2-Dichloroethene, trans-	21	160		<1
Dalton Olmsted 2002	5/4/2001	MW-15	1,2-Dichloroethene, trans-	20	160		<1
Dalton Olmsted 2007	5/3/2007	MW-27	1,2-Dichloroethene, trans-	19	160		<1

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Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dalton Olmsted 2007	5/3/2007	MW-26	1,2-Dichloroethene, trans-	18	160		<1
Dalton Olmsted 2002	5/4/2001	MW-28	1,2-Dichloroethene, trans-	17	160		<1
Dalton Olmsted 2005	4/5/2005	MW-28	1,2-Dichloroethene, trans-	16	160		<1
Dalton Olmsted 2006	4/19/2006	MW-13	1,2-Dichloroethene, trans-	15	160		<1
Dalton Olmsted 2007	5/3/2007	MW-13	1,2-Dichloroethene, trans-	15	160		<1
Dalton Olmsted 2000	5/2/2000	MW-12S	1,2-Dichloroethene, trans-	14	160		<1
Dalton Olmsted 2000	5/2/2000	MW-28	1,2-Dichloroethene, trans-	13	160		<1
Dalton Olmsted 2003	4/1/2003	MW-28	1,2-Dichloroethene, trans-	13	160		<1
Dalton Olmsted 2002	12/3/2001	MW-28	1,2-Dichloroethene, trans-	13	160		<1
Dalton Olmsted 2000	5/2/2000	MW-15	1,2-Dichloroethene, trans-	12	160		<1
Dalton Olmsted 2005	9/10/2004	MW-28	1,2-Dichloroethene, trans-	11	160		<1
Dalton Olmsted 2002	5/4/2001	MW-14	1,2-Dichloroethene, trans-	10	160		<1
Dalton Olmsted 2005	7/11/2003	MW-28	1,2-Dichloroethene, trans-	10	160		<1
Dalton Olmsted 1996	6/28/1995	MW-14	1,2-Dichloroethene, trans-	9.4	160		<1
Dalton Olmsted 2007	5/3/2007	MW-28	1,2-Dichloroethene, trans-	9.3	160		<1
Dalton Olmsted 2005	3/17/2004	MW-28	1,2-Dichloroethene, trans-	7.9	160		<1
Dalton Olmsted 2003	11/7/2002	MW-24	1,2-Dichloroethene, trans-	6	160		<1
Dalton Olmsted 1996	1/18/1994	MW-7	1,2-Dichloroethene, trans-	5.8	160		<1
Dalton Olmsted 2005	4/5/2005	MW-13	1,2-Dichloroethene, trans-	5.2	160		<1
Dalton Olmsted 2000	5/2/2000	MW-13	1,2-Dichloroethene, trans-	4.8	160		<1
Dalton Olmsted 2005	4/5/2005	MW-12S	1,2-Dichloroethene, trans-	4.7	160		<1
Dalton Olmsted 2002	5/4/2001	MW-13	1,2-Dichloroethene, trans-	4.7	160		<1
Dalton Olmsted 2005	3/17/2004	MW-24	1,2-Dichloroethene, trans-	4.6	160		<1
Dalton Olmsted 2006	4/19/2006	MW-12S	1,2-Dichloroethene, trans-	3.9	160		<1
Dalton Olmsted 2007	5/3/2007	MW-12S	1,2-Dichloroethene, trans-	3.5	160		<1
Dalton Olmsted 2005	3/17/2004	MW-15	1,2-Dichloroethene, trans-	3.4	160		<1
Dalton Olmsted 2006	4/19/2006	MW-15	1,2-Dichloroethene, trans-	3.3	160		<1
Dalton Olmsted 2007	5/3/2007	MW-15	1,2-Dichloroethene, trans-	2.6	160		<1
Dalton Olmsted 2000	5/2/2000	MW-14	1,2-Dichloroethene, trans-	2.5	160		<1
Dalton Olmsted 2005	3/17/2004	MW-12S	1,2-Dichloroethene, trans-	2.2	160		<1
Dalton Olmsted 2006	4/19/2006	MW-24	1,2-Dichloroethene, trans-	1.6	160		<1

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Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dalton Olmsted 2007	5/3/2007	MW-24	1,2-Dichloroethene, trans-	1.4	160		<1
Ecology 1990c	3/23/1990	Surface Water - Transfer Area	Acetone	13	7,200		<1
Dalton Olmsted 1996a	12/13/1995	MW-9	Arsenic	98	0.058	370	1690
Dalton Olmsted 1996a	12/13/1995	MW-13	Arsenic	96	0.058	370	1655
Dalton Olmsted 1996a	12/13/1995	MW-16	Arsenic	32	0.058	370	552
Dalton Olmsted 1996a	12/13/1995	MW-15	Arsenic	10	0.058	370	171
Dalton Olmsted 1996a	12/13/1995	MW-9	Barium	170	3,200		<1
Dalton Olmsted 1996a	12/13/1995	MW-13	Barium	45	3,200		<1
Dalton Olmsted 1996a	12/13/1995	MW-12D	Barium	37	3,200		<1
Dalton Olmsted 1996a	12/13/1995	MW-16	Barium	35	3,200		<1
Dalton Olmsted 1996a	12/13/1995	MW-15	Barium	22	3,200		<1
Dalton Olmsted 1996a	12/13/1995	MW-12D	Cadmium	4.1	5.0	3.4	1.2
Dalton Olmsted 1996a	12/13/1995	MW-16	Cadmium	2.9	5.0	3.4	<1
Dalton Olmsted 1996a	12/13/1995	MW-13	Cadmium	1.9	5.0	3.4	<1
Dalton Olmsted 1996a	12/13/1995	MW-15	Cadmium	1.1	5.0	3.4	<1
Dalton Olmsted 1996a	12/13/1995	MW-9	Cadmium	0.21	5.0	3.4	<1
Dalton Olmsted 1996b	6/28/1995	MW-17	Chlorobenzene	100	160		<1
Dalton Olmsted 1996b	1/18/1995	MW-19	Chlorobenzene	53	160		<1
Dalton Olmsted 1996b	1/18/1995	MW-11	Chlorobenzene	38	160		<1
Dalton Olmsted 1996b	1/18/1995	MW-17	Chlorobenzene	18	160		<1
Dalton Olmsted 1994b	10/15/1994	MW-17	Chlorobenzene	5.6	160		<1
Dalton Olmsted 2000	5/2/2000	MW-26	Chlorobenzene	2.5	160		<1
Dalton Olmsted 2005	3/17/2004	MW-27	Chlorobenzene	2.4	160		<1
Dalton Olmsted 2005	9/10/2004	MW-27	Chlorobenzene	2	160		<1
Dalton Olmsted 2000	5/2/2000	MW-25	Chlorobenzene	2.0	160		<1
Dalton Olmsted 2000	5/2/2000	MW-24	Chlorobenzene	2.0	160		<1
Dalton Olmsted 2000	5/2/2000	MW-27	Chlorobenzene	1.6	160		<1
Dalton Olmsted 2005	7/11/2003	MW-27	Chlorobenzene	1.4	160		<1
Dalton Olmsted 2005	9/10/2004	MW-26	Chlorobenzene	1.3	160		<1
Dalton Olmsted 2005	7/11/2003	MW-26	Chlorobenzene	1.3	160		<1

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Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dalton Olmsted 2007	5/3/2007	MW-25	Chlorobenzene	0.66	160		<1
Dalton Olmsted 2007	5/3/2007	MW-15	Chlorobenzene	0.51	160		<1
Dalton Olmsted 2007	5/3/2007	MW-27	Chlorobenzene	0.46	160		<1
Dalton Olmsted 2007	5/3/2007	MW-12S	Chlorobenzene	0.22	160		<1
Dalton Olmsted 2005	7/11/2003	MW-28	Chloroethane	62			
Dalton Olmsted 2003	4/1/2003	MW-28	Chloroethane	54			
Dalton Olmsted 2002	12/3/2001	MW-28	Chloroethane	12			
Dalton Olmsted 1996b	6/28/1995	MW-10	Chloroethane	2.9			
Dalton Olmsted 1994b	10/15/1994	MW-16	Chloroethane	1.8			
Dalton Olmsted 1996b	6/28/1995	MW-16	Chloroethane	1.8			
Dalton Olmsted 2005	9/10/2004	MW-28	Chloroethane	1.7			
E&E 1991	10/25/1990	DW-1	Chloroform	15	80		<1
Dalton Olmsted 1994b	10/15/1994	MW-18	Chloroform	12	80		<1
Dalton Olmsted 1996b	1/18/1995	MW-18	Chloroform	2.4	80		<1
Ecology 1990c	3/23/1990	Surface Water - Transfer Area	Chloroform	2 J	80		<1
Dalton Olmsted 1996a	12/13/1995	MW-9	Chromium[c]	210	50	320	4.2
Dalton Olmsted 1996a	12/13/1995	MW-9	Iron	35,000	11,000		3.2
Dalton Olmsted 1996a	12/13/1995	MW-16	Iron	28,000	11,000		2.5
Dalton Olmsted 1996a	12/13/1995	MW-12D	Iron	26,000	11,000		2.4
Dalton Olmsted 1996a	12/13/1995	MW-15	Iron	14,000	11,000		1.3
Dalton Olmsted 1996a	12/13/1995	MW-13	Iron	2,100	11,000		<1
Dalton Olmsted 1996a	12/13/1995	MW-13	Lead	31	15	13	2.4
Dalton Olmsted 1996a	12/13/1995	MW-9	Lead	27	15	13	2.1
Dalton Olmsted 1996a	12/13/1995	MW-16	Lead	17	15	13	1.3
Dalton Olmsted 1996a	12/13/1995	MW-15	Lead	2.5	15	13	<1
Dalton Olmsted 1996a	12/13/1995	MW-12D	Manganese	2,000	2,200		<1
Dalton Olmsted 1996a	12/13/1995	MW-16	Manganese	1,500	2,200		<1
Dalton Olmsted 1996a	12/13/1995	MW-15	Manganese	530	2,200		<1
Dalton Olmsted 1996a	12/13/1995	MW-9	Manganese	520	2,200		<1

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Chemicals Detected in Groundwater
Former Eastern Supply Company

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dalton Olmsted 1996a	12/13/1995	MW-13	Manganese	34	2,200		<1
Dalton Olmsted 1996a	12/13/1995	MW-9	Mercury	1.1	2.0	0.0074	149
Dalton Olmsted 2007	5/3/2007	MW-26	Methylene chloride	506	5.0		101
Ecology 1990c	3/23/1990	Surface Water - Transfer Area	Tetrachloroethene	290,000	5.0		58000
Dalton Olmsted 1996b	1/18/1995	MW-11	Tetrachloroethene	110,000	5.0		22000
Dalton Olmsted 1996b	1/18/1994	MW-11	Tetrachloroethene	69,000	5.0		13800
Dalton Olmsted 1996b	6/28/1995	MW-11	Tetrachloroethene	66,000	5.0		13200
Dalton Olmsted 1996b	1/18/1995	MW-19	Tetrachloroethene	65,000	5.0		13000
Dalton Olmsted 1996b	4/26/1994	MW-11	Tetrachloroethene	61,000	5.0		12200
Dalton Olmsted 1994b	10/15/1994	MW-11	Tetrachloroethene	52,000	5.0		10400
Dalton Olmsted 1996b	10/26/1993	MW-11	Tetrachloroethene	49,000	5.0		9800
Dalton Olmsted 1996b	1/18/1995	MW-20	Tetrachloroethene	9,600	5.0		1920
Dalton Olmsted 1996b	6/28/1995	MW-19	Tetrachloroethene	8,000	5.0		1600
Dalton Olmsted 2005	4/5/2005	MW-27	Tetrachloroethene	5,600	5.0		1120
Dalton Olmsted 2000	5/2/2000	MW-26	Tetrachloroethene	3,540	5.0		708
Dalton Olmsted 2005	3/17/2004	MW-27	Tetrachloroethene	3,120	5.0		624
Dalton Olmsted 2005	9/10/2004	MW-27	Tetrachloroethene	2,660	5.0		532
Dalton Olmsted 1996b	6/28/1995	MW-20	Tetrachloroethene	2,100	5.0		420
Dalton Olmsted 2000	5/2/2000	MW-27	Tetrachloroethene	1,670	5.0		334
Dalton Olmsted 1994b	10/15/1994	MW-19	Tetrachloroethene	1,600	5.0		320
Dalton Olmsted 2006	4/19/2006	MW-27	Tetrachloroethene	1,370	5.0		274
Dalton Olmsted 2005	7/11/2003	MW-27	Tetrachloroethene	1,280	5.0		256
Dalton Olmsted 2003	4/1/2003	MW-27	Tetrachloroethene	1,080	5.0		216
Dalton Olmsted 1994b	10/15/1994	MW-15	Tetrachloroethene	1,000	5.0		200
Dalton Olmsted 1996b	1/18/1995	MW-15	Tetrachloroethene	900.0	5.0		180
Dalton Olmsted 2007	5/3/2007	MW-27	Tetrachloroethene	489	5.0		98
Dalton Olmsted 2007	5/3/2007	MW-26	Tetrachloroethene	440	5.0		88
Dalton Olmsted 2002	5/4/2001	MW-27	Tetrachloroethene	388	5.0		78
Dalton Olmsted 2002	5/4/2001	MW-26	Tetrachloroethene	352	5.0		70

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Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dalton Olmsted 2002	12/3/2001	MW-27	Tetrachloroethene	341	5.0		68
Dalton Olmsted 2006	4/19/2006	MW-26	Tetrachloroethene	308	5.0		62
Dalton Olmsted 2007	5/3/2007	MW-28	Tetrachloroethene	262	5.0		52
Dalton Olmsted 2003	4/1/2003	MW-26	Tetrachloroethene	226	5.0		45
Dalton Olmsted 2005	4/5/2005	MW-26	Tetrachloroethene	224	5.0		45
Dalton Olmsted 1996b	4/26/1994	MW-7	Tetrachloroethene	180	5.0		36
Dalton Olmsted 2005	7/11/2003	MW-26	Tetrachloroethene	179	5.0		36
Dalton Olmsted 2006	4/19/2006	MW-28	Tetrachloroethene	151	5.0		30
Dalton Olmsted 1996b	6/28/1995	MW-15	Tetrachloroethene	130	5.0		26
Dalton Olmsted 2005	9/10/2004	MW-26	Tetrachloroethene	123	5.0		25
Dalton Olmsted 2002	12/3/2001	MW-26	Tetrachloroethene	121	5.0		24
Dalton Olmsted 2005	3/17/2004	MW-26	Tetrachloroethene	113	5.0		23
Dalton Olmsted 1996b	10/26/1993	MW-7	Tetrachloroethene	110	5.0		22
Dalton Olmsted 2000	5/2/2000	MW-25	Tetrachloroethene	106	5.0		21
Dalton Olmsted 2002	5/4/2001	MW-25	Tetrachloroethene	103	5.0		21
Dalton Olmsted 1994b	10/15/1994	MW-14	Tetrachloroethene	100	5.0		20
Dalton Olmsted 2003	4/1/2003	MW-28	Tetrachloroethene	85	5.0		17
Dalton Olmsted 2005	7/11/2003	MW-28	Tetrachloroethene	75	5.0		15
Dalton Olmsted 1996b	10/26/1993	MW-12S	Tetrachloroethene	61	5.0		12
Dalton Olmsted 1996b	1/18/1995	MW-14	Tetrachloroethene	58	5.0		12
Dalton Olmsted 2000	5/2/2000	MW-28	Tetrachloroethene	56	5.0		11
Dalton Olmsted 1996b	1/18/1994	MW-7	Tetrachloroethene	45	5.0		9.0
Dalton Olmsted 2005	4/5/2005	MW-28	Tetrachloroethene	42	5.0		8.3
Dalton Olmsted 2002	12/3/2001	MW-25	Tetrachloroethene	41	5.0		8.1
Dalton Olmsted 1996b	6/28/1995	MW-12S	Tetrachloroethene	40	5.0		8.0
Dalton Olmsted 2005	9/10/2004	MW-28	Tetrachloroethene	36	5.0		7.2
Dalton Olmsted 1996b	1/18/1995	MW-13	Tetrachloroethene	28	5.0		5.6
Dalton Olmsted 2000	5/2/2000	MW-13	Tetrachloroethene	18	5.0		3.6
Dalton Olmsted 1996b	4/26/1994	MW-13	Tetrachloroethene	17	5.0		3.4
Dalton Olmsted 2005	3/17/2004	MW-28	Tetrachloroethene	16	5.0		3.2
Dalton Olmsted 2006	4/19/2006	MW-25	Tetrachloroethene	16	5.0		3.2

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Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dalton Olmsted 2005	3/17/2004	MW-25	Tetrachloroethene	7.5	5.0		1.5
Dalton Olmsted 2002	12/3/2001	MW-28	Tetrachloroethene	6.1	5.0		1.2
Dalton Olmsted 1994b	10/15/1994	MW-18	Tetrachloroethene	5.5	5.0		1.1
Dalton Olmsted 1996b	1/18/1995	MW-18	Tetrachloroethene	4.8	5.0		<1
Dalton Olmsted 1996b	1/18/1994	MW-13	Tetrachloroethene	3.6	5.0		<1
Dalton Olmsted 1996b	6/28/1995	MW-13	Tetrachloroethene	2.8	5.0		<1
Dalton Olmsted 2007	5/3/2007	MW-12S	Tetrachloroethene	2.4	5.0		<1
Dalton Olmsted 2007	5/3/2007	MW-25	Tetrachloroethene	2.2	5.0		<1
Dalton Olmsted 1996b	6/28/1995	MW-14	Tetrachloroethene	1.6	5.0		<1
Dalton Olmsted 1994b	10/15/1994	MW-11	Trichloroethylene	6,500	2.4		2708
Dalton Olmsted 1996b	1/18/1995	MW-11	Trichloroethylene	5,100	2.4		2125
Dalton Olmsted 1996b	10/26/1993	MW-11	Trichloroethylene	3,800	2.4		1583
Dalton Olmsted 1996b	6/28/1995	MW-11	Trichloroethylene	3,200	2.4		1333
Dalton Olmsted 1996b	4/26/1994	MW-11	Trichloroethylene	3,100	2.4		1292
Dalton Olmsted 1996b	1/18/1995	MW-20	Trichloroethylene	3,000	2.4		1250
Dalton Olmsted 1996b	1/18/1994	MW-11	Trichloroethylene	2,500	2.4		1042
Dalton Olmsted 1996b	6/28/1995	MW-19	Trichloroethylene	2,500	2.4		1042
Dalton Olmsted 1996b	6/28/1995	MW-20	Trichloroethylene	1,600	2.4		667
Dalton Olmsted 2000	5/2/2000	MW-26	Trichloroethylene	1,540	2.4		642
Dalton Olmsted 2005	4/5/2005	MW-27	Trichloroethylene	1,010	2.4		421
Dalton Olmsted 1994b	10/15/1994	MW-15	Trichloroethylene	940	2.4		392
Dalton Olmsted 1994b	10/15/1994	MW-19	Trichloroethylene	920	2.4		383
Dalton Olmsted 1996b	1/18/1995	MW-15	Trichloroethylene	860	2.4		358
Dalton Olmsted 1996b	1/18/1995	MW-19	Trichloroethylene	680	2.4		283
Dalton Olmsted 2000	5/2/2000	MW-27	Trichloroethylene	672	2.4		280
Dalton Olmsted 2005	3/17/2004	MW-27	Trichloroethylene	497	2.4		207
Dalton Olmsted 2005	9/10/2004	MW-27	Trichloroethylene	496	2.4		207
Dalton Olmsted 1994b	10/15/1994	MW-14	Trichloroethylene	370	2.4		154
Dalton Olmsted 1996b	1/18/1995	MW-14	Trichloroethylene	320	2.4		133
Dalton Olmsted 2005	7/11/2003	MW-27	Trichloroethylene	288	2.4		120
Dalton Olmsted 1996b	6/28/1995	MW-15	Trichloroethylene	280	2.4		117

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Dalton Olmsted 1996b	6/28/1995	MW-12S	Trichloroethylene	240	2.4		100
Dalton Olmsted 2003	4/1/2003	MW-27	Trichloroethylene	233	2.4		97
Dalton Olmsted 1996b	4/26/1994	MW-12S	Trichloroethylene	220	2.4		92
Dalton Olmsted 1996b	4/26/1994	MW-7	Trichloroethylene	200	2.4		83
Dalton Olmsted 2006	4/19/2006	MW-27	Trichloroethylene	198	2.4		83
Dalton Olmsted 1996b	1/18/1994	MW-7	Trichloroethylene	190	2.4		79
Dalton Olmsted 2002	5/4/2001	MW-25	Trichloroethylene	164	2.4		68
Dalton Olmsted 2002	5/4/2001	MW-26	Trichloroethylene	163	2.4		68
Dalton Olmsted 2002	5/4/2001	MW-27	Trichloroethylene	160	2.4		67
Dalton Olmsted 2005	9/10/2004	MW-26	Trichloroethylene	158	2.4		66
Dalton Olmsted 2005	4/5/2005	MW-26	Trichloroethylene	152	2.4		63
Dalton Olmsted 2003	4/1/2003	MW-26	Trichloroethylene	140	2.4		58
Dalton Olmsted 2005	7/11/2003	MW-26	Trichloroethylene	131	2.4		55
Dalton Olmsted 1996b	10/26/1993	MW-7	Trichloroethylene	120	2.4		50
Dalton Olmsted 1996b	1/18/1994	MW-12S	Trichloroethylene	96	2.4		40
Dalton Olmsted 2002	12/3/2001	MW-25	Trichloroethylene	95	2.4		40
Dalton Olmsted 2002	12/3/2001	MW-27	Trichloroethylene	95	2.4		40
Dalton Olmsted 1996b	10/26/1993	MW-12S	Trichloroethylene	86	2.4		36
Dalton Olmsted 2000	5/2/2000	MW-28	Trichloroethylene	84	2.4		35
Dalton Olmsted 2005	3/17/2004	MW-26	Trichloroethylene	80	2.4		34
Dalton Olmsted 1996b	1/18/1995	MW-12S	Trichloroethylene	80	2.4		33
Dalton Olmsted 2006	4/19/2006	MW-28	Trichloroethylene	70	2.4		29
Dalton Olmsted 2007	5/3/2007	MW-27	Trichloroethylene	60	2.4		25
Dalton Olmsted 2005	4/5/2005	MW-28	Trichloroethylene	55	2.4		23
Dalton Olmsted 2006	4/19/2006	MW-26	Trichloroethylene	52	2.4		22
Dalton Olmsted 2007	5/3/2007	MW-26	Trichloroethylene	50	2.4		21
Dalton Olmsted 2002	12/3/2001	MW-26	Trichloroethylene	47	2.4		20
Dalton Olmsted 2007	5/3/2007	MW-28	Trichloroethylene	39	2.4		16
Dalton Olmsted 2002	5/4/2001	MW-15	Trichloroethylene	37	2.4		16
Dalton Olmsted 2000	5/2/2000	MW-13	Trichloroethylene	35	2.4		14
Dalton Olmsted 2003	4/1/2003	MW-28	Trichloroethylene	35	2.4		14

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Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dalton Olmsted 2005	9/10/2004	MW-28	Trichloroethylene	33	2.4		14
Dalton Olmsted 2005	7/11/2003	MW-28	Trichloroethylene	32	2.4		13
Dalton Olmsted 2000	5/2/2000	MW-15	Trichloroethylene	31	2.4		13
Dalton Olmsted 2005	3/17/2004	MW-28	Trichloroethylene	29	2.4		12
Dalton Olmsted 1996b	6/28/1995	MW-10	Trichloroethylene	28	2.4		12
Dalton Olmsted 2006	4/19/2006	MW-25	Trichloroethylene	21	2.4		8.5
Dalton Olmsted 2005	3/17/2004	MW-25	Trichloroethylene	19	2.4		7.9
Dalton Olmsted 1996b	10/26/1993	MW-13	Trichloroethylene	15	2.4		6.3
Dalton Olmsted 1996b	1/18/1995	MW-13	Trichloroethylene	12	2.4		5.0
Dalton Olmsted 2000	5/2/2000	MW-14	Trichloroethylene	11	2.4		4.4
Dalton Olmsted 1996b	4/26/1994	MW-13	Trichloroethylene	10	2.4		4.2
Dalton Olmsted 1996b	6/28/1995	MW-14	Trichloroethylene	8.3	2.4		3.5
Ecology 1990c	3/23/1990	Surface Water - Transfer Area	Trichloroethylene	7	2.4		2.9
Dalton Olmsted 2002	5/4/2001	MW-14	Trichloroethylene	6.1	2.4		2.6
Dalton Olmsted 1994b	10/15/1994	MW-18	Trichloroethylene	6.1	2.4		2.5
Dalton Olmsted 2007	5/3/2007	MW-25	Trichloroethylene	4.9	2.4		2.1
Dalton Olmsted 1996b	1/18/1995	MW-18	Trichloroethylene	4.4	2.4		1.8
Dalton Olmsted 1993	1/15/1993	MW-7	Trichloroethylene	4.4	2.4		1.8
Dalton Olmsted 2002	12/3/2001	MW-28	Trichloroethylene	4.4	2.4		1.8
Dalton Olmsted 1996b	7/15/1992	D-7	Trichloroethylene	3.9	2.4		1.6
Dalton Olmsted 1993	7/15/1992	MW-7	Trichloroethylene	3.8	2.4		1.6
Dalton Olmsted 2002	5/4/2001	MW-28	Trichloroethylene	2.6	2.4		1.1
Dalton Olmsted 1996b	1/18/1994	MW-13	Trichloroethylene	2.0	2.4		<1
Dalton Olmsted 1993	10/29/1992	MW-7	Trichloroethylene	2	2.4		<1
Dalton Olmsted 2002	12/3/2001	MW-14	Trichloroethylene	1.0	2.4		<1
Dalton Olmsted 2007	5/3/2007	MW-15	Trichloroethylene	0.22	2.4		<1
Dalton Olmsted 1996b	6/28/1995	MW-19	Vinyl chloride	24,000	0.2		120000
Dalton Olmsted 1996b	4/26/1994	MW-10	Vinyl chloride	19,000	0.2		95000
Dalton Olmsted 1994b	10/15/1994	MW-19	Vinyl chloride	15,000	0.2		75000

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Dalton Olmsted 1996b	7/15/1992	MW-10	Vinyl chloride	14,000	0.2		70000
Dalton Olmsted 1993	10/29/1992	MW-10	Vinyl chloride	13,000	0.2		65000
Dalton Olmsted 1996b	1/18/1994	MW-10	Vinyl chloride	13,000	0.2		65000
Dalton Olmsted 1996b	6/28/1995	MW-10	Vinyl chloride	13,000	0.2		65000
Dalton Olmsted 1996b	10/26/1993	MW-10	Vinyl chloride	12,000	0.2		60000
Dalton Olmsted 1993	1/15/1993	MW-10	Vinyl chloride	10,000	0.2		50000
Dalton Olmsted 1993	10/29/1992	MW-8	Vinyl chloride	9,300	0.2		46500
Dalton Olmsted 1993	1/15/1993	D-10	Vinyl chloride	9,200	0.2		46000
Dalton Olmsted 1993	1/15/1993	MW-8	Vinyl chloride	8,600	0.2		43000
Dalton Olmsted 2005	4/5/2005	MW-25	Vinyl chloride	6,900	0.2		34500
Dalton Olmsted 2000	5/2/2000	MW-27	Vinyl chloride	5,060	0.2		25300
Dalton Olmsted 1996b	4/26/1994	MW-11	Vinyl chloride	5,000	0.2		25000
Dalton Olmsted 1996b	4/26/1994	MW-12S	Vinyl chloride	4,900	0.2		24500
Dalton Olmsted 1996b	6/28/1995	MW-12S	Vinyl chloride	4,400	0.2		22000
Dalton Olmsted 2000	5/2/2000	MW-24	Vinyl chloride	3,870	0.2		19350
Dalton Olmsted 1994b	10/15/1994	MW-11	Vinyl chloride	3,800	0.2		19000
Dalton Olmsted 1993	7/15/1992	MW-8	Vinyl chloride	3,600	0.2		18000
Dalton Olmsted 2005	3/17/2004	MW-25	Vinyl chloride	2,850	0.2		14250
Dalton Olmsted 1994b	10/15/1994	MW-12S	Vinyl chloride	2,800	0.2		14000
Dalton Olmsted 2007	5/3/2007	MW-13	Vinyl chloride	2,770	0.2		13850
Dalton Olmsted 2002	5/4/2001	MW-25	Vinyl chloride	2,670	0.2		13350
Dalton Olmsted 1996b	6/28/1995	MW-11	Vinyl chloride	2,600	0.2		13000
Dalton Olmsted 1996b	10/26/1993	MW-12S	Vinyl chloride	2,400	0.2		12000
E&E 1991	10/25/1990	MW-8	Vinyl chloride	2,400	0.2		12000
Dalton Olmsted 1996b	1/18/1995	MW-11	Vinyl chloride	2,300	0.2		11500
Dalton Olmsted 2006	4/19/2006	MW-25	Vinyl chloride	2,020	0.2		10100
Dalton Olmsted 1996b	1/18/1995	MW-12S	Vinyl chloride	2,000	0.2		10000
Dalton Olmsted 2002	5/4/2001	MW-27	Vinyl chloride	1,980	0.2		9900
Dalton Olmsted 2007	5/3/2007	MW-25	Vinyl chloride	1,920	0.2		9600
Dalton Olmsted 1994b	10/15/1994	MW-20	Vinyl chloride	1,900	0.2		9500
Dalton Olmsted 2005	4/5/2005	MW-27	Vinyl chloride	1,830	0.2		9150

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Dalton Olmsted 1996b	10/26/1993	MW-11	Vinyl chloride	1,800	0.2		9000
Dalton Olmsted 2000	5/2/2000	MW-26	Vinyl chloride	1,780	0.2		8900
Dalton Olmsted 2002	5/4/2001	MW-24	Vinyl chloride	1,740	0.2		8700
Dalton Olmsted 2002	12/3/2001	MW-25	Vinyl chloride	1,670	0.2		8350
Dalton Olmsted 2000	5/2/2000	MW-12S	Vinyl chloride	1,560	0.2		7800
Dalton Olmsted 1996b	1/18/1994	MW-12S	Vinyl chloride	1,400	0.2		7000
Dalton Olmsted 2000	5/2/2000	MW-25	Vinyl chloride	1,390	0.2		6950
Dalton Olmsted 2006	4/19/2006	MW-13	Vinyl chloride	1,340	0.2		6700
Dalton Olmsted 2002	5/4/2001	MW-12S	Vinyl chloride	1,210	0.2		6050
Dalton Olmsted 1996b	1/18/1995	MW-19	Vinyl chloride	1,200	0.2		6000
Dalton Olmsted 2005	4/5/2005	MW-12S	Vinyl chloride	1,130	0.2		5650
Dalton Olmsted 1996b	6/28/1995	MW-15	Vinyl chloride	1,100	0.2		5500
Dalton Olmsted 1996b	6/28/1995	MW-20	Vinyl chloride	930	0.2		4650
Dalton Olmsted 2005	9/10/2004	MW-27	Vinyl chloride	880	0.2		4400
Dalton Olmsted 2002	12/3/2001	MW-12S	Vinyl chloride	871	0.2		4355
Dalton Olmsted 2007	5/3/2007	MW-12S	Vinyl chloride	712	0.2		3560
Dalton Olmsted 2005	4/5/2005	MW-26	Vinyl chloride	665	0.2		3325
Dalton Olmsted 2000	5/2/2000	MW-28	Vinyl chloride	627	0.2		3135
Dalton Olmsted 1996b	6/28/1995	MW-14	Vinyl chloride	620	0.2		3100
Dalton Olmsted 2002	5/4/2001	MW-28	Vinyl chloride	615	0.2		3075
Dalton Olmsted 1996b	1/18/1995	MW-14	Vinyl chloride	560	0.2		2800
Dalton Olmsted 2000	5/2/2000	MW-15	Vinyl chloride	560	0.2		2800
Dalton Olmsted 1996b	1/18/1995	MW-15	Vinyl chloride	550	0.2		2750
Dalton Olmsted 2006	4/19/2006	MW-12S	Vinyl chloride	549	0.2		2745
Dalton Olmsted 2002	12/3/2001	MW-27	Vinyl chloride	539	0.2		2695
Dalton Olmsted 2005	9/10/2004	MW-26	Vinyl chloride	532	0.2		2660
Dalton Olmsted 2002	5/4/2001	MW-15	Vinyl chloride	470	0.2		2350
Dalton Olmsted 1996b	1/18/1995	MW-20	Vinyl chloride	460	0.2		2300
Dalton Olmsted 2002	12/3/2001	MW-15	Vinyl chloride	411	0.2		2055
Dalton Olmsted 2005	7/11/2003	MW-27	Vinyl chloride	391	0.2		1955
Dalton Olmsted 2005	4/5/2005	MW-13	Vinyl chloride	378	0.2		1890

Table C-8
Chemicals Detected in Groundwater
Former Eastern Supply Company

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dalton Olmsted 2005	7/11/2003	MW-26	Vinyl chloride	362	0.2		1810
Dalton Olmsted 2005	4/5/2005	MW-15	Vinyl chloride	344	0.2		1720
Dalton Olmsted 2005	3/17/2004	MW-27	Vinyl chloride	334	0.2		1670
Dalton Olmsted 2005	3/17/2004	MW-12S	Vinyl chloride	331	0.2		1655
Dalton Olmsted 2003	4/1/2003	MW-27	Vinyl chloride	302	0.2		1510
Dalton Olmsted 2002	5/4/2001	MW-26	Vinyl chloride	300	0.2		1500
Dalton Olmsted 2002	12/3/2001	MW-28	Vinyl chloride	277	0.2		1385
Dalton Olmsted 1994b	10/15/1994	MW-15	Vinyl chloride	250	0.2		1250
Dalton Olmsted 2005	9/10/2004	MW-28	Vinyl chloride	245	0.2		1225
Dalton Olmsted 2005	4/5/2005	MW-28	Vinyl chloride	235	0.2		1175
Dalton Olmsted 2002	12/3/2001	MW-26	Vinyl chloride	228	0.2		1140
Dalton Olmsted 2003	11/7/2002	MW-24	Vinyl chloride	227	0.2		1135
Dalton Olmsted 2002	5/4/2001	MW-14	Vinyl chloride	186	0.2		930
Dalton Olmsted 2005	3/17/2004	MW-26	Vinyl chloride	181	0.2		905
Dalton Olmsted 2003	4/1/2003	MW-26	Vinyl chloride	179	0.2		895
Dalton Olmsted 2000	5/2/2000	MW-14	Vinyl chloride	173	0.2		865
Dalton Olmsted 2005	3/17/2004	MW-15	Vinyl chloride	164	0.2		820
Dalton Olmsted 2005	7/11/2003	MW-28	Vinyl chloride	151	0.2		755
Dalton Olmsted 2006	4/19/2006	MW-15	Vinyl chloride	146	0.2		730
Dalton Olmsted 2003	4/1/2003	MW-28	Vinyl chloride	123	0.2		615
Dalton Olmsted 1996b	4/26/1994	MW-7	Vinyl chloride	120	0.2		600
Dalton Olmsted 2005	4/5/2005	MW-24	Vinyl chloride	117	0.2		585
Dalton Olmsted 2007	5/3/2007	MW-15	Vinyl chloride	112	0.2		560
E&E 1991	10/25/1990	MW-2	Vinyl chloride	65	0.2		325
Dalton Olmsted 2005	3/17/2004	MW-28	Vinyl chloride	65	0.2		325
Dalton Olmsted 2000	5/2/2000	MW-13	Vinyl chloride	64	0.2		322
Dalton Olmsted 1993	7/15/1992	MW-2	Vinyl chloride	62	0.2		310
Dalton Olmsted 1993	1/15/1993	MW-2	Vinyl chloride	55	0.2		275
Dalton Olmsted 1996b	10/26/1993	MW-7	Vinyl chloride	52	0.2		260
Dalton Olmsted 2005	3/17/2004	MW-24	Vinyl chloride	43	0.2		214
Dalton Olmsted 2002	12/3/2001	MW-14	Vinyl chloride	38	0.2		189

Table C-8
Chemicals Detected in Groundwater
Former Eastern Supply Company

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dalton Olmsted 2005	4/5/2005	MW-14	Vinyl chloride	38	0.2		188
Dalton Olmsted 2005	3/17/2004	MW-13	Vinyl chloride	37	0.2		184
Dalton Olmsted 2005	3/17/2004	MW-14	Vinyl chloride	31	0.2		155
Dalton Olmsted 2006	4/19/2006	MW-28	Vinyl chloride	31	0.2		154
Dalton Olmsted 1996b	1/18/1994	MW-7	Vinyl chloride	30	0.2		150
Dalton Olmsted 1993	10/29/1992	D-2	Vinyl chloride	21	0.2		105
Dalton Olmsted 2002	5/4/2001	MW-13	Vinyl chloride	20	0.2		98
Dalton Olmsted 1996b	4/26/1994	MW-2	Vinyl chloride	18	0.2		90
Dalton Olmsted 1996b	6/28/1995	MW-21	Vinyl chloride	17	0.2		85
Dalton Olmsted 1996b	1/18/1995	MW-2	Vinyl chloride	15	0.2		75
Dalton Olmsted 2006	4/19/2006	MW-26	Vinyl chloride	14	0.2		70
Dalton Olmsted 1993	10/29/1992	MW-2	Vinyl chloride	11	0.2		55
Dalton Olmsted 1993	1/15/1993	MW-7	Vinyl chloride	10	0.2		48
Dalton Olmsted 1996b	1/18/1994	MW-2	Vinyl chloride	8.5	0.2		43
Dalton Olmsted 1996b	4/26/1994	MW-13	Vinyl chloride	7.7	0.2		39
Dalton Olmsted 1994b	10/15/1994	MW-18	Vinyl chloride	7.3	0.2		37
Dalton Olmsted 1996b	6/28/1995	MW-16	Vinyl chloride	7.0	0.2		35
Dalton Olmsted 2006	4/19/2006	MW-24	Vinyl chloride	6.7	0.2		34
Dalton Olmsted 1996b	1/18/1994	MW-13	Vinyl chloride	5.6	0.2		28
Dalton Olmsted 1996b	7/15/1992	D-7	Vinyl chloride	5.3	0.2		27
Dalton Olmsted 1993	10/29/1992	MW-7	Vinyl chloride	4.8	0.2		24
Dalton Olmsted 1996b	10/26/1993	MW-2	Vinyl chloride	4.7	0.2		24
Dalton Olmsted 1994b	10/15/1994	MW-13	Vinyl chloride	4.3	0.2		22
Dalton Olmsted 2006	4/19/2006	MW-14	Vinyl chloride	3.9	0.2		19
Dalton Olmsted 1996b	1/18/1995	MW-13	Vinyl chloride	3.3	0.2		17
Dalton Olmsted 1996b	1/18/1995	MW-18	Vinyl chloride	3.0	0.2		15
Dalton Olmsted 1996b	6/28/1995	MW-13	Vinyl chloride	2.9	0.2		15
Dalton Olmsted 1993	7/15/1992	MW-7	Vinyl chloride	2.8	0.2		14
Dalton Olmsted 1996b	10/26/1993	MW-13	Vinyl chloride	2	0.2		12
Dalton Olmsted 2007	5/3/2007	MW-27	Vinyl chloride	2.2	0.2		11
Dalton Olmsted 2007	5/3/2007	MW-14	Vinyl chloride	2.0	0.2		10

Table C-8
Chemicals Detected in Groundwater
Former Eastern Supply Company

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dalton Olmsted 1991	10/25/1990	MW-3	Vinyl chloride	2.0	0.2		10
Dalton Olmsted 1996b	6/28/1995	MW-2	Vinyl chloride	1.7	0.2		8.5
Dalton Olmsted 2007	5/3/2007	MW-26	Vinyl chloride	1.7	0.2		8.3
Dalton Olmsted 2007	5/3/2007	MW-24	Vinyl chloride	1.0	0.2		5.2
Dalton Olmsted 2007	5/3/2007	MW-28	Vinyl chloride	0.64	0.2		3.2
Dalton Olmsted 1996a	12/13/1995	MW-16	Zinc	52	4,800	76	<1
Dalton Olmsted 1996a	12/13/1995	MW-13	Zinc	41	4,800	76	<1
Dalton Olmsted 1996a	12/13/1995	MW-9	Zinc	28	4,800	76	<1
Dalton Olmsted 1996a	12/13/1995	MW-12D	Zinc	21	4,800	76	<1

ug/L - Micrograms per liter

MTCA - Model Toxics Control Act

(Highlighted) Sample concentration exceeded MTCA Cleanup Level or Groundwater-to-Sediment Screening Level.

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.

b - Based on CSL (SAIC 2006)

c - MTCA Method A cleanup level for Cr Total

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or groundwater-to-sediment screening level, whichever level is lower.

Table C-9
Chemicals Detected in Soil
Former First Avenue Bridge Landfill and Central Wetlands Area

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
Former First Avenue Bridge Landfill								
Dames & Moore 1994	July 1992	MW-2	12.5	Acetone	0.016	72,000.0		<1
Dames & Moore 1994	July 1992	MW-1	5	Acetone	0.01	72,000.0		<1
Dames & Moore 1994	July 1992	MW-2	2.5	Arsenic	14	0.7	590	21
Dames & Moore 1994	July 1992	MW-1	2.5	Arsenic	6	0.7	590	9.0
Dames & Moore 1994	July 1992	MW-2	7.5	Cadmium	1	2.0	2	<1
Dames & Moore 1994	July 1992	MW-1	2.5	Chromium	47		270	<1
Dames & Moore 1994	July 1992	MW-2	12.5	Chromium	38		270	<1
Dames & Moore 1994	July 1992	MW-2	12.5	Copper	52	3,200	39	1.3
Dames & Moore 1994	July 1992	MW-1	2.5	Copper	33	3,200	39	<1
Dames & Moore 1994	July 1992	MW-2	12.5	Lead	27	250	67	<1
Dames & Moore 1994	July 1992	MW-1	2.5	Lead	24	250	67	<1
Dames & Moore 1994	July 1992	MW-1	2.5	Nickel	54	1,600		<1
Dames & Moore 1994	July 1992	MW-2	12.5	Nickel	25	1,600		<1
Dames & Moore 1994	July 1992	MW-2	12.5	Zinc	116	24,000	38	3.1
Dames & Moore 1994	July 1992	MW-1	2.5	Zinc	66	24,000	38	1.7
Central Wetlands Area								
Dames & Moore 1994	April 1993	MW-17	3.0	Antimony	6.0	32		<1
Dames & Moore 1994	July 1992	MW-3	5.0	Arsenic	15	0.67	590	22
Dames & Moore 1994	April 1993	MW-17	6.0	Arsenic	8.3	0.67	590	12
Dames & Moore 1994	April 1993	MW-17	6.0	Arsenic	8.3	0.67	590	12
Dames & Moore 1994	July 1992	MW-9	10	Arsenic	8.0	0.67	590	12
Dames & Moore 1994	July 1992	MW-6	10	Arsenic	4.0	0.67	590	6.0
Dames & Moore 1994	July 1992	BH-4	2.5	Arsenic	3.0	0.67	590	4.5
Dames & Moore 1994	April 1993	MW-19	2.0	Arsenic	3.0	0.67	590	4.5
Dames & Moore 1994	April 1993	MW-17	4.0	Cadmium	4.3	2.0	1.7	2.5
Dames & Moore 1994	April 1993	MW-19	1.0	Cadmium	0.88	2.0	1.7	<1
Dames & Moore 1994	April 1993	MW-17	4.0	Chromium	57		270	<1
Dames & Moore 1994	July 1992	MW-6	5	Chromium	51		270	<1
Dames & Moore 1994	July 1992	MW-3	10	Chromium	20		270	<1
Dames & Moore 1994	July 1992	MW-9	10	Chromium	16		270	<1

Table C-9
Chemicals Detected in Soil
Former First Avenue Bridge Landfill and Central Wetlands Area

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
Dames & Moore 1994	July 1992	BH-4	10	Chromium	14		270	<1
Dames & Moore 1994	April 1993	MW-19	2.0	Chromium	8.6		270	<1
Dames & Moore 1994	April 1993	MW-17	4.0	Copper	44	3,200	39	1.1
Dames & Moore 1994	July 1992	MW-6	10	Copper	40	3,200	39	1.0
Dames & Moore 1994	July 1992	MW-3	5.0	Copper	34	3,200	39	<1
Dames & Moore 1994	July 1992	BH-4	10	Copper	25	3,200	39	<1
Dames & Moore 1994	July 1992	MW-9	10	Copper	24	3,200	39	<1
Dames & Moore 1994	April 1993	MW-19	2.0	Copper	9.6	3,200	39	<1
Dames & Moore 1994	April 1993	MW-17	1.0	Lead	13	250	67	<1
Dames & Moore 1994	July 1992	MW-9	10	Mercury	0.20	2.0	0.030	6.7
Dames & Moore 1994	July 1992	MW-6	5	Nickel	73	1,600		<1
Dames & Moore 1994	April 1993	MW-17	4.0	Nickel	71	1,600		<1
Dames & Moore 1994	July 1992	MW-3	5.0	Nickel	15	1,600		<1
Dames & Moore 1994	July 1992	MW-9	10.0	Nickel	11	1,600		<1
Dames & Moore 1994	April 1993	MW-19	2.0	Nickel	6.9	1,600		<1
Dames & Moore 1994	April 1993	MW-17	10	Toluene	0.063	7.0		<1
Dames & Moore 1994	April 1993	MW-17	4.0	Zinc	76	24,000	38	2.0
Dames & Moore 1994	July 1992	MW-6	10	Zinc	67	24,000	38	1.8
Dames & Moore 1994	July 1992	MW-3	10	Zinc	51	24,000	38	1.3
Dames & Moore 1994	July 1992	BH-4	2.5	Zinc	40	24,000	38	1.1
Dames & Moore 1994	July 1992	MW-9	10	Zinc	39	24,000	38	1.0
Dames & Moore 1994	April 1993	MW-19	2.0	Zinc	24	24,000	38	<1

ft bgs - feet below ground surface

Sample concentration exceeded MTCA Cleanup Level or Soil-to-Sediment Screening Level.

mg/kg - Milligrams per kilogram

MTCA - Model Toxics Control Act

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.

b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or the soil-to-sediment screening level, whichever level is lower.

Table C-10
Chemicals Detected in Water Samples
Former First Avenue Bridge Landfill and Central Wetlands Area

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	GW-to-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Former First Avenue Bridge Landfill							
Dames & Moore 1994	September 1992	MW-2	Arsenic (dissolved)	130	0.058	370	2241
Dames & Moore 1994	April 1993	MW-2	Arsenic (dissolved)	62	0.058	370	1069
Dames & Moore 1994	July 1992	MW-2	Arsenic (total)	50	0.058	370	862
Dames & Moore 1994	July 1992	MW-2	Chromium (total)	16	50	320	<1
Dames & Moore 1994	July 1992	MW-1	Copper (total)	19	640	120	<1
Dames & Moore 1994	September 1992	MW-2	Lead (dissolved)	2.0	15	13	<1
Dames & Moore 1994	July 1992	MW-2	Diesel-range hydrocarbons	490	500		<1
Dames & Moore 1994	July 1992	MW-1	Vinyl chloride	2.7	0.20		14
Dames & Moore 1994	July 1992	MW-2	Zinc (total)	37	4,800	76	<1
Dames & Moore 1994	July 1992	MW-1	Zinc (total)	11	4,800	76	<1
Central Wetlands Area							
Dames & Moore 1994	April 1993	MW-17	Arsenic (total)	17	0.058	370	293
Dames & Moore 1994	September 1992	MW-9	Arsenic (dissolved)	11	0.058	370	190
Dames & Moore 1994	July 1992	MW-9	Arsenic (dissolved)	10	0.058	370	172
Dames & Moore 1994	April 1993	MW-9	Arsenic (dissolved)	9.0	0.058	370	155
Dames & Moore 1994	April 1993	WA2-2	Arsenic	3.0	0.058	370	52
Dames & Moore 1994	April 1993	MW-19	Arsenic (total)	2.0	0.058	370	34
Dames & Moore 1994	April 1993	MW-19	Cadmium (total)	0.40	5.0	3.4	<1
Dames & Moore 1994	April 1993	MW-17	Cadmium (total)	0.30	5.0	3.4	<1
Dames & Moore 1994	April 1993	MW-17	Chromium (total)	61	50	320	1.2
Dames & Moore 1994	July 1992	MW-6	Chromium (total)	17	50	320	<1
Dames & Moore 1994	July 1992	MW-9	Chromium (dissolved)	8.0	50	320	<1
Dames & Moore 1994	July 1992	MW-3	Chromium (total)	8.0	50	320	<1
Dames & Moore 1994	April 1993	MW-17	Copper (total)	110	640	120	<1
Dames & Moore 1994	July 1992	MW-3	Copper (total)	25	640	120	<1
Dames & Moore 1994	July 1992	MW-9	Copper (dissolved)	17	640	120	<1
Dames & Moore 1994	April 1993	MW-17	Lead (total)	14	15	13	1.1
Dames & Moore 1994	April 1993	MW-19	Lead (total)	13	15	13	1.0

Table C-10
Chemicals Detected in Water Samples
Former First Avenue Bridge Landfill and Central Wetlands Area

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	GW-to-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Dames & Moore 1994	September 1992	MW-9	Lead (dissolved)	6.0	15	13	<1
Dames & Moore 1994	April 1993	MW-9	Lead (dissolved)	6.0	15	13	<1
Dames & Moore 1994	July 1992	MW-3	Lead (total)	5.0	15	13	<1
Dames & Moore 1994	April 1993	WA2-2	Methylene chloride	13	5.0		2.6
Dames & Moore 1994	April 1993	MW-17	Nickel (total)	53	320		<1
Dames & Moore 1994	April 1993	WA2-3	Nickel	22	320		<1
Dames & Moore 1994	April 1993	MW-17	Nickel (dissolved)	21	320		<1
Dames & Moore 1994	April 1993	WA2-2	Total petroleum hydrocarbons	610	500		1.2
Dames & Moore 1994	April 1993	WA2-1	Total petroleum hydrocarbons	390	500		<1
Dames & Moore 1994	April 1993	WA2-3	Total petroleum hydrocarbons	350	500		<1
Dames & Moore 1994	July 1992	MW-9	TPH-Diesel	580	500		1.2
Dames & Moore 1994	April 1993	MW-17	TPH-Diesel	330	500		<1
Dames & Moore 1994	July 1992	MW-6	TPH-Diesel	280	500		<1
Dames & Moore 1994	July 1992	MW-3	TPH-Diesel	150	500		<1
Dames & Moore 1994	April 1993	MW-17	Zinc (total)	130	4,800	76	1.7
Dames & Moore 1994	July 1992	MW-3	Zinc (total)	28	4800	76	<1
Dames & Moore 1994	April 1993	WA2-1	Zinc	23	4800	76	<1
Dames & Moore 1994	April 1993	MW-19	Zinc (total)	23	4800	76	<1
Dames & Moore 1994	April 1993	WA2-3	Zinc	22	4800	76	<1
Dames & Moore 1994	July 1992	MW-9	Zinc (dissolved)	14	4800	76	<1
Dames & Moore 1994	July 1992	MW-6	Zinc (total)	12	4800	76	<1

GW - groundwater

ug/L - Micrograms per liter

MTCA - Model Toxics Control Act

Sample concentration exceeded MTCA Cleanup Level or GW-to-Sediment Screening Level.

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.

b - Based on CSL (SAIC 2006)

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or groundwater-to-sediment screening level, whichever level is lower.

Table C-11
Chemicals Detected in Soil
West Coast Equipment 2

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
KM&S 1995	2/1/1995	TPE4-1	4	Arsenic	400	0.67	590	597
KM&S 1995	2/1/1995	TPE2-1	4	Arsenic	360	0.67	590	537
KM&S 1995	2/1/1995	TPE1-1	4	Arsenic	290	0.67	590	433
KM&S 1995	2/1/1995	TPE5-1	4	Arsenic	200	0.67	590	299
GeoEngineers 1996	1/31/1996	TP4, #2	3.0 (CKD)	Arsenic	200	0.67	590	299
GeoEngineers 1996	1/31/1996	TP9, #2	2.5 (CKD)	Arsenic	160	0.67	590	239
GeoEngineers 1996	1/31/1996	TP5, #2	3.0 (CKD)	Arsenic	140	0.67	590	209
GeoEngineers 1996	1/31/1996	TP6, #2	2.0 (CKD)	Arsenic	130	0.67	590	194
GeoEngineers 1996	1/31/1996	TP2, #2	3.0 (CKD)	Arsenic	120	0.67	590	179
GeoEngineers 1996	1/30/1996	B3, #1	0 (slag/native)	Arsenic	100	0.67	590	149
GeoEngineers 1996	1/31/1996	TP10, #2	2.5 (CKD)	Arsenic	94	0.67	590	140
GeoEngineers 1996	1/31/1996	TP7, #2	3.0 (CKD)	Arsenic	94	0.67	590	140
GeoEngineers 1996	1/31/1996	TP3, #2	4.5 (CKD)	Arsenic	93	0.67	590	139
GeoEngineers 1996	1/30/1996	B2, #2	2.5 (CKD)	Arsenic	67	0.67	590	100
GeoEngineers 1996	2/2/1996	TP8, #2	2.5 (CKD)	Arsenic	67	0.67	590	100
KM&S 1995	2/1/1995	TPE1-2	0.5	Arsenic	64	0.67	590	96
KM&S 1995	2/1/1995	TPE2-2	0.5	Arsenic	52	0.67	590	78
GeoEngineers 1996	1/30/1996	TP2, #1	0.5 (slag)	Arsenic	50	0.67	590	75
GeoEngineers 1996	1/30/1996	TP1, #1	0.5 (slag)	Arsenic	45	0.67	590	67
KM&S 1995	2/1/1995	TPE4-2	0.5	Arsenic	34	0.67	590	51
GeoEngineers 1996	1/30/1996	TP1, #2	2.0 (CKD)	Arsenic	32	0.67	590	48
GeoEngineers 1996	1/31/1996	TP5, #3	6.5 (CKD)	Arsenic	32	0.67	590	48
KM&S 1995	2/1/1995	TPE5-2	0.5	Arsenic	28	0.67	590	42
GeoEngineers 1996	1/31/1996	TP7, #1	0.5 (native)	Arsenic	18	0.67	590	27
GeoEngineers 1996	1/31/1996	TP3, #1	0.5 (slag/native)	Arsenic	17	0.67	590	25
GeoEngineers 1996	2/2/1996	TP8, #1	0.5 (slag/native)	Arsenic	15	0.67	590	22
GeoEngineers 1996	1/31/1996	TP1, #4	9.0 (native)	Arsenic	11	0.67	590	16
GeoEngineers 1996	1/31/1996	TP9, #4	9.5 (native)	Arsenic	7.6	0.67	590	11
GeoEngineers 1996	1/31/1996	TP7, #4	12.5 (native)	Arsenic	6.7	0.67	590	10
GeoEngineers 1996	1/31/1996	TP6, #4	12 (native)	Arsenic	5.6	0.67	590	8.4
GeoEngineers 1996	1/31/1996	TP2, #4	12 (native)	Arsenic	5.5	0.67	590	8.2

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Chemicals Detected in Soil
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Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
GeoEngineers 1996	2/2/1996	TP8, #4	9.5 (native)	Arsenic	3.5	0.67	590	5.2
GeoEngineers 1996	1/31/1996	TP3, #4	10.25 (native)	Arsenic	2.7	0.67	590	4.0
GeoEngineers 1996	1/31/1996	TP4, #4	10.75 (native)	Arsenic	2.3	0.67	590	3.4
GeoEngineers 1996	1/30/1996	B2, #1	0 (slag/native)	Barium	450	41		11
GeoEngineers 1996	1/31/1996	TP10, #1	0.5 (slag/native)	Barium	280	41		6.8
GeoEngineers 1996	1/31/1996	TP5, #1	0.5 (slag/native)	Barium	270	41		6.6
GeoEngineers 1996	1/31/1996	TP4, #1	0.5 (slag/native)	Barium	220	41		5.4
GeoEngineers 1996	1/31/1996	TP9, #1	0.5 (slag/native)	Barium	220	41		5.4
GeoEngineers 1996	1/30/1996	TP1, #1	0.5 (slag)	Barium	180	41		4.4
GeoEngineers 1996	1/30/1996	TP2, #1	0.5 (slag)	Barium	140	41		3.4
GeoEngineers 1996	1/31/1996	TP3, #2	4.5 (CKD)	Barium	65	41		1.6
GeoEngineers 1996	1/30/1996	B3, #3	5.0 (CKD)	Barium	58	41		1.4
GeoEngineers 1996	1/30/1996	B2, #2	2.5 (CKD)	Barium	57	41		1.4
GeoEngineers 1996	1/31/1996	TP5, #3	6.5 (CKD)	Barium	53	41		1.3
GeoEngineers 1996	1/31/1996	TP2, #2	3.0 (CKD)	Barium	50	41		1.2
GeoEngineers 1996	1/30/1996	B3, #5	10 (native)	Barium	47	41		1.1
GeoEngineers 1996	1/31/1996	TP9, #2	2.5 (CKD)	Barium	45	41		1.1
GeoEngineers 1996	2/2/1996	TP3, #3	7.0 (native)	Barium	40	41		<1.0
GeoEngineers 1996	2/2/1996	TP6, #3	6.5 (native)	Barium	39	41		<1.0
GeoEngineers 1996	1/31/1996	TP5, #2	3.0 (CKD)	Barium	30	41		<1.0
GeoEngineers 1996	1/31/1996	TP4, #2	3.0 (CKD)	Barium	29	41		<1.0
GeoEngineers 1996	2/2/1996	TP7, #3	7.5 (native)	Barium	29	41		<1.0
GeoEngineers 1996	2/2/1996	TP8, #2	2.5 (CKD)	Barium	29	41		<1.0
GeoEngineers 1996	2/2/1996	TP4, #3	6.5 (native)	Barium	28	41		<1.0
GeoEngineers 1996	1/31/1996	TP6, #2	2.0 (CKD)	Barium	27	41		<1.0
GeoEngineers 1996	1/31/1996	TP7, #2	3.0 (CKD)	Barium	26	41		<1.0
GeoEngineers 1996	1/30/1996	TP1, #2	2.0 (CKD)	Barium	25	41		<1.0
GeoEngineers 1996	1/31/1996	TP3, #1	0.5 (slag/native)	Barium	25	41		<1.0
GeoEngineers 1996	1/31/1996	TP10, #3	6.5 (native)	Barium	24	41		<1.0
GeoEngineers 1996	1/31/1996	TP1, #3	5.0 (native)	Barium	23	41		<1.0
GeoEngineers 1996	1/31/1996	TP6, #1	0.5 (slag/native)	Barium	23	41		<1.0

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Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
GeoEngineers 1996	2/2/1996	TP9, #3	6.5 (native)	Barium	21	41		<1.0
GeoEngineers 1996	2/2/1996	TP8, #1	0.5 (slag/native)	Barium	18	41		<1.0
GeoEngineers 1996	2/2/1996	TP2, #3	6.5 (native)	Barium	17	41		<1.0
GeoEngineers 1996	1/30/1996	B2, #5	10 (native)	Barium	16	41		<1.0
GeoEngineers 1996	1/31/1996	TP10, #2	2.5 (CKD)	Barium	15	41		<1.0
GeoEngineers 1996	2/2/1996	TP8, #3	6.5 (native)	Barium	15	41		<1.0
GeoEngineers 1996	1/30/1996	B3, #1	0 (slag/native)	Barium	13	41		<1.0
GeoEngineers 1996	1/31/1996	TP7, #1	0.5 (native)	Barium	13	41		<1.0
KM&S 1995	2/1/1995	TPE4-1	4	Cadmium	12	2.0	1.7	7.1
KM&S 1995	2/1/1995	TPE5-1	4	Cadmium	10	2.0	1.7	5.9
KM&S 1995	2/1/1995	TPE2-1	4	Cadmium	8.6	2.0	1.7	5.1
GeoEngineers 1996	1/31/1996	TP6, #2	2.0 (CKD)	Cadmium	6.6	2.0	1.7	3.9
KM&S 1995	2/1/1995	TPE1-1	4	Cadmium	5.9	2.0	1.7	3.5
KM&S 1995	2/1/1995	TPE5-2	0.5	Cadmium	5.7	2.0	1.7	3.4
GeoEngineers 1996	1/30/1996	B3, #1	0 (slag/native)	Cadmium	4.4	2.0	1.7	2.6
GeoEngineers 1996	2/2/1996	TP8, #2	2.5 (CKD)	Cadmium	3.7	2.0	1.7	2.2
GeoEngineers 1996	1/31/1996	TP3, #2	4.5 (CKD)	Cadmium	3.6	2.0	1.7	2.1
GeoEngineers 1996	1/31/1996	TP9, #2	2.5 (CKD)	Cadmium	3.5	2.0	1.7	2.1
GeoEngineers 1996	1/31/1996	TP5, #2	3.0 (CKD)	Cadmium	3.4	2.0	1.7	2.0
GeoEngineers 1996	1/31/1996	TP4, #2	3.0 (CKD)	Cadmium	3.3	2.0	1.7	1.9
GeoEngineers 1996	1/31/1996	TP7, #2	3.0 (CKD)	Cadmium	3.2	2.0	1.7	1.9
GeoEngineers 1996	1/31/1996	TP10, #2	2.5 (CKD)	Cadmium	3.0	2.0	1.7	1.8
KM&S 1995	2/1/1995	TPE4-2	0.5	Cadmium	2.9	2.0	1.7	1.7
GeoEngineers 1996	1/31/1996	TP2, #2	3.0 (CKD)	Cadmium	2.8	2.0	1.7	1.6
KM&S 1995	2/1/1995	TPE1-2	0.5	Cadmium	1.9	2.0	1.7	1.1
KM&S 1995	2/1/1995	TPE2-2	0.5	Cadmium	1.9	2.0	1.7	1.1
GeoEngineers 1996	1/30/1996	TP1, #1	0.5 (slag)	Cadmium	1.2	2.0	1.7	<1
GeoEngineers 1996	1/30/1996	B2, #1	0 (slag/native)	Cadmium	1.1	2.0	1.7	<1
GeoEngineers 1996	1/30/1996	TP2, #1	0.5 (slag)	Cadmium	0.86	2.0	1.7	<1
GeoEngineers 1996	1/31/1996	TP4, #1	0.5 (slag/native)	Cadmium	0.82	2.0	1.7	<1
GeoEngineers 1996	1/31/1996	TP9, #1	0.5 (slag/native)	Cadmium	0.65	2.0	1.7	<1

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Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
GeoEngineers 1996	1/30/1996	B2, #2	2.5 (CKD)	Cadmium	0.59	2.0	1.7	<1
GeoEngineers 1996	1/30/1996	TP1, #2	2.0 (CKD)	Cadmium	0.59	2.0	1.7	<1
GeoEngineers 1996	1/31/1996	TP5, #1	0.5 (slag/native)	Cadmium	0.50	2.0	1.7	<1
GeoEngineers 1996	1/31/1996	TP10, #1	0.5 (slag/native)	Cadmium	0.49	2.0	1.7	<1
GeoEngineers 1996	1/30/1996	B3, #3	5.0 (CKD)	Cadmium	0.29	2.0	1.7	<1
GeoEngineers 1996	1/31/1996	TP3, #1	0.5 (slag/native)	Cadmium	0.29	2.0	1.7	<1
GeoEngineers 1996	1/31/1996	TP5, #3	6.5 (CKD)	Cadmium	0.29	2.0	1.7	<1
GeoEngineers 1996	2/2/1996	TP8, #1	0.5 (slag/native)	Cadmium	0.27	2.0	1.7	<1
KM&S 1995	2/1/1995	TPE2-2	0.5	Chromium	2,700		270	10
KM&S 1995	2/1/1995	TPE5-2	0.5	Chromium	2,200		270	8.1
GeoEngineers 1996	1/31/1996	TP9, #1	0.5 (slag/native)	Chromium	2,000		270	7.4
GeoEngineers 1996	1/31/1996	TP10, #1	0.5 (slag/native)	Chromium	1,900		270	7.0
GeoEngineers 1996	1/31/1996	TP5, #1	0.5 (slag/native)	Chromium	1,900		270	7.0
GeoEngineers 1996	1/31/1996	TP4, #1	0.5 (slag/native)	Chromium	1,700		270	6.3
KM&S 1995	2/1/1995	TPE1-2	0.5	Chromium	1,200		270	4.4
KM&S 1995	2/1/1995	TPE4-2	0.5	Chromium	940		270	3.5
GeoEngineers 1996	1/30/1996	TP2, #1	0.5 (slag)	Chromium	790		270	2.9
GeoEngineers 1996	1/30/1996	TP1, #1	0.5 (slag)	Chromium	320		270	1.2
KM&S 1995	2/1/1995	TPE1-1	4	Chromium	270		270	1.0
GeoEngineers 1996	1/31/1996	TP5, #3	6.5 (CKD)	Chromium	70		270	<1
KM&S 1995	2/1/1995	TPE4-1	4	Chromium	53		270	<1
GeoEngineers 1996	1/30/1996	B2, #1	0 (slag/native)	Chromium	41		270	<1
GeoEngineers 1996	1/31/1996	TP6, #1	0.5 (slag/native)	Chromium	38		270	<1
GeoEngineers 1996	1/30/1996	B2, #2	2.5 (CKD)	Chromium	27		270	<1
GeoEngineers 1996	1/31/1996	TP5, #2	3.0 (CKD)	Chromium	23		270	<1
GeoEngineers 1996	1/31/1996	TP3, #1	0.5 (slag/native)	Chromium	21		270	<1
GeoEngineers 1996	1/30/1996	B3, #1	0 (slag/native)	Chromium	20		270	<1
KM&S 1995	2/1/1995	TPE5-1	4	Chromium	17		270	<1
KM&S 1995	2/1/1995	TPE2-1	4	Chromium	14		270	<1
GeoEngineers 1996	1/30/1996	B3, #3	5.0 (CKD)	Chromium	14		270	<1
GeoEngineers 1996	1/30/1996	B3, #5	10 (native)	Chromium	12		270	<1

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GeoEngineers 1996	1/30/1996	TP1, #2	2.0 (CKD)	Chromium	12		270	<1
GeoEngineers 1996	2/2/1996	TP4, #3	6.5 (native)	Chromium	11		270	<1
GeoEngineers 1996	1/31/1996	TP6, #2	2.0 (CKD)	Chromium	11		270	<1
GeoEngineers 1996	1/31/1996	TP1, #3	5.0 (native)	Chromium	10		270	<1
GeoEngineers 1996	1/31/1996	TP2, #2	3.0 (CKD)	Chromium	10		270	<1
GeoEngineers 1996	1/31/1996	TP4, #2	3.0 (CKD)	Chromium	10		270	<1
GeoEngineers 1996	2/2/1996	TP6, #3	6.5 (native)	Chromium	10		270	<1
GeoEngineers 1996	1/31/1996	TP9, #2	2.5 (CKD)	Chromium	9.2		270	<1
GeoEngineers 1996	2/2/1996	TP3, #3	7.0 (native)	Chromium	9.1		270	<1
GeoEngineers 1996	1/31/1996	TP3, #2	4.5 (CKD)	Chromium	8.8		270	<1
GeoEngineers 1996	1/31/1996	TP10, #2	2.5 (CKD)	Chromium	8.7		270	<1
GeoEngineers 1996	2/2/1996	TP7, #3	7.5 (native)	Chromium	8.4		270	<1
GeoEngineers 1996	1/30/1996	B2, #5	10 (native)	Chromium	8.1		270	<1
GeoEngineers 1996	1/31/1996	TP7, #2	3.0 (CKD)	Chromium	7.5		270	<1
GeoEngineers 1996	1/31/1996	TP10, #3	6.5 (native)	Chromium	7.4		270	<1
GeoEngineers 1996	2/2/1996	TP2, #3	6.5 (native)	Chromium	7.2		270	<1
GeoEngineers 1996	2/2/1996	TP8, #2	2.5 (CKD)	Chromium	6.8		270	<1
GeoEngineers 1996	2/2/1996	TP8, #1	0.5 (slag/native)	Chromium	6.2		270	<1
GeoEngineers 1996	2/2/1996	TP8, #3	6.5 (native)	Chromium	6.1		270	<1
GeoEngineers 1996	2/2/1996	TP9, #3	6.5 (native)	Chromium	5.9		270	<1
GeoEngineers 1996	1/31/1996	TP7, #1	0.5 (native)	Chromium	4.1		270	<1
GeoEngineers 1996	1/31/1996	TP9, #1	0.5 (slag/native)	Diesel-range hydrocarbons	3,400	2,000		1.7
GeoEngineers 1996	1/31/1996	TP10, #1	0.5 (slag/native)	Diesel-range hydrocarbons	2,800	2,000		1.4
GeoEngineers 1996	1/31/1996	TP9, #2	2.5 (CKD)	Diesel-range hydrocarbons	890	2,000		<1
GeoEngineers 1996	1/31/1996	TP8, #2	2.5 (CKD)	Diesel-range hydrocarbons	560	2,000		<1
GeoEngineers 1996	1/30/1996	B2, #1	0 (slag/native)	Diesel-range hydrocarbons	330	2,000		<1
GeoEngineers 1996	1/31/1996	TP1, #2	2.0 (CKD)	Diesel-range hydrocarbons	270	2,000		<1
GeoEngineers 1996	1/31/1996	TP8, #1	0.5 (slag/native)	Diesel-range hydrocarbons	250	2,000		<1
GeoEngineers 1996	1/31/1996	TP6, #2	2.0 (CKD)	Diesel-range hydrocarbons	220	2,000		<1
GeoEngineers 1996	1/31/1996	TP3, #1	0.5 (slag/native)	Diesel-range hydrocarbons	190	2,000		<1
GeoEngineers 1996	1/31/1996	TP4, #1	0.5 (slag/native)	Diesel-range hydrocarbons	190	2,000		<1

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Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
GeoEngineers 1996	1/31/1996	TP2, #1	0.5 (slag)	Diesel-range hydrocarbons	70	2,000		<1
GeoEngineers 1996	1/31/1996	TP6, #1	0.5 (slag/native)	Diesel-range hydrocarbons	52	2,000		<1
GeoEngineers 1996	1/31/1996	TP1, #1	0.5 (slag)	Diesel-range hydrocarbons	46	2,000		<1
GeoEngineers 1996	2/2/1996	TP8, #2	2.5 (CKD)	Gasoline-range hydrocarbons[c]	210	30		7.0
GeoEngineers 1996	1/31/1996	TP5, #3	6.5 (CKD)	Lead	4,600	250	67	69
KM&S 1995	2/1/1995	TPE4-1	4	Lead	2,400	250	67	36
GeoEngineers 1996	1/30/1996	B3, #1	0 (slag/native)	Lead	2,200	250	67	33
KM&S 1995	2/1/1995	TPE2-1	4	Lead	1,900	250	67	28
KM&S 1995	2/1/1995	TPE1-1	4	Lead	1,100	250	67	16
KM&S 1995	2/1/1995	TPE5-1	4	Lead	1,100	250	67	16
GeoEngineers 1996	1/31/1996	TP4, #2	3.0 (CKD)	Lead	870	250	67	13
GeoEngineers 1996	1/31/1996	TP9, #2	2.5 (CKD)	Lead	830	250	67	12
GeoEngineers 1996	1/31/1996	TP5, #2	3.0 (CKD)	Lead	740	250	67	11
GeoEngineers 1996	1/31/1996	TP2, #2	3.0 (CKD)	Lead	720	250	67	11
GeoEngineers 1996	1/31/1996	TP3, #2	4.5 (CKD)	Lead	720	250	67	11
GeoEngineers 1996	1/31/1996	TP10, #2	2.5 (CKD)	Lead	650	250	67	10
GeoEngineers 1996	1/31/1996	TP6, #2	2.0 (CKD)	Lead	640	250	67	10
GeoEngineers 1996	1/31/1996	TP7, #2	3.0 (CKD)	Lead	610	250	67	9.1
KM&S 1995	2/1/1995	TPE5-2	0.5	Lead	480	250	67	7.2
GeoEngineers 1996	2/2/1996	TP8, #2	2.5 (CKD)	Lead	410	250	67	6.1
GeoEngineers 1996	1/30/1996	TP2, #1	0.5 (slag)	Lead	360	250	67	5.4
GeoEngineers 1996	1/30/1996	B2, #1	0 (slag/native)	Lead	220	250	67	3.3
GeoEngineers 1996	1/30/1996	TP1, #1	0.5 (slag)	Lead	200	250	67	3.0
GeoEngineers 1996	1/30/1996	B2, #2	2.5 (CKD)	Lead	150	250	67	2.2
GeoEngineers 1996	1/31/1996	TP9, #1	0.5 (slag/native)	Lead	140	250	67	2.1
GeoEngineers 1996	1/31/1996	TP5, #1	0.5 (slag/native)	Lead	120	250	67	1.8
GeoEngineers 1996	1/31/1996	TP4, #1	0.5 (slag/native)	Lead	98	250	67	1.5
KM&S 1995	2/1/1995	TPE1-2	0.5	Lead	93	250	67	1.4
KM&S 1995	2/1/1995	TPE4-2	0.5	Lead	86	250	67	1.3
GeoEngineers 1996	1/31/1996	TP10, #1	0.5 (slag/native)	Lead	71	250	67	1.1
GeoEngineers 1996	2/2/1996	TP8, #1	0.5 (slag/native)	Lead	68	250	67	1.0

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GeoEngineers 1996	1/30/1996	TP1, #2	2.0 (CKD)	Lead	65	250	67	<1
KM&S 1995	2/1/1995	TPE2-2	0.5	Lead	55	250	67	<1
GeoEngineers 1996	1/31/1996	TP3, #1	0.5 (slag/native)	Lead	53	250	67	<1
GeoEngineers 1996	1/31/1996	TP6, #1	0.5 (slag/native)	Lead	34	250	67	<1
GeoEngineers 1996	1/31/1996	TP7, #1	0.5 (native)	Lead	28	250	67	<1
GeoEngineers 1996	1/31/1996	TP9, #4	9.5 (native)	Lead	25	250	67	<1
GeoEngineers 1996	1/31/1996	TP1, #4	9.0 (native)	Lead	22	250	67	<1
GeoEngineers 1996	1/31/1996	TP7, #4	12.5 (native)	Lead	18	250	67	<1
GeoEngineers 1996	1/31/1996	TP2, #4	12 (native)	Lead	15	250	67	<1
GeoEngineers 1996	1/31/1996	TP6, #4	12 (native)	Lead	15	250	67	<1
GeoEngineers 1996	1/30/1996	B3, #3	5.0 (CKD)	Lead	13	250	67	<1
GeoEngineers 1996	2/2/1996	TP8, #4	9.5 (native)	Lead	13	250	67	<1
GeoEngineers 1996	1/31/1996	TP3, #4	10.25 (native)	Lead	11	250	67	<1
GeoEngineers 1996	1/31/1996	TP4, #4	10.75 (native)	Lead	11	250	67	<1
GeoEngineers 1996	1/31/1996	TP4, #1	0.5 (slag/native)	Mercury	0.17	2.0	0.030	5.7
KM&S 1995	2/1/1995	TPE1-2	0.5	Mercury	0.13	2.0	0.030	4.3
GeoEngineers 1996	1/30/1996	B2, #1	0 (slag/native)	Mercury	0.11	2.0	0.030	3.7
GeoEngineers 1996	1/31/1996	TP9, #1	0.5 (slag/native)	Oil-range hydrocarbons	5,500	2,000		2.8
GeoEngineers 1996	1/31/1996	TP10, #1	0.5 (slag/native)	Oil-range hydrocarbons	4,200	2,000		2.1
GeoEngineers 1996	1/30/1996	B2, #1	0 (slag/native)	Oil-range hydrocarbons	1,500	2,000		<1
GeoEngineers 1996	1/31/1996	TP3, #1	0.5 (slag/native)	Oil-range hydrocarbons	1,400	2,000		<1
GeoEngineers 1996	1/31/1996	TP8, #1	0.5 (slag/native)	Oil-range hydrocarbons	1,300	2,000		<1
GeoEngineers 1996	1/31/1996	TP4, #1	0.5 (slag/native)	Oil-range hydrocarbons	1,000	2,000		<1
GeoEngineers 1996	1/31/1996	TP8, #2	2.5 (CKD)	Oil-range hydrocarbons	720	2,000		<1
GeoEngineers 1996	1/31/1996	TP1, #2	2.0 (CKD)	Oil-range hydrocarbons	500	2,000		<1
GeoEngineers 1996	1/31/1996	TP2, #1	0.5 (slag)	Oil-range hydrocarbons	340	2,000		<1
GeoEngineers 1996	1/31/1996	TP1, #1	0.5 (slag)	Oil-range hydrocarbons	260	2,000		<1
GeoEngineers 1996	1/31/1996	TP6, #1	0.5 (slag/native)	Oil-range hydrocarbons	220	2,000		<1
GeoEngineers 1996	1/31/1996	TP6, #2	2.0 (CKD)	Oil-range hydrocarbons	38	2,000		<1
GeoEngineers 1996	1/31/1996	TP3, #2	4.5 (CKD)	Silver	9.5		0.61	16
GeoEngineers 1996	1/31/1996	TP7, #2	3.0 (CKD)	Silver	8.8		0.61	14

Table C-11
Chemicals Detected in Soil
West Coast Equipment 2

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
GeoEngineers 1996	1/31/1996	TP5, #2	3.0 (CKD)	Silver	8.3		0.61	14
GeoEngineers 1996	2/2/1996	TP8, #2	2.5 (CKD)	Silver	8.2		0.61	13
GeoEngineers 1996	1/31/1996	TP2, #2	3.0 (CKD)	Silver	8.0		0.61	13
GeoEngineers 1996	1/31/1996	TP10, #2	2.5 (CKD)	Silver	7.8		0.61	13
GeoEngineers 1996	1/31/1996	TP4, #2	3.0 (CKD)	Silver	7.5		0.61	12
GeoEngineers 1996	1/30/1996	B3, #1	0 (slag/native)	Silver	6.8		0.61	11
GeoEngineers 1996	1/31/1996	TP6, #2	2.0 (CKD)	Silver	6.3		0.61	10
GeoEngineers 1996	1/31/1996	TP3, #1	0.5 (slag/native)	Silver	5.6		0.61	9.2
GeoEngineers 1996	1/30/1996	B2, #2	2.5 (CKD)	Silver	5.2		0.61	8.5
GeoEngineers 1996	1/31/1996	TP10, #1	0.5 (slag/native)	Silver	5.2		0.61	8.5
GeoEngineers 1996	1/31/1996	TP4, #1	0.5 (slag/native)	Silver	4.8		0.61	7.9
GeoEngineers 1996	1/31/1996	TP6, #1	0.5 (slag/native)	Silver	4.8		0.61	7.9
GeoEngineers 1996	2/2/1996	TP8, #1	0.5 (slag/native)	Silver	4.8		0.61	7.9
GeoEngineers 1996	1/31/1996	TP9, #1	0.5 (slag/native)	Silver	4.6		0.61	7.5
GeoEngineers 1996	1/30/1996	TP1, #1	0.5 (slag)	Silver	3.9		0.61	6.4
GeoEngineers 1996	1/30/1996	TP2, #1	0.5 (slag)	Silver	3.8		0.61	6.2
GeoEngineers 1996	1/31/1996	TP7, #1	0.5 (native)	Silver	3.5		0.61	5.7
GeoEngineers 1996	1/31/1996	TP5, #3	6.5 (CKD)	Silver	3.4		0.61	5.6
GeoEngineers 1996	1/30/1996	TP1, #2	2.0 (CKD)	Silver	1.7		0.61	2.8
GeoEngineers 1996	1/31/1996	TP5, #1	0.5 (slag/native)	Silver	1.7		0.61	2.8
GeoEngineers 1996	1/30/1996	B2, #1	0 (slag/native)	Silver	1.6		0.61	2.6
GeoEngineers 1996	2/2/1996	TP6, #3	6.5 (native)	Silver	1.5		0.61	2.5
GeoEngineers 1996	2/2/1996	TP7, #3	7.5 (native)	Silver	1.4		0.61	2.3
GeoEngineers 1996	2/2/1996	TP4, #3	6.5 (native)	Silver	1.1		0.61	1.8
GeoEngineers 1996	1/31/1996	TP9, #2	2.5 (CKD)	Silver	10		0.61	16
GeoEngineers 1996	2/2/1996	TP3, #3	7.0 (native)	Silver	1.7		0.61	2.8
GeoEngineers 1996	1/31/1996	TP5, #2	3.0 (CKD)	TCLP Chromium (mg/L)	0.12			<1
GeoEngineers 1996	1/31/1996	TP5, #2	3.0 (CKD)	TCLP Silver (mg/L)	0.023			<1
KM&S 1995	2/1/1995	TPE4-1	4	Zinc	1,200	24,000	38	32
KM&S 1995	2/1/1995	TPE2-1	4	Zinc	960	24,000	38	25
KM&S 1995	2/1/1995	TPE1-1	4	Zinc	750	24,000	38	20

Table C-11
Chemicals Detected in Soil
West Coast Equipment 2

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
KM&S 1995	2/1/1995	TPE5-1	4	Zinc	690	24,000	38	18
KM&S 1995	2/1/1995	TPE5-2	0.5	Zinc	490	24,000	38	13
KM&S 1995	2/1/1995	TPE4-2	0.5	Zinc	260	24,000	38	6.8
KM&S 1995	2/1/1995	TPE1-2	0.5	Zinc	120	24,000	38	3.2
KM&S 1995	2/1/1995	TPE2-2	0.5	Zinc	100	24,000	38	2.6

ft bgs - feet below ground surface
mg/kg - Milligrams per kilogram
MTCA - Model Toxics Control Act

Sample concentration exceeded MTCA Cleanup Level or Soil-to-Sediment Screening Level.

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.
b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).
c - MTCA Method A cleanup level for TPH gasoline range organics with benzene present
Table presents detected chemicals only.
Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or the soil-to-sediment screening level, whichever level is lower.

Table C-12
Chemicals Detected in Groundwater
West Coast Equipment 2

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
GeoEngineers 1996	2/2/1996	MW-3	2-Butanone (methyl ethyl ketone)	11	4,800		<1
GeoEngineers 1996	2/2/1996	MW-3	Acetone	80	7,200		<1
GeoEngineers 1996	2/2/1996	MW-9	Acetone	20	7,200		<1
GeoEngineers 1996	2/2/1996	MW-9	Arsenic (dissolved)	120	0.058	370	2069
GeoEngineers 1996	2/2/1996	MW-3	Arsenic (dissolved)	39	0.058	370	672
GeoEngineers 1996	2/2/1996	MW-2	Arsenic (dissolved)	7.0	0.058	370	121
GeoEngineers 1996	2/2/1996	MW-9	Arsenic (total)	150	0.058	370	2586
GeoEngineers 1996	2/2/1996	MW-2	Arsenic (total)	65	0.058	370	1121
GeoEngineers 1996	2/2/1996	MW-3	Arsenic (total)	53	0.058	370	914
GeoEngineers 1996	2/2/1996	MW-9	Barium (dissolved)	150	3,200		<1
GeoEngineers 1996	2/2/1996	MW-2	Barium (total)	430	3,200		<1
GeoEngineers 1996	2/2/1996	MW-9	Barium (total)	360	3,200		<1
GeoEngineers 1996	2/2/1996	MW-3	Barium (total)	76	3,200		<1
GeoEngineers 1996	2/2/1996	MW-3	Benzene	0.85	0.80		1.1
GeoEngineers 1996	2/2/1996	MW-9	Chromium (dissolved)	68	50	320	1.4
GeoEngineers 1996	2/2/1996	MW-2	Chromium (total)	330	50	320	6.6
GeoEngineers 1996	2/2/1996	MW-9	Chromium (total)	180	50	320	3.6
GeoEngineers 1996	2/2/1996	MW-3	Chromium (total)	160	50	320	3.2
GeoEngineers 1996	2/2/1996	MW-3	Diesel-range hydrocarbons	930	500		1.9
GeoEngineers 1996	2/2/1996	MW-2	Diesel-range hydrocarbons	680	500		1.4
GeoEngineers 1996	2/2/1996	MW-9	Diesel-range hydrocarbons	590	500		1.2
GeoEngineers 1996	2/2/1996	MW03	Ethylbenzene	0.85	700		<1
GeoEngineers 1996	2/2/1996	MW-9	Lead (dissolved)	20	15	13	1.5
GeoEngineers 1996	2/2/1996	MW-3	Lead (total)	96	15	13	7.4
GeoEngineers 1996	2/2/1996	MW-2	Lead (total)	41	15	13	3.2
GeoEngineers 1996	2/2/1996	MW-9	Lead (total)	25	15	13	1.9
GeoEngineers 1996	2/2/1996	MW-3	Oil-range hydrocarbons	770	500		1.5
GeoEngineers 1996	2/2/1996	MW-3	Toluene	0.88	640		<1
GeoEngineers 1996	2/2/1996	MW-3	Xylenes	1.5	1,000		<1

ug/L - Micrograms per liter
MTCA - Model Toxics Control Act

Sample concentration exceeded MTCA Cleanup Level or Groundwater-to-Sediment Screening Level.

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.
b - Based on CSL (SAIC 2006)
Table presents detected chemicals only.
Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or groundwater-to-sediment screening level, whichever level is lower.

Table C-13
Chemicals Detected in Soil
Kenyon Street Property

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
SES 2007	9/28/2006	B-04	4.0	Arsenic	327	0.67	590	488
SES 2007	9/28/2006	B-03	3.0	Arsenic	326	0.67	590	487
SES 2007	9/28/2006	B-06	8.0	Arsenic	326	0.67	590	487
SES 2007	9/28/2006	B-02	4.0	Arsenic	143	0.67	590	213
SES 2007	2/8/2007	B-12	7.5	Arsenic	110	0.67	590	164
SES 2007	9/28/2006	B-01	2.0	Arsenic	95	0.67	590	142
SES 2007	2/5/2007	B-09	8.0	Arsenic	30	0.67	590	45
SES 2007	2/5/2007	B-07	6.0	Arsenic	8.7	0.67	590	13
SES 2007	2/8/2007	B-10	10.5	Arsenic	6.6	0.67	590	9.9
SES 2007	2/8/2007	B-11	11.0	Arsenic	5.7	0.67	590	8.6
SES 2007	9/28/2006	B-04	11.0	Arsenic	5.7	0.67	590	8.5
SES 2007	2/5/2007	B-08	5.5	Arsenic	5.2	0.67	590	7.7
SES 2007	9/28/2006	B-04	14.5	Arsenic	4.3	0.67	590	6.3
SES 2007	2/8/2007	B-13	11.0	Arsenic	3.0	0.67	590	4.5
SES 2007	2/8/2007	B-12	7.5	Barium	103	16,000		<1
SES 2007	2/5/2007	B-09	8.0	Barium	101	16,000		<1
SES 2007	9/28/2006	B-04	11.0	Barium	75	16,000		<1
SES 2007	2/5/2007	B-07	6.0	Barium	70	16,000		<1
SES 2007	9/28/2006	B-04	4.0	Barium	66	16,000		<1
SES 2007	9/28/2006	B-06	8.0	Barium	64	16,000		<1
SES 2007	9/28/2006	B-01	2.0	Barium	62	16,000		<1
SES 2007	2/8/2007	B-11	11.0	Barium	59	16,000		<1
SES 2007	2/8/2007	B-10	10.5	Barium	53	16,000		<1
SES 2007	2/8/2007	B-13	11.0	Barium	51	16,000		<1
SES 2007	9/28/2006	B-03	3.0	Barium	42	16,000		<1
SES 2007	2/5/2007	B-08	5.5	Barium	39	16,000		<1
SES 2007	9/28/2006	B-04	14.5	Barium	31	16,000		<1
SES 2007	9/28/2006	B-02	4.0	Barium	17	16,000		<1

Table C-13
Chemicals Detected in Soil
Kenyon Street Property

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
SES 2007	9/28/2006	B-06	8.0	Cadmium	9.1	2.0	1.7	5.3
SES 2007	9/28/2006	B-03	3.0	Cadmium	8.0	2.0	1.7	4.7
SES 2007	9/28/2006	B-04	4.0	Cadmium	6.8	2.0	1.7	4.0
SES 2007	2/5/2007	B-09	8.0	Cadmium	5.3	2.0	1.7	3.1
SES 2007	9/28/2006	B-02	4.0	Cadmium	4.4	2.0	1.7	2.6
SES 2007	2/5/2007	B-07	6.0	Cadmium	3.7	2.0	1.7	2.2
SES 2007	2/8/2007	B-12	7.5	Cadmium	2.3	2.0	1.7	1.3
SES 2007	9/28/2006	B-01	2.0	Cadmium	1.9	2.0	1.7	1.1
SES 2007	2/5/2007	B-09	8.0	Chromium	40		270	<1
SES 2007	9/28/2006	B-04	11.0	Chromium	22		270	<1
SES 2007	2/8/2007	B-12	7.5	Chromium	21		270	<1
SES 2007	9/28/2006	B-06	8.0	Chromium	17		270	<1
SES 2007	2/8/2007	B-13	11.0	Chromium	16		270	<1
SES 2007	9/28/2006	B-03	3.0	Chromium	16		270	<1
SES 2007	9/28/2006	B-01	2.0	Chromium	16		270	<1
SES 2007	9/28/2006	B-04	4.0	Chromium	15		270	<1
SES 2007	2/8/2007	B-11	11.0	Chromium	14		270	<1
SES 2007	9/28/2006	B-02	4.0	Chromium	13		270	<1
SES 2007	9/28/2006	B-04	14.5	Chromium	11		270	<1
SES 2007	2/8/2007	B-10	10.5	Chromium	10		270	<1
SES 2007	2/5/2007	B-07	6.0	Chromium	8.9		270	<1
SES 2007	2/5/2007	B-08	5.5	Chromium	7.7		270	<1
SES 2007	9/28/2006	B-06	8.0	Lead	2,550	250	67	38
SES 2007	9/28/2006	B-03	3.0	Lead	2,350	250	67	35
SES 2007	2/5/2007	B-09	8.0	Lead	2,100	250	67	31
SES 2007	9/28/2006	B-04	4.0	Lead	1,830	250	67	27
SES 2007	9/28/2006	B-02	4.0	Lead	1,320	250	67	20
SES 2007	2/8/2007	B-12	7.5	Lead	613	250	67	9.1
SES 2007	9/28/2006	B-01	2.0	Lead	546	250	67	8.1
SES 2007	2/5/2007	B-07	6.0	Lead	48	250	67	<1
SES 2007	2/8/2007	B-10	10.5	Lead	21	250	67	<1

Table C-13
Chemicals Detected in Soil
Kenyon Street Property

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
SES 2007	9/28/2006	B-04	11.0	Lead	17	250	67	<1
SES 2007	9/28/2006	B-04	14.5	Lead	4.9	250	67	<1
SES 2007	2/8/2007	B-11	11.0	Lead	4.2	250	67	<1
SES 2007	2/5/2007	B-08	5.5	Lead	3.8	250	67	<1
SES 2007	2/8/2007	B-13	11.0	Lead	3.5	250	67	<1
SES 2007	9/28/2006	B-06	8.0	Selenium	3.6	400		<1
SES 2007	9/28/2006	B-04	4.0	Selenium	3.6	400		<1
SES 2007	9/28/2006	B-03	3.0	Selenium	3.1	400		<1
SES 2007	9/28/2006	B-02	4.0	Selenium	2.1	400		<1
SES 2007	2/8/2007	B-12	7.5	Selenium	1.6	400		<1
SES 2007	2/5/2007	B-09	8.0	Selenium	1.1	400		<1
SES 2007	9/28/2006	B-06	8.0	Silver	4.8	400	0.61	7.8
SES 2007	9/28/2006	B-04	4.0	Silver	3.9	400	0.61	6.4
SES 2007	9/28/2006	B-03	3.0	Silver	3.7	400	0.61	6.0
SES 2007	2/5/2007	B-09	8.0	Silver	2.3	400	0.61	3.7
SES 2007	9/28/2006	B-02	4.0	Silver	1.9	400	0.61	3.0
SES 2007	9/28/2006	B-01	2.0	Silver	1.2	400	0.61	1.9

ft bgs - feet below ground surface
mg/kg - Milligrams per kilogram
MTCA - Model Toxics Control Act

Sample concentration exceeded MTCA Cleanup Level or Soil-to-Sediment Screening Level.

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.
b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).
Table presents detected chemicals only.
Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or the soil-to-sediment screening level, whichever level is lower.

Table C-14
Chemicals Detected in Groundwater
Kenyon Street Property

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
SES 2007	10/4/2006	MW-02	Arsenic	100	0.058	370	1724
SES 2007	2/12/2007	MW-04	Arsenic	99	0.058	370	1712
SES 2007	7/5/2007	MW-07	Arsenic	99	0.058	370	1703
SES 2007	7/5/2007	MW-04	Arsenic	85	0.058	370	1459
SES 2008	11/1/2007	MW-07	Arsenic	78	0.058	370	1343
SES 2007	4/20/2007	MW-04	Arsenic	56	0.058	370	962
SES 2007	7/5/2007	MW-02	Arsenic	56	0.058	370	959
SES 2008	11/1/2007	MW-02	Arsenic	41	0.058	370	703
SES 2007	7/5/2007	MW-06	Arsenic	36	0.058	370	628
SES 2008	11/1/2007	MW-06	Arsenic	28	0.058	370	474
SES 2007	7/5/2007	MW-05	Arsenic	23	0.058	370	402
SES 2007	10/4/2006	MW-01	Arsenic	23	0.058	370	391
SES 2007	10/4/2006	MW-03	Arsenic	21	0.058	370	362
SES 2008	11/1/2007	MW-05	Arsenic	17	0.058	370	286
SES 2008	11/1/2007	MW-01	Arsenic	15	0.058	370	264
SES 2007	7/5/2007	MW-08	Arsenic	15	0.058	370	252
SES 2007	2/12/2007	MW-05	Arsenic	14	0.058	370	236
SES 2008	11/1/2007	MW-08	Arsenic	13	0.058	370	222
SES 2007	4/20/2007	MW-05	Arsenic	11	0.058	370	186
SES 2007	2/6/2007	Stormwater-W	Arsenic	1.6	0.058	370	27
SES 2007	2/6/2007	Stormwater-E	Arsenic	1.5	0.058	370	27
SES 2007	2/6/2007	Stormwater-C	Arsenic	1.4	0.058	370	25
SES 2007	10/4/2006	MW-02	Barium	66	3,200		<1
SES 2007	10/4/2006	MW-01	Barium	32	3,200		<1
SES 2007	7/5/2007	MW-04	Barium	30	3,200		<1
SES 2008	11/1/2007	MW-02	Barium	27	3,200		<1
SES 2008	11/1/2007	MW-01	Barium	27	3,200		<1
SES 2007	2/6/2007	Stormwater-E	Barium	21	3,200		<1
SES 2007	2/6/2007	Stormwater-W	Barium	21	3,200		<1
SES 2007	2/6/2007	Stormwater-C	Barium	20	3,200		<1
SES 2007	4/20/2007	MW-04	Barium	16	3,200		<1
SES 2008	11/1/2007	MW-07	Barium	16	3,200		<1
SES 2007	2/12/2007	MW-05	Barium	15	3,200		<1
SES 2007	7/5/2007	MW-02	Barium	13	3,200		<1
SES 2007	10/4/2006	MW-03	Barium	13	3,200		<1
SES 2007	2/12/2007	MW-04	Barium	13	3,200		<1
SES 2008	11/1/2007	MW-06	Barium	11	3,200		<1

Table C-14
Chemicals Detected in Groundwater
Kenyon Street Property

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
SES 2007	7/5/2007	MW-06	Barium	10	3,200		<1
SES 2007	7/5/2007	MW-07	Barium	9.3	3,200		<1
SES 2007	4/20/2007	MW-05	Barium	6.2	3,200		<1
SES 2007	7/5/2007	MW-05	Barium	4.1	3,200		<1
SES 2007	7/5/2007	MW-08	Barium	3.5	3,200		<1
SES 2008	11/1/2007	MW-08	Barium	2.9	3,200		<1
SES 2008	11/1/2007	MW-05	Barium	2.0	3,200		<1
SES 2007	10/4/2006	MW-02	Cadmium	3.0	5.0	3.4	<1
SES 2008	11/1/2007	MW-07	Cadmium	1.1	5.0	3.4	<1
SES 2008	11/1/2007	MW-02	Cadmium	1.1	5.0	3.4	<1
SES 2007	10/4/2006	MW-03	Chromium[c]	71	50	320	1.4
SES 2007	10/4/2006	MW-02	Chromium[c]	44	50	320	<1
SES 2007	10/4/2006	MW-01	Chromium[c]	35	50	320	<1
SES 2007	7/5/2007	MW-05	Chromium[c]	17	50	320	<1
SES 2008	11/1/2007	MW-02	Chromium[c]	17	50	320	<1
SES 2007	7/5/2007	MW-02	Chromium[c]	17	50	320	<1
SES 2007	7/5/2007	MW-04	Chromium[c]	17	50	320	<1
SES 2007	7/5/2007	MW-07	Chromium[c]	14	50	320	<1
SES 2008	11/1/2007	MW-07	Chromium[c]	14	50	320	<1
SES 2007	7/5/2007	MW-06	Chromium[c]	12	50	320	<1
SES 2007	2/12/2007	MW-04	Chromium[c]	12	50	320	<1
SES 2007	2/12/2007	MW-05	Chromium[c]	11	50	320	<1
SES 2007	7/5/2007	MW-08	Chromium[c]	8.7	50	320	<1
SES 2008	11/1/2007	MW-06	Chromium[c]	5.1	50	320	<1
SES 2007	4/20/2007	MW-04	Chromium[c]	3.8	50	320	<1
SES 2008	11/1/2007	MW-01	Chromium[c]	3.5	50	320	<1
SES 2007	2/6/2007	Stormwater-E	Chromium[c]	2.2	50	320	<1
SES 2007	2/6/2007	Stormwater-C	Chromium[c]	2.1	50	320	<1
SES 2007	2/6/2007	Stormwater-W	Chromium[c]	1.9	50	320	<1
SES 2008	11/1/2007	MW-05	Chromium[c]	1.1	50	320	<1
SES 2007	10/4/2006	MW-02	Lead	30	15	13	2.3
SES 2007	10/4/2006	MW-01	Lead	17	15	13	1.3
SES 2008	11/1/2007	MW-07	Lead	10	15	13	<1

Table C-14
Chemicals Detected in Groundwater
Kenyon Street Property

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
SES 2008	11/1/2007	MW-02	Lead	8.0	15	13	<1
SES 2007	2/6/2007	Stormwater-W	Lead	4.5	15	13	<1
SES 2007	2/6/2007	Stormwater-E	Lead	3.3	15	13	<1
SES 2007	2/6/2007	Stormwater-C	Lead	3.3	15	13	<1
SES 2008	11/1/2007	MW-01	Lead	3.0	15	13	<1
SES 2007	7/5/2007	MW-02	Lead	2.7	15	13	<1
SES 2007	2/12/2007	MW-04	Lead	2.0	15	13	<1
SES 2007	7/5/2007	MW-04	Lead	1.8	15	13	<1
SES 2007	7/5/2007	MW-06	Lead	1.8	15	13	<1
SES 2008	11/1/2007	MW-06	Lead	1.5	15	13	<1
SES 2007	7/5/2007	MW-07	Lead	1.4	15	13	<1
SES 2007	7/5/2007	MW-06	Selenium	6.1	80		<1
SES 2007	10/4/2006	MW-03	Selenium	4.5	80		<1
SES 2008	11/1/2007	MW-06	Selenium	3.0	80		<1
SES 2007	2/12/2007	MW-04	Selenium	2.3	80		<1
SES 2007	10/4/2006	MW-02	Selenium	2.0	80		<1
SES 2007	7/5/2007	MW-04	Selenium	1.9	80		<1
SES 2008	11/1/2007	MW-07	Selenium	1.6	80		<1
SES 2007	10/4/2006	MW-01	Selenium	1.5	80		<1
SES 2008	11/1/2007	MW-02	Selenium	1.4	80		<1
SES 2007	7/5/2007	MW-07	Selenium	1.2	80		<1
SES 2007	7/5/2007	MW-02	Selenium	1.1	80		<1

ug/L - Micrograms per liter
MTCA - Model Toxics Control Act

Sample concentration exceeded MTCA Cleanup Level or Groundwater-to-Sediment Screening Level.

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.
b - Based on CSL (SAIC 2006)
c - MTCA Method A cleanup level for Cr Total
Table presents detected chemicals only.
Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or groundwater-to-sediment screening level, whichever level is lower.

Table C-15
Chemicals Detected in Soil
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Maximum Exceedance Factor
Riley 2005c	Aug 2004	B-3	2 - 3	Arsenic	143	0.67	590	213
Riley 2005c	Aug 2004	B-1	2 - 3	Arsenic	44	0.67	590	66
Riley 2005c	Aug 2004	B-2	2.5 - 3.5	Arsenic	39	0.67	590	58
Riley 2005c	Aug 2004	B-1	5 - 6	Arsenic	37	0.67	590	55
Riley 2005c	Aug 2004	B-1	8.5 - 9.5	Arsenic	7.1	0.67	590	11
Riley 2005c	Aug 2004	B-5	5 - 6	Arsenic	4.3	0.67	590	6.5
Riley 2005c	Aug 2004	B-4	3 - 4	Arsenic	3.9	0.67	590	5.8
Riley 2005c	Aug 2004	B-3	4.5 - 5.5	Arsenic	3.7	0.67	590	5.5
Riley 2005c	Aug 2004	B-2	6.5 - 7.5	Arsenic	2.9	0.67	590	4.4
Riley 2005c	Aug 2004	B-4	6.5 - 7.5	Arsenic	2.1	0.67	590	3.1
Riley 2005c	Aug 2004	B-5	2 - 3	Arsenic	2.0	0.67	590	3.0
Riley 2005c	Aug 2004	B-2	9 - 10	Arsenic	1.3	0.67	590	1.9
Riley 1998b	9/2/1997	B2	12 (excavation floor)	Benzene	180	0.03		6,000
Riley 1998b	9/2/1997	SS2	8.0 (sidewall)	Benzene	84	0.03		2,800
Riley 1998b	9/2/1997	B3	12 (excavation floor)	Benzene	82	0.03		2,733
Riley 1998b	9/2/1997	ES1	8.0 (sidewall)	Benzene	56	0.03		1,867
Riley 1998b	9/2/1997	STP4	stockpile	Benzene	8.6	0.03		287
Riley 2005d	12/3/2004	B2	13	Benzene	0.45	0.03		15
Riley 2004c	5/31/1997	SB7	7.0	Benzene	0.42	0.03		14
Riley 2005d	12/3/2004	B10	6.0 (CKD)	Benzene	0.12	0.03		4.0
Riley 2005d	12/3/2004	B3	13	Benzene	0.061	0.03		2.0
Riley 2005d	12/3/2004	B5	6.0 (CKD)	Benzene	0.059	0.03		2.0
Riley 2005d	12/3/2004	B8	13	Benzene	0.032	0.03		1.1
Riley 2005c	Aug 2004	B-3	2 - 3	Cadmium	8.6	2.0	1.7	5.0
Riley 2005c	Aug 2004	B-1	2 - 3	Cadmium	2.9	2.0	1.7	1.7
Riley 2005c	Aug 2004	B-1	5 - 6	Cadmium	2.5	2.0	1.7	1.5
Riley 2005c	Aug 2004	B-2	2.5 - 3.5	Cadmium	1.5	2.0	1.7	<1
Riley 2005c	Aug 2004	B-5	2 - 3	Cadmium	1.4	2.0	1.7	<1
Riley 2005c	Aug 2004	B-2	6.5 - 7.5	Chromium, total	35		270	<1
Riley 2005c	Aug 2004	B-5	2 - 3	Chromium, total	17		270	<1
Riley 2005c	Aug 2004	B-1	8.5 - 9.5	Chromium, total	15		270	<1
Riley 2005c	Aug 2004	B-3	2 - 3	Chromium, total	14		270	<1
Riley 2005c	Aug 2004	B-5	5 - 6	Chromium, total	13		270	<1
Riley 2005c	Aug 2004	B-4	3 - 4	Chromium, total	13		270	<1
Riley 2005c	Aug 2004	B-1	5 - 6	Chromium, total	12		270	<1
Riley 2005c	Aug 2004	B-4	6.5 - 7.5	Chromium, total	11		270	<1

Table C-15
Chemicals Detected in Soil
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Maximum Exceedance Factor
Riley 2005c	Aug 2004	B-2	2.5 - 3.5	Chromium, total	11		270	<1
Riley 2005c	Aug 2004	B-1	2 - 3	Chromium, total	11		270	<1
Riley 2005c	Aug 2004	B-3	4.5 - 5.5	Chromium, total	7.6		270	<1
Riley 2005c	Aug 2004	B-2	9 - 10	Chromium, total	6.6		270	<1
Riley 2005d	12/3/2004	B2	13	Diesel-range hydrocarbons	3,000	2,000		1.5
Riley 1998b	9/2/1997	STP4	stockpile	Diesel-range hydrocarbons	1,700	2,000		<1
Riley 1998b	9/2/1997	ES1	8.0 (sidewall)	Diesel-range hydrocarbons	1,300	2,000		<1
Riley 1998b	9/2/1997	B2	12 (excavation floor)	Diesel-range hydrocarbons	1,200	2,000		<1
Riley 1998b	9/2/1997	B3	12 (excavation floor)	Diesel-range hydrocarbons	1,000	2,000		<1
Riley 1998b	9/2/1997	SS2	8.0 (sidewall)	Diesel-range hydrocarbons	960	2,000		<1
Riley 2004c	5/31/1997	SB4	6.5	Diesel-range hydrocarbons	560	2,000		<1
Riley 1998b	9/2/1997	WS2	7.0 (sidewall)	Diesel-range hydrocarbons	400	2,000		<1
Riley 2004c	5/31/1997	SB6	6.5	Diesel-range hydrocarbons	340	2,000		<1
Riley 2004c	5/31/1997	SB1	5.0	Diesel-range hydrocarbons	100	2,000		<1
Riley 1998b	9/2/1997	B2	12 (excavation floor)	Ethylbenzene	330	6.0		55
Riley 1998b	9/2/1997	SS2	8.0 (sidewall)	Ethylbenzene	190	6.0		32
Riley 1998b	9/2/1997	B3	12 (excavation floor)	Ethylbenzene	180	6.0		30
Riley 1998b	9/2/1997	ES1	8.0 (sidewall)	Ethylbenzene	130	6.0		22
Riley 1998b	9/2/1997	STP4	stockpile	Ethylbenzene	41	6.0		6.8
Riley 1998b	9/2/1997	WS2	7.0 (sidewall)	Ethylbenzene	13	6.0		2.2
Riley 2005d	12/3/2004	B2	13	Ethylbenzene	1.5	6.0		<1
Riley 2004c	5/31/1997	SB7	7.0	Ethylbenzene	0.99	6.0		<1
Riley 2005d	12/3/2004	B8	13	Ethylbenzene	0.86	6.0		<1
Riley 1998b	9/2/1997	B2	12 (excavation floor)	Gasoline-range hydrocarbons[e]	17,000	30		567
Riley 1998b	9/2/1997	SS2	8.0 (sidewall)	Gasoline-range hydrocarbons[e]	9,000	30		300
Riley 1998b	9/2/1997	B3	12 (excavation floor)	Gasoline-range hydrocarbons[e]	8,800	30		293
Riley 1998b	9/2/1997	ES1	8.0 (sidewall)	Gasoline-range hydrocarbons[e]	6,100	30		203
Riley 1998b	9/2/1997	STP4	stockpile	Gasoline-range hydrocarbons[e]	2,600	30		87
Riley 1998b	9/2/1997	WS2	7.0 (sidewall)	Gasoline-range hydrocarbons[e]	1,100	30		37
Riley 2005d	12/3/2004	B2	13	Gasoline-range hydrocarbons[e]	190	30		6.3
Riley 2004c	5/31/1997	SB1	5.0	Gasoline-range hydrocarbons[e]	85	30		2.8
Riley 2005c	Aug 2004	B-3	2 - 3	Lead	2,210	250	67	33
Riley 2005c	Aug 2004	B-1	2 - 3	Lead	888	250	67	13
Riley 2005c	Aug 2004	B-1	5 - 6	Lead	719	250	67	11
Riley 2005c	Aug 2004	B-2	2.5 - 3.5	Lead	423	250	67	6.3

Table C-15
Chemicals Detected in Soil
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Maximum Exceedance Factor
Riley 2005c	Aug 2004	B-2	6.5 - 7.5	Lead	52	250	67	<1
Riley 2005c	Aug 2004	B-5	5 - 6	Lead	11	250	67	<1
Riley 2005c	Aug 2004	B-4	3 - 4	Lead	4.2	250	67	<1
Riley 2005c	Aug 2004	B-1	8.5 - 9.5	Lead	4.0	250	67	<1
Riley 2005c	Aug 2004	B-3	4.5 - 5.5	Lead	2.9	250	67	<1
Riley 2005c	Aug 2004	B-5	2 - 3	Lead	2.5	250	67	<1
Riley 2005c	Aug 2004	B-4	6.5 - 7.5	Lead	1.7	250	67	<1
Riley 2005c	Aug 2004	B-2	9 - 10	Lead	0.93	250	67	<1
Riley 2004c	5/31/1997	SB6	6.5	Oil-range hydrocarbons	2,700	2,000		1.4
Riley 2004c	5/31/1997	SB4	6.5	Oil-range hydrocarbons	1,700	2,000		<1
Riley 2005d	12/3/2004	B7	6.0 (CKD)	Oil-range hydrocarbons	170	2,000		<1
Riley 2005d	12/3/2004	B12	6.0 (CKD)	Oil-range hydrocarbons	97	2,000		<1
Riley 1998b	9/2/1997	B2	12 (excavation floor)	Toluene	590	7.0		84
Riley 1998b	9/2/1997	SS2	8.0 (sidewall)	Toluene	520	7.0		74
Riley 1998b	9/2/1997	B3	12 (excavation floor)	Toluene	450	7.0		64
Riley 1998b	9/2/1997	ES1	8.0 (sidewall)	Toluene	420	7.0		60
Riley 1998b	9/2/1997	STP4	stockpile	Toluene	110	7.0		16
Riley 1998b	9/2/1997	WS2	7.0 (sidewall)	Toluene	9.7	7.0		1.4
Riley 2004c	5/31/1997	SB7	7.0	Toluene	3.1	7.0		0.44
Riley 1998b	9/15/1997	SS4	8.0 (sidewall)	Total EPH[c]	1,242	2,000		<1
Riley 1998b	9/15/1997	WS2	7.0 (sidewall)	Total EPH[c]	528	2,000		<1
Riley 1998b	9/15/1997	ES4	8.0 (sidewall)	Total EPH[c]	250	2,000		<1
Riley 1998b	9/15/1997	B5	13 (excavation floor)	Total EPH[c]	56	2,000		<1
Riley 1998b	9/15/1997	SS4	8.0 (sidewall)	Total VPH[d]	1,890	30		63
Riley 1998b	9/15/1997	ES4	8.0 (sidewall)	Total VPH[d]	484	30		16
Riley 1998b	9/15/1997	WS2	7.0 (sidewall)	Total VPH[d]	406	30		14
Riley 1998b	9/15/1997	B5	13 (excavation floor)	Total VPH[d]	26	30		<1
Riley 1998b	9/15/1997	B4	13 (excavation floor)	Total VPH[d]	17	30		<1
Riley 1998b	9/2/1997	B2	12 (excavation floor)	Xylenes	1,030	9.0		114
Riley 1998b	9/2/1997	SS2	8.0 (sidewall)	Xylenes	820	9.0		91
Riley 1998b	9/2/1997	B3	12 (excavation floor)	Xylenes	720	9.0		80
Riley 1998b	9/2/1997	ES1	8.0 (sidewall)	Xylenes	640	9.0		71

Table C-15
Chemicals Detected in Soil
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Maximum Exceedance Factor
Riley 1998b	9/2/1997	STP4	stockpile	Xylenes	264	9.0		29
Riley 1998b	9/2/1997	WS2	7.0 (sidewall)	Xylenes	71	9.0		7.9
Riley 2005d	12/3/2004	B2	13	Xylenes	15	9.0		1.6
Riley 2004c	5/31/1997	SB7	7.0	Xylenes	6.4	9.0		<1
Riley 2005d	12/3/2004	B8	13	Xylenes	1.9	9.0		<1
Riley 2004c	5/31/1997	SB1	5.0	Xylenes	1.4	9.0		<1

ft bgs - feet below ground surface
mg/kg - Milligrams per kilogram
MTCA - Model Toxics Control Act
VPH - volatile petroleum hydrocarbons

(grey box) Sample location was excavated during remediation activities.
(yellow box) Sample concentration exceeded MTCA Cleanup Level or Soil-to-Sediment Screening Level.

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.
b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).
c - Total EPH was compared to the MTCA cleanup level for TPH-Diesel
d - Total VPH was compared to the MTCA cleanup level for TPH-Gasoline
e - MTCA Method A cleanup level for TPH gasoline range organics with benzene present
Table presents detected chemicals only.
Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or the soil-to-sediment screening level, whichever level is lower.

Table C-16
Chemicals Detected in Groundwater
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
EPI 2006	5/18/2005	MW-11	Antimony (dissolved)	8.0	6.4		1.3
EPI 2006	5/18/2005	MW-11	Antimony (total)	9.0	6.4		1.4
EPI 2006	2/14/2006	MW-7R	Arsenic (dissolved)	91	0.058	370	1569
Riley 2005c	8/18/2004	MW-3	Arsenic (dissolved)	68	0.058	370	1172
Riley 2005c	8/18/2004	MW-4	Arsenic (dissolved)	59	0.058	370	1017
Riley 2005c	8/18/2004	MW-7	Arsenic (dissolved)	58	0.058	370	1000
EPI 2006	2/14/2006	MW-1	Arsenic (dissolved)	35	0.058	370	603
EPI 2006	5/18/2005	MW-11	Arsenic (dissolved)	35	0.058	370	603
EPI 2006	5/18/2005	MW-3	Arsenic (dissolved)	34	0.058	370	586
EPI 2006	2/14/2006	MW-3	Arsenic (dissolved)	31	0.058	370	534
EPI 2006	8/30/2005	MW-7R	Arsenic (dissolved)	31	0.058	370	534
Riley 2004 [7102]	8/18/2004	MW-5	Arsenic (dissolved)	31	0.058	370	534
EPI 2006	2/14/2006	MW-5	Arsenic (dissolved)	30	0.058	370	517
Riley 2005c	Aug 2004	MW-4	Arsenic (dissolved)	30	0.058	370	517
EPI 2006	2/14/2006	MW-10	Arsenic (dissolved)	29	0.058	370	500
EPI 2006	8/30/2005	MW-11	Arsenic (dissolved)	29	0.058	370	500
EPI 2006	5/18/2005	MW-7R	Arsenic (dissolved)	28	0.058	370	483
2005c	8/18/2004	MW-2	Arsenic (dissolved)	27	0.058	370	466
EPI 2006	8/30/2005	MW-3	Arsenic (dissolved)	26	0.058	370	448
EPI 2006	8/30/2005	MW-5	Arsenic (dissolved)	24	0.058	370	414
Riley 2005c	Aug 2004	MW-2	Arsenic (dissolved)	24	0.058	370	410
EPI 2006	5/18/2005	MW-4	Arsenic (dissolved)	23	0.058	370	397
2005c	8/18/2004	MW-1	Arsenic (dissolved)	23	0.058	370	397
EPI 2006	5/18/2005	MW-1	Arsenic (dissolved)	22	0.058	370	379
EPI 2006	8/30/2005	MW-1	Arsenic (dissolved)	22	0.058	370	379
EPI 2006	11/22/2005	MW-7R	Arsenic (dissolved)	21	0.058	370	362
EPI 2006	8/31/2005	MW-6	Arsenic (dissolved)	20	0.058	370	345
EPI 2006	2/14/2006	MW-9	Arsenic (dissolved)	20	0.058	370	345
EPI 2006	11/22/2005	MW-11	Arsenic (dissolved)	20	0.058	370	345
Riley 2004 [7102]	8/18/2004	MW-8	Arsenic (dissolved)	19	0.058	370	328
EPI 2006	11/22/2005	MW-3	Arsenic (dissolved)	18	0.058	370	310
EPI 2006	8/30/2005	MW-4	Arsenic (dissolved)	18	0.058	370	310
EPI 2006	11/22/2005	MW-1	Arsenic (dissolved)	16	0.058	370	276
EPI 2006	5/18/2005	MW-5	Arsenic (dissolved)	15	0.058	370	259

Table C-16
Chemicals Detected in Groundwater
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
EPI 2006	11/22/2005	MW-10	Arsenic (dissolved)	15	0.058	370	259
EPI 2006	2/14/2006	MW-11	Arsenic (dissolved)	15	0.058	370	259
EPI 2006	11/22/2005	MW-5	Arsenic (dissolved)	14	0.058	370	241
EPI 2006	8/31/2005	MW-9	Arsenic (dissolved)	13	0.058	370	224
EPI 2006	5/18/2005	MW-2	Arsenic (dissolved)	12	0.058	370	207
EPI 2006	8/31/2005	MW-10	Arsenic (dissolved)	11	0.058	370	190
Riley 2005c	Aug 2004	MW-1	Arsenic (dissolved)	9.9	0.058	370	171
EPI 2006	11/22/2005	MW-4	Arsenic (dissolved)	9.0	0.058	370	155
EPI 2006	5/18/2005	MW-9	Arsenic (dissolved)	9.0	0.058	370	155
EPI 2006	5/18/2005	MW-10	Arsenic (dissolved)	7.0	0.058	370	121
EPI 2006	11/22/2005	MW-9	Arsenic (dissolved)	5.0	0.058	370	86
EPI 2006	5/18/2005	MW-7R	Arsenic (total)	40	0.058	370	690
EPI 2006	5/18/2005	MW-11	Arsenic (total)	36	0.058	370	621
EPI 2006	5/18/2005	MW-3	Arsenic (total)	35	0.058	370	603
EPI 2006	5/18/2005	MW-1	Arsenic (total)	30	0.058	370	517
EPI 2006	5/18/2005	MW-5	Arsenic (total)	29	0.058	370	500
EPI 2006	5/18/2005	MW-4	Arsenic (total)	26	0.058	370	448
EPI 2006	11/22/2005	MW-3	Arsenic (total)	23	0.058	370	397
EPI 2006	11/22/2005	MW-7R	Arsenic (total)	22	0.058	370	379
EPI 2006	11/22/2005	MW-11	Arsenic (total)	22	0.058	370	379
EPI 2006	5/18/2005	MW-10	Arsenic (total)	20	0.058	370	345
EPI 2006	11/22/2005	MW-1	Arsenic (total)	19	0.058	370	328
EPI 2006	11/22/2005	MW-10	Arsenic (total)	18	0.058	370	310
EPI 2006	11/22/2005	MW-6	Arsenic (total)	17	0.058	370	293
EPI 2006	5/18/2005	MW-9	Arsenic (total)	15	0.058	370	259
EPI 2006	11/22/2005	MW-5	Arsenic (total)	14	0.058	370	241
EPI 2006	5/18/2005	MW-2	Arsenic (total)	13	0.058	370	224
EPI 2006	11/22/2005	MW-4	Arsenic (total)	11	0.058	370	190
EPI 2006	11/22/2005	MW-9	Arsenic (total)	10	0.058	370	172
EPI 2006	11/22/2005	MW-2	Arsenic (total)	9.0	0.058	370	155
Riley 2000a	11/10/1999	MW-1	Benzene	13,000	0.80		16,250
Riley 2000b	3/7/2000	MW-1	Benzene	6,100	0.80		7,625
Riley 1999a	3/23/1999	MW-2	Benzene	6,000	0.80		7,500
Riley 2000a	11/10/1999	MW-4	Benzene	2,800	0.80		3,500

Table C-16
Chemicals Detected in Groundwater
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Riley 2004a	7/27/2001	MW-1	Benzene	2,200	0.80		2,750
Riley 2004a	5/1/2001	MW-1	Benzene	1,500	0.80		1,875
Riley 1999a	3/23/1999	MW-3	Benzene	1,200	0.80		1,500
Riley 2000b	3/7/2000	MW-4	Benzene	510	0.80		638
Riley 2005i	7/9/1999	MW-1	Benzene	410	0.80		513
Riley 2005i	7/9/1999	MW-4	Benzene	320	0.80		400
Riley 2005i	7/9/1999	MW-2	Benzene	310	0.80		388
Riley 2000a	11/10/1999	MW-2	Benzene	110	0.80		138
Riley 2000b	3/7/2000	MW-2	Benzene	59	0.80		74
Riley 2005i	7/9/1999	MW-3	Benzene	54	0.80		68
Riley 1999a	3/23/1999	MW-4	Benzene	51	0.80		64
Riley 2004a	7/27/2001	MW-4	Benzene	13	0.80		16
Riley 2004a	5/1/2001	MW-2	Benzene	10	0.80		13
Riley 2005a	12/10/2004	MW-1	Benzene	8.6	0.80		11
Riley 2000b	3/7/2000	MW-3	Benzene	7.0	0.80		8.8
Riley 2004a	6/30/2003	MW-4	Benzene	6.8	0.80		8.5
Riley 2004a	6/11/2002	MW-4	Benzene	4.2	0.80		5.3
Riley 2004a	5/1/2001	MW-4	Benzene	4.0	0.80		5.0
Riley 2004a	1/28/2004	MW-4	Benzene	2.8	0.80		3.5
Riley 2004a	6/30/2003	MW-2	Benzene	2.8	0.80		3.5
Riley 2004a	1/14/2003	MW-4	Benzene	2.7	0.80		3.4
Riley 2004a	6/11/2002	MW-1	Benzene	2.2	0.80		2.8
Riley 2005i	7/27/2001	MW-2	Benzene	2.0	0.80		2.5
Riley 2004a	6/30/2003	MW-1	Benzene	1.5	0.80		1.9
Riley 2005a	12/10/2004	MW-4	Benzene	1.4	0.80		1.8
Riley 2004a	1/14/2003	MW-1	Benzene	1.3	0.80		1.6
Riley 2004f	9/23/2004	MW-1	Benzene	1.1	0.80		1.4
EPI 2006	8/31/2005	MW-6	Cadmium (dissolved)	31	5.0	3.4	9.1
EPI 2006	5/18/2005	MW-3	Chromium (dissolved)	23	50	320	<1
EPI 2006	8/31/2005	MW-6	Chromium III (dissolved)	37	24,000		<1
EPI 2006	11/22/2005	MW-3	Chromium III (dissolved)	13	24,000		<1
EPI 2006	8/31/2005	MW-10	Chromium III (dissolved)	7.0	24,000		<1
EPI 2006	11/22/2005	MW-3	Chromium III (total)	17	24,000		<1

Table C-16
Chemicals Detected in Groundwater
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
EPI 2006	5/18/2005	MW-3	Chromium, total	23	50	320	<1
Riley 2005c	Aug 2004	MW-2	Chromium, total	5.5	50	320	<1
Riley 2005c	Aug 2004	MW-1	Chromium, total	3.6	50	320	<1
Riley 2005c	Aug 2004	MW-3	Chromium, total	3.3	50	320	<1
EPI 2006	5/18/2005	MW-2	Copper (total)	27	640	120	<1
Riley 2000a	11/3/1999	MW-7	Diesel-range hydrocarbons	5,000	500		10
Riley 2000a	11/10/1999	MW-1	Diesel-range hydrocarbons	2,900	500		5.8
Riley 2000a	11/3/1999	MW-5	Diesel-range hydrocarbons	2,400	500		4.8
Riley 2005i	3/7/2000	MW-7	Diesel-range hydrocarbons	2,000	500		4.0
Riley 1999a	3/23/1999	MW-2	Diesel-range hydrocarbons	1,400	500		2.8
Riley 2000b	3/7/2000	MW-1	Diesel-range hydrocarbons	1,100	500		2.2
Riley 2005a	12/10/2004	MW-7	Diesel-range hydrocarbons	1,000	500		2.0
Riley 2004a	5/1/2001	MW-7	Diesel-range hydrocarbons	720	500		1.4
Riley 2000a	11/10/1999	MW-4	Diesel-range hydrocarbons	690	500		1.4
Riley 2004a	5/1/2001	MW-1	Diesel-range hydrocarbons	560	500		1.1
Riley 2005i	7/9/1999	MW-1	Diesel-range hydrocarbons	510	500		1.0
Riley 1999a	3/23/1999	MW-1	Diesel-range hydrocarbons	400	500		<1
Riley 2005i	7/9/1999	MW-4	Diesel-range hydrocarbons	380	500		<1
Riley 1999a	3/23/1999	MW-3	Diesel-range hydrocarbons	360	500		<1
Riley 2005a	12/10/2004	MW-1	Diesel-range hydrocarbons	340	500		<1
Riley 1999a	3/23/1999	MW-4	Diesel-range hydrocarbons	320	500		<1
Riley 2005i	7/9/1999	MW-2	Diesel-range hydrocarbons	250	500		<1
Riley 2004f	8/18/2004	MW-4	Diesel-range hydrocarbons	170	500		<1
Riley 2004f	8/18/2004	MW-2	Diesel-range hydrocarbons	140	500		<1
Riley 2000a	11/10/1999	MW-1	Ethylbenzene	1,100	700		1.6
Riley 2000b	3/7/2000	MW-1	Ethylbenzene	820	700		1.2
Riley 2004a	7/27/2001	MW-1	Ethylbenzene	720	700		1.0
Riley 2004a	5/1/2001	MW-1	Ethylbenzene	490	700		<1
Riley 1999a	3/23/1999	MW-2	Ethylbenzene	340	700		<1
Riley 2000a	11/10/1999	MW-4	Ethylbenzene	160	700		<1
Riley 2005i	7/9/1999	MW-2	Ethylbenzene	100	700		<1

Table C-16
Chemicals Detected in Groundwater
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Riley 2005i	7/9/1999	MW-1	Ethylbenzene	95	700		<1
Riley 2000b	3/7/2000	MW-4	Ethylbenzene	56	700		<1
Riley 2004a	6/11/2002	MW-1	Ethylbenzene	20	700		<1
Riley 2000a	11/10/1999	MW-2	Ethylbenzene	20	700		<1
Riley 2005i	7/9/1999	MW-4	Ethylbenzene	16	700		<1
Riley 2000b	3/7/2000	MW-2	Ethylbenzene	12	700		<1
Riley 1999a	3/23/1999	MW-3	Ethylbenzene	9.0	700		<1
Riley 2005a	12/10/2004	MW-1	Ethylbenzene	8.6	700		<1
Riley 1999a	3/23/1999	MW-4	Ethylbenzene	6.0	700		<1
Riley 2004a	7/27/2001	MW-4	Ethylbenzene	5.0	700		<1
Riley 1999a	3/23/1999	MW-1	Ethylbenzene	5.0	700		<1
Riley 2005i	7/9/1999	MW-3	Ethylbenzene	3.6	700		<1
Riley 2004a	5/1/2001	MW-2	Ethylbenzene	3.0	700		<1
Riley 2004a	6/11/2002	MW-4	Ethylbenzene	1.2	700		<1
Riley 2004a	7/27/2001	MW-2	Ethylbenzene	1.0	700		<1
Riley 2004a	5/1/2001	MW-4	Ethylbenzene	1.0	700		<1
Riley 2000a	11/10/1999	MW-1	Gasoline-range hydrocarbons	16,000	800		20
Riley 2000b	3/7/2000	MW-1	Gasoline-range hydrocarbons	5,500	800		6.9
Riley 1999a	3/23/1999	MW-2	Gasoline-range hydrocarbons	5,400	800		6.8
Riley 2004a	7/27/2001	MW-1	Gasoline-range hydrocarbons	3,100	800		3.9
Riley 2004a	5/1/2001	MW-1	Gasoline-range hydrocarbons	2,000	800		2.5
Riley 2005i	7/9/1999	MW-2	Gasoline-range hydrocarbons	1,200	800		1.5
Riley 2000a	11/10/1999	MW-4	Gasoline-range hydrocarbons	890	800		1.1
Riley 2005i	7/9/1999	MW-1	Gasoline-range hydrocarbons	820	800		1.0
Riley 1999a	3/23/1999	MW-1	Gasoline-range hydrocarbons	740	800		<1
Riley 2000b	3/7/2000	MW-4	Gasoline-range hydrocarbons	280	800		<1
Riley 2000a	11/10/1999	MW-2	Gasoline-range hydrocarbons	260	800		<1
Riley 2004a	6/11/2002	MW-1	Gasoline-range hydrocarbons	250	800		<1
Riley 2004a	1/14/2003	MW-1	Gasoline-range hydrocarbons	190	800		<1
Riley 2000b	3/7/2000	MW-2	Gasoline-range hydrocarbons	180	800		<1
Riley 2005i	7/9/1999	MW-4	Gasoline-range hydrocarbons	160	800		<1

Table C-16
Chemicals Detected in Groundwater
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Riley 2005i	5/1/2001	MW-2	Gasoline-range hydrocarbons	140	800		<1
Riley 2005a	12/10/2004	MW-1	Gasoline-range hydrocarbons	120	800		<1
Riley 1999a	3/23/1999	MW-4	Gasoline-range hydrocarbons	78	800		<1
Riley 1999a	3/23/1999	MW-3	Gasoline-range hydrocarbons	68	800		<1
Riley 2005i	5/1/2001	MW-4	Gasoline-range hydrocarbons	52	800		<1
EPI 2006	8/31/2005	MW-10	Lead (dissolved)	28	15	13	2.2
EPI 2006	2/14/2006	MW-5	Lead (dissolved)	10	15	13	<1
EPI 2006	8/31/2005	MW-6	Lead (dissolved)	10	15	13	<1
EPI 2006	8/30/2005	MW-2	Lead (dissolved)	9.0	15	13	<1
EPI 2006	8/30/2005	MW-5	Lead (dissolved)	9.0	15	13	<1
EPI 2006	5/18/2005	MW-2	Lead (dissolved)	6.0	15	13	<1
EPI 2006	8/30/2005	MW-3	Lead (dissolved)	4.0	15	13	<1
EPI 2006	2/14/2006	MW-7R	Lead (dissolved)	4.0	15	13	<1
EPI 2006	2/14/2006	MW-2	Lead (dissolved)	3.0	15	13	<1
EPI 2006	5/18/2005	MW-3	Lead (total)	16	15	13	1.2
EPI 2006	5/18/2005	MW-7R	Lead (total)	15	15	13	1.2
EPI 2006	5/18/2005	MW-2	Lead (total)	8.0	15	13	<1
EPI 2006	11/22/2005	MW-7R	Lead (total)	8.0	15	13	<1
EPI 2006	11/22/2005	MW-6	Lead (total)	6.0	15	13	<1
EPI 2006	5/18/2005	MW-1	Lead (total)	5.0	15	13	<1
EPI 2006	11/22/2005	MW-3	Lead (total)	5.0	15	13	<1
EPI 2006	5/18/2005	MW-4	Lead (total)	4.0	15	13	<1
EPI 2006	5/18/2005	MW-5	Lead (total)	4.0	15	13	<1
EPI 2006	5/18/2005	MW-11	Mercury (dissolved)	1.1	2.0	0.0074	149
EPI 2006	5/18/2005	MW-11	Mercury (total)	3.2	2.0	0.0074	432
EPI 2006	5/18/2005	MW-2	Mercury (total)	0.40	2.0	0.0074	54
EPI 2006	5/18/2005	MW-10	Mercury (total)	0.20	2.0	0.0074	27
EPI 2006	5/18/2005	MW-2	Nickel (dissolved)	180	320		<1
EPI 2006	5/18/2005	MW-2	Nickel (total)	200	320		<1
Riley 2005a	12/10/2004	MW-7	Oil-range hydrocarbons	17,000	500		34
Riley 2004a	6/11/2002	MW-7	Oil-range hydrocarbons	3,800	500		7.6

Table C-16
Chemicals Detected in Groundwater
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Riley 2004a	6/30/2003	MW-7	Oil-range hydrocarbons	3,700	500		7.4
Riley 2004a	1/14/2003	MW-7	Oil-range hydrocarbons	2,900	500		5.8
Riley 2004a	1/28/2004	MW-7	Oil-range hydrocarbons	1,700	500		3.4
Riley 2004a	1/28/2004	MW-4	Oil-range hydrocarbons	1,300	500		2.6
Riley 1999a	3/23/1999	MW-2	Oil-range hydrocarbons	830	500		1.7
Riley 2005a	12/10/2004	MW-4	Oil-range hydrocarbons	810	500		1.6
Riley 2005i	7/9/1999	MW-1	Oil-range hydrocarbons	700	500		1.4
Riley 2005i	7/9/1999	MW-4	Oil-range hydrocarbons	650	500		1.3
Riley 2005i	7/9/1999	MW-2	Oil-range hydrocarbons	540	500		1.1
Riley 2005i	7/9/1999	MW-3	Oil-range hydrocarbons	530	500		1.1
Riley 1999a	3/23/1999	MW-1	Oil-range hydrocarbons	520	500		1.0
EPI 2006	5/18/2005	MW-2	Thallium (dissolved)	4.0			
EPI 2006	5/18/2005	MW-2	Thallium (total)	4.0			
Riley 2000a	11/10/1999	MW-1	Toluene	2,600	640		4.1
Riley 2005i	7/9/1999	MW-2	Toluene	840	640		1.3
Riley 1999a	3/23/1999	MW-2	Toluene	840	640		1.3
Riley 2000b	3/7/2000	MW-1	Toluene	130	640		<1
Riley 2005i	7/9/1999	MW-1	Toluene	34	640		<1
Riley 2004a	7/27/2001	MW-1	Toluene	15	640		<1
Riley 2004a	5/1/2001	MW-1	Toluene	8.0	640		<1
Riley 1999a	3/23/1999	MW-3	Toluene	8.0	640		<1
Riley 2005i	7/9/1999	MW-4	Toluene	5.9	640		<1
Riley 2000a	11/10/1999	MW-2	Toluene	5.0	640		<1
Riley 2000b	3/7/2000	MW-2	Toluene	3.0	640		<1
Riley 2000b	3/7/2000	MW-4	Toluene	3.0	640		<1
EPI 2006	5/18/2005	MW-11	Trichloroethylene	3.0	2.4		1.3
Riley 2000a	11/10/1999	MW-1	Xylenes	1,800	1,600		1.1
Riley 1999a	3/23/1999	MW-2	Xylenes	590	1,600		<1
Riley 2000b	3/7/2000	MW-1	Xylenes	540	1,600		<1

Table C-16
Chemicals Detected in Groundwater
Intermountain Supply/Former Recycle America

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
Riley 1999a	3/23/1999	MW-1	Xylenes	140	1,600		<1
Riley 2004a	7/27/2001	MW-1	Xylenes	76	1,600		<1
Riley 2005i	7/9/1999	MW-2	Xylenes	65	1,600		<1
Riley 2005i	7/9/1999	MW-1	Xylenes	47	1,600		<1
Riley 2004a	5/1/2001	MW-1	Xylenes	25	1,600		<1
Riley 2000a	11/10/1999	MW-2	Xylenes	24	1,600		<1
Riley 2000b	3/7/2000	MW-4	Xylenes	21	1,600		<1
Riley 2000b	3/7/2000	MW-2	Xylenes	11	1,600		<1
Riley 2005i	7/9/1999	MW-4	Xylenes	6.3	1,600		<1

ug/L - Micrograms per liter

MTCA - Model Toxics Control Act

(grey box) Before groundwater remediation

(yellow box) Sample concentration exceeded MTCA Cleanup Level or Groundwater-to-Sediment Screening Level.

a - MTCA Method A cleanup level

b - Based on CSL (SAIC 2006)

Table presents detected chemicals only.

Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or groundwater-to-sediment screening level, whichever level is lower.

Table C-17
Chemicals Detected in Soil
Kenyon Business Park

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Soil Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
BBL 1995	10/17/1995	HP-4	5	1,2,4-Trimethylbenzene	0.04 J			
DEI 1992	3/11/1992	B-2	13.5	1,2-Dichlorobenzene	0.018	7200	0.0038	4.7
DEI 1992	3/11/1992	B-2	13.5	1,4-Dichlorobenzene	0.0038		0.015	<1
DEI 1992	3/11/1992	MW-5	8.5	1,4-Dichlorobenzene	0.002		0.015	<1
DEI 1992	3/11/1992	MW-5	8.5	Acetone	0.11	72000		<1
DEI 1992	3/11/1992	MW-5	3.5	Acetone	0.063	72000		<1
DEI 1992	3/11/1992	MW-4	8.5	Acetone	0.047	72000		<1
DEI 1992	3/11/1992	MW-8	3.5	Acetone	0.031	72000		<1
DEI 1992	3/11/1992	MW-4	3.5	Acetone	0.03	72000		<1
DEI 1992	3/11/1992	MW-6	8.5	Acetone	0.019	72000		<1
DEI 1992	3/11/1992	B-2	3.5	Acetone	0.018	72000		<1
DEI 1992	3/11/1992	B-3	3	Acetone	0.015	72000		<1
DEI 1992	3/11/1992	MW-6	3.5	Acetone	0.015	72000		<1
DEI 1992	3/11/1992	MW-4	13.5	Acetone	0.011	72000		<1
DEI 1992	3/11/1992	MW-4	8.5	Benzene	0.016	0.03		<1
DEI 1992	3/11/1992	MW-4	3.5	Benzene	0.0056	0.03		<1
DEI 1992	3/11/1992	MW-5	8.5	Benzene	0.0026	0.03		<1
DEI 1992	3/11/1992	MW-4	8.5	Carbon Disulfide	0.009	8000		<1
DEI 1992	3/11/1992	MW-4	3.5	Carbon Disulfide	0.0054	8000		<1
DEI 1992	3/11/1992	MW-5	8.5	Carbon Disulfide	0.0045	8000		<1
DEI 1992	3/11/1992	B-2	8.5	Carbon Disulfide	0.0021	8000		<1
DEI 1992	3/11/1992	B-2	13.5	Carbon Disulfide	0.0018	8000		<1
DEI 1992	3/11/1992	B-3	3	Carbon Disulfide	0.0016	8000		<1
BBL 1995	10/16/1995	MW-3A	6.5	Chloroform	0.46 J	800		<1
BBL 1995	10/17/1995	HP-3	9	Chloroform	0.11 J	800		<1
BBL 1995	10/18/1995	HP-1	5	Chloroform	0.099 J	800		<1
BBL 1995	10/17/1995	HP-4	5	Chloroform	0.099 J	800		<1
BBL 1995	10/18/1995	HP-5	5	Chloroform	0.097 J	800		<1

Table C-17
Chemicals Detected in Soil
Kenyon Business Park

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Soil Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
BBL 1995	10/18/1995	HP-2	5	Chloroform	0.085 J	800		<1
BBL 1995	10/18/1995	HP-6	5	Chloroform	0.08 J	800		<1
BBL 1995	10/16/1995	MW-1A	5	Chloroform	0.069 J	800		<1
BBL 1995	10/16/1995	MW-1A	5	Chloromethane	0.034 J			
DEI 1992	3/11/1992	B-3	3	cis-1,2-Dichloroethene	0.001	160		<1
DEI 1992	3/11/1992	MW-6	3.5	Diesel-range hydrocarbons	15000	2000		7.5
DEI 1992	3/11/1992	MW-4	8.5	Diesel-range hydrocarbons	5800	2000		2.9
DEI 1992	3/11/1992	MW-5	8.5	Diesel-range hydrocarbons	5000	2000		2.5
DEI 1992	3/11/1992	MW-4	3.5	Diesel-range hydrocarbons	3800	2000		1.9
DEI 1992	3/11/1992	MW-6	8.5	Diesel-range hydrocarbons	2400	2000		1.2
DEI 1992	3/11/1992	B-2	8.5	Diesel-range hydrocarbons	640	2000		<1
DEI 1992	3/11/1992	B-2	13.5	Diesel-range hydrocarbons	590	2000		<1
DEI 1992	3/11/1992	B-3	3	Diesel-range hydrocarbons	250	2000		<1
DEI 1992	3/11/1992	B-1	8	Diesel-range hydrocarbons	190	2000		<1
DEI 1992	3/11/1992	B-1	3	Diesel-range hydrocarbons	110	2000		<1
DEI 1992	3/11/1992	MW-7	3.5	Diesel-range hydrocarbons	34	2000		<1
DEI 1992	3/11/1992	MW-7	18.5	Diesel-range hydrocarbons	19	2000		<1
DEI 1992	3/11/1992	MW-4	13.5	Diesel-range hydrocarbons	12	2000		<1
DEI 1992	3/11/1992	B-2	3.5	Diesel-range hydrocarbons	8.4	2000		<1
DEI 1992	3/11/1992	MW-8	3.5	Diesel-range hydrocarbons	7.4	2000		<1
DEI 1992	3/11/1992	MW-8	8.5	Diesel-range hydrocarbons	6.2	2000		<1
DEI 1992	3/11/1992	MW-5	8.5	Ethylebenzene	0.0016	6		<1
DEI 1992	3/11/1992	MW-6	8.5	Ethylebenzene	0.0015	6		<1
DEI 1992	3/11/1992	MW-5	8.5	m,p-Xylene	0.0076	16000		<1
DEI 1992	3/11/1992	MW-6	8.5	m,p-Xylene	0.006	16000		<1
DEI 1992	3/11/1992	MW-6	3.5	m,p-Xylene	0.0017	16000		<1
DEI 1992	3/11/1992	MW-4	8.5	m,p-Xylene	0.0016	16000		<1
DEI 1992	3/11/1992	MW-4	3.5	m,p-Xylene	0.0014	16000		<1

Table C-17
Chemicals Detected in Soil
Kenyon Business Park

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Soil Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
DEI 1992	3/11/1992	MW-5	8.5	Methyl Ethyl Ketone	0.036	48000		<1
BBL 1995	10/16/1995	MW-3A	6.5	Methylene Chloride	0.24 J	0.02		12
DEI 1992	3/11/1992	MW-4	8.5	Methylene Chloride	0.062	0.02		3.1
BBL 1995	10/16/1995	MW-1A	5	Methylene Chloride	0.051 J	0.02		2.6
DEI 1992	3/11/1992	MW-4	3.5	Methylene Chloride	0.047	0.02		2.4
BBL 1995	10/18/1995	HP-5	5	Methylene Chloride	0.047 J	0.02		2.4
BBL 1995	10/17/1995	HP-4	5	Methylene Chloride	0.039 J	0.02		2.0
DEI 1992	3/11/1992	B-2	8.5	Methylene Chloride	0.034	0.02		1.7
DEI 1992	3/11/1992	B-3	3	Methylene Chloride	0.021	0.02		1.1
DEI 1992	3/11/1992	MW-5	8.5	Methylene Chloride	0.021	0.02		1.1
DEI 1992	3/11/1992	MW-8	3.5	Methylene Chloride	0.018	0.02		<1
DEI 1992	3/11/1992	B-2	3.5	Methylene Chloride	0.017	0.02		<1
DEI 1992	3/11/1992	MW-6	8.5	Methylene Chloride	0.012	0.02		<1
DEI 1992	3/11/1992	MW-7	8.5	Methylene Chloride	0.01	0.02		<1
DEI 1992	3/11/1992	MW-5	8.5	o-Xylene	0.0035	16000		<1
DEI 1992	3/11/1992	MW-6	8.5	o-Xylene	0.0016	16000		<1
DEI 1992	3/11/1992	MW-4	8.5	o-Xylene	0.0012	16000		<1
BBL 1995	10/16/1995	MW-3A	6.5	Toluene	0.26 J	7		<1
BBL 1995	10/16/1995	MW-1A	5	Toluene	0.22 J	7		<1
BBL 1995	10/17/1995	HP-4	5	Toluene	0.071 J	7		<1
BBL 1995	10/18/1995	HP-5	5	Toluene	0.039 J	7		<1
DEI 1992	3/11/1992	MW-6	8.5	Toluene	0.017	7		<1
DEI 1992	3/11/1992	MW-5	8.5	Toluene	0.0085	7		<1
DEI 1992	3/11/1992	MW-6	3.5	Toluene	0.0056	7		<1
DEI 1992	3/11/1992	MW-4	3.5	Toluene	0.004	7		<1
DEI 1992	3/11/1992	MW-4	8.5	Toluene	0.002	7		<1
BBL 1995	10/18/1995	HP-2	5	Total petroleum hydrocarbons[c]	890	2000		<1
BBL 1995	10/17/1995	HP-4	5	Total petroleum hydrocarbons[c]	850	2000		<1

Table C-17
Chemicals Detected in Soil
Kenyon Business Park

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Soil Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Exceedance Factor
BBL 1995	10/16/1995	MW-3A	6.5	Total petroleum hydrocarbons[c]	630	2000		<1
BBL 1995	10/16/1995	MW-1A	5	Total petroleum hydrocarbons[c]	210	2000		<1
BBL 1995	10/18/1995	HP-6	5	Total petroleum hydrocarbons[c]	200	2000		<1
BBL 1995	10/18/1995	HP-1	5	Total petroleum hydrocarbons[c]	57	2000		<1
BBL 1995	10/18/1995	HP-5	5	Total petroleum hydrocarbons[c]	37	2000		<1
BBL 1995	10/18/1995	HP-2	5	Trichloroethene	0.055 J	0.03		1.8
BBL 1995	10/18/1995	HP-1	5	Trichloroethene	0.044 J	0.03		1.5
DEI 1992	3/11/1992	MW-4	8.5	Trichloroethene	0.001	0.03		<1
DEI 1992	3/11/1992	MW-4	3.5	Trichlorofluoromethane	0.0028			
DEI 1992	3/11/1992	MW-4	8.5	Trichlorofluoromethane	0.001			
DEI 1992	3/11/1992	B-3	3	Vinyl Chloride	0.0019	240		<1

ft bgs - Feet below ground surface

mg/kg - Milligrams per kilogram

MTCA - Model Toxics Control Act

a - The lower of MTCA Method A or B cleanup levels was selected, from CLARC database.

b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).

c - The MTCA cleanup level for petroleum hydrocarbons is the value for diesel-range and heavy oil-range hydrocarbons.

Table presents detected chemicals only.

Table C-18
Chemicals Detected in Groundwater
Kenyon Business Park

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
BBL 1995	9/25/1995	MW-6	cis-1,2-Dichloroethene	20	16		1.3
BBL 1995	10/20/1995	MW-3A	cis-1,2-Dichloroethene	1.5 J	16		<1
BBL 1995	10/20/1995	MW-3A	trans-1,2-Dichloroethene	1.3 J	160		<1
BBL 1995	10/17/1995	HP-4	1,1-Dichloroethene	0.52 J	400		<1
BBL 1995	10/18/1995	HP-2	1,1-Dichloroethene	0.46 J	400		<1
BBL 1995	10/18/1995	HP-6	1,1-Dichloroethene	0.46 J	400		<1
BBL 1995	10/18/1995	HP-1	1,1-Dichloroethene	0.44 J	400		<1
BBL 1995	10/17/1995	HP-5	1,1-Dichloroethene	0.43 J	400		<1
BBL 1995	9/25/1995	MW-5	1,2,4-Trimethylbenzene	8.8 J			
BBL 1995	10/20/1995	MW-1A	1,2,4-Trimethylbenzene	0.74 J			
BBL 1995	10/17/1995	HP-4	1,2,4-Trimethylbenzene	0.58 J			
BBL 1995	9/25/1995	MW-2B	1,2-Dichlorobenzene	12	720	5.2	<1
DEI 1992	4/14/1992	MW-2B	1,2-Dichlorobenzene	5.7	720	5.2	<1
BBL 1995	10/18/1995	HP-6	1,2-Dichlorobenzene	1.6 J	720	5.2	<1
BBL 1995	10/17/1995	HP-5	1,2-Dichlorobenzene	1.2 J	720	5.2	<1
BBL 1995	9/25/1995	MW-2B	1,3-Dichlorobenzene	1.7 J			
BBL 1995	9/25/1995	MW-2B	1,4-Dichlorobenzene	23		21	
DEI 1992	4/14/1992	MW-2B	1,4-Dichlorobenzene	5.4		21	
BBL 1995	10/18/1995	HP-6	1,4-Dichlorobenzene	3 J		21	
BBL 1995	9/25/1995	MW-2B	2-Chlorotoluene	2.1 J	160		<1
DEI 1992	4/14/1992	MW-5	Acetone	960	7200		<1
DEI 1992	4/14/1992	MW-4	Acetone	23	7200		<1
BBL 1995	10/17/1995	HP-5	Arsenic	5700	0.058	370	98276
BBL 1995	9/25/1995	MW-5	Arsenic	980	0.058	370	16897
BBL 1995	10/17/1995	HP-3	Arsenic	760	0.058	370	13103
BBL 1995	10/17/1995	HP-4	Arsenic	660	0.058	370	11379
BBL 1995	10/18/1995	HP-6	Arsenic	340	0.058	370	5862
BBL 1995	10/18/1995	HP-2	Arsenic	200	0.058	370	3448
BBL 1995	10/18/1995	HP-1	Arsenic	89	0.058	370	1534
BBL 1995	10/20/1995	MW-1A	Arsenic	40	0.058	370	690
BBL 1995	10/20/1995	MW-3A	Arsenic	35	0.058	370	603

Table C-18
Chemicals Detected in Groundwater
Kenyon Business Park

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
BBL 1995	9/25/1995	MW-4	Arsenic	7.8	0.058	370	134
BBL 1995	9/25/1995	MW-7	Arsenic	7.3	0.058	370	126
BBL 1995	9/25/1995	MW-8	Arsenic	4.5	0.058	370	78
BBL 1995	10/17/1995	HP-4	Barium	35000	3200		11
BBL 1995	10/17/1995	HP-5	Barium	8900	3200		2.8
BBL 1995	10/17/1995	HP-3	Barium	8800	3200		2.8
BBL 1995	9/25/1995	MW-4	Barium	4600	3200		1.4
BBL 1995	10/20/1995	MW-3A	Barium	3500	3200		1.1
BBL 1995	9/25/1995	MW-2B	Barium	2000	3200		<1
BBL 1995	10/18/1995	HP-6	Barium	2000	3200		<1
BBL 1995	10/18/1995	HP-2	Barium	950	3200		<1
BBL 1995	10/18/1995	HP-1	Barium	550	3200		<1
BBL 1995	9/25/1995	MW-6	Barium	350	3200		<1
BBL 1995	10/20/1995	MW-1A	Barium	200	3200		<1
BBL 1995	9/25/1995	MW-5	Barium	160	3200		<1
BBL 1995	9/25/1995	MW-2B	Benzene	670	5		134
DEI 1992	11/1/1989	MW-2B	Benzene	300	5		60
DEI 1992	4/14/1992	MW-2B	Benzene	210	5		42
BBL 1995	9/25/1995	MW-6	Benzene	15	5		3.0
BBL 1995	9/25/1995	MW-5	Benzene	14 J	5		2.8
BBL 1995	10/18/1995	HP-2	Benzene	6.8	5		1.4
BBL 1995	10/17/1995	HP-4	Benzene	2.2 J	5		<1
DEI 1992	11/1/1989	MW-3	Benzene	2	5		<1
BBL 1995	9/25/1995	MW-4	Benzene	1.9 J	5		<1
BBL 1995	10/17/1995	HP-5	Benzene	1.9 J	5		<1
BBL 1995	9/25/1995	MW-7	Benzene	1.7 J	5		<1
BBL 1995	9/25/1995	MW-8	Benzene	1.6 J	5		<1
BBL 1995	10/18/1995	HP-6	Benzene	1.5 J	5		<1
BBL 1995	10/20/1995	MW-3A	Benzene	1.3 J	5		<1
BBL 1995	10/18/1995	HP-1	Benzene	1 J	5		<1
BBL 1995	10/20/1995	MW-1A	Benzene	0.72 J	5		<1

Table C-18
Chemicals Detected in Groundwater
Kenyon Business Park

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
BBL 1995	10/17/1995	HP-5	Cadmium	280	5	3.4	82
BBL 1995	10/17/1995	HP-4	Cadmium	270	5	3.4	79
BBL 1995	10/17/1995	HP-3	Cadmium	15	5	3.4	4.4
BBL 1995	10/20/1995	MW-3A	Cadmium	10	5	3.4	2.9
DEI 1992	11/1/1989	MW-2B	Chlorobenzene	3730	160		23
BBL 1995	9/25/1995	MW-2B	Chlorobenzene	1500	160		9.4
DEI 1992	4/14/1992	MW-2B	Chlorobenzene	320	160		2.0
BBL 1995	9/25/1995	MW-6	Chlorobenzene	38	160		<1
BBL 1995	10/18/1995	HP-6	Chlorobenzene	20	160		<1
BBL 1995	9/25/1995	MW-7	Chlorobenzene	5.3	160		<1
BBL 1995	10/17/1995	HP-5	Chlorobenzene	3.5 J	160		<1
BBL 1995	9/25/1995	MW-8	Chlorobenzene	3.4 J	160		<1
BBL 1995	9/25/1995	MW-4	Chlorobenzene	2.6 J	160		<1
DEI 1992	11/1/1989	MW-3	Chlorobenzene	2	160		<1
BBL 1995	10/17/1995	HP-4	Chlorobenzene	1.5 J	160		<1
BBL 1995	10/18/1995	HP-2	Chlorobenzene	0.64 J	160		<1
BBL 1995	10/20/1995	MW-1A	Chlorobenzene	0.62 J	160		<1
BBL 1995	10/20/1995	MW-3A	Chlorobenzene	0.59 J	160		<1
BBL 1995	9/25/1995	MW-5	Chloroform	13 J	80		<1
DEI 1992	4/14/1992	MW-2B	Chloroform	1.8	80		<1
BBL 1995	10/17/1995	HP-5	Chromium	3000	80	318	38
BBL 1995	10/17/1995	HP-3	Chromium	2900	80	318	36
BBL 1995	10/18/1995	HP-6	Chromium	2000	80	318	25
BBL 1995	10/17/1995	HP-4	Chromium	1300	80	318	16
BBL 1995	10/18/1995	HP-2	Chromium	510	80	318	6.4
BBL 1995	10/18/1995	HP-1	Chromium	330	80	318	4.1
BBL 1995	9/25/1995	MW-5	Chromium	120	80	318	1.5
BBL 1995	10/20/1995	MW-3A	Chromium	91	80	318	1.1
DEI 1992	3/11/1992	MW-2B	Diesel-range hydrocarbons	1,400	500		2.8
DEI 1992	3/11/1992	MW-5	Diesel-range hydrocarbons	670	500		1.3
DEI 1992	3/11/1992	MW-4	Diesel-range hydrocarbons	330	500		<1

Table C-18
Chemicals Detected in Groundwater
Kenyon Business Park

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
DEI 1992	3/11/1992	MW-6	Diesel-range hydrocarbons	290	500		<1
DEI 1992	3/11/1992	MW-8	Diesel-range hydrocarbons	110	500		<1
DEI 1992	3/11/1992	MW-7	Diesel-range hydrocarbons	60	500		<1
BBL 1995	9/25/1995	MW-5	Ethylbenzene	7.5 J	700		<1
BBL 1995	9/25/1995	MW-6	Ethylbenzene	3.2 J	700		<1
BBL 1995	10/17/1995	HP-4	Ethylbenzene	0.72 J	700		<1
BBL 1995	10/17/1995	HP-5	Ethylbenzene	0.64 J	700		<1
BBL 1995	10/17/1995	HP-4	Lead	76000	15	13	5846
BBL 1995	10/17/1995	HP-5	Lead	9500	15	13	731
BBL 1995	10/17/1995	HP-3	Lead	2500	15	13	192
BBL 1995	10/20/1995	MW-3A	Lead	1500	15	13	115
BBL 1995	10/18/1995	HP-6	Lead	910	15	13	70
BBL 1995	10/18/1995	HP-1	Lead	180	15	13	14
BBL 1995	10/18/1995	HP-2	Lead	150	15	13	12
BBL 1995	9/25/1995	MW-5	Lead	130	15	13	10
BBL 1995	9/25/1995	MW-2B	Lead	110	15	13	8.5
BBL 1995	9/25/1995	MW-4	Lead	90	15	13	6.9
BBL 1995	10/20/1995	MW-1A	Lead	18	15	13	1.4
BBL 1995	9/25/1995	MW-6	Lead	13	15	13	1
BBL 1995	10/18/1995	HP-2	Mercury	1.9	2	0.0074	257
BBL 1995	9/25/1995	MW-5	Mercury	0.64	2	0.0074	86
BBL 1995	10/17/1995	HP-3	Mercury	0.53	2	0.0074	72
BBL 1995	9/25/1995	MW-6	Methylene Chloride	160	5		32
DEI 1992	11/1/1989	MW-2B	Methylene Chloride	70	5		14
BBL 1995	9/25/1995	MW-2B	Methylene Chloride	24	5		4.8
BBL 1995	9/25/1995	MW-8	Methylene Chloride	20	5		4.0
BBL 1995	9/25/1995	MW-4	Methylene Chloride	18	5		3.6
BBL 1995	9/25/1995	MW-7	Methylene Chloride	15	5		3.0
BBL 1995	10/20/1995	MW-1A	Methylene Chloride	1.2 J	5		<1
BBL 1995	10/20/1995	MW-3A	Methylene Chloride	1.2 J	5		<1
BBL 1995	10/17/1995	HP-5	Methylene Chloride	0.95 J	5		<1

Table C-18
Chemicals Detected in Groundwater
Kenyon Business Park

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
BBL 1995	10/18/1995	HP-1	Methylene Chloride	0.92 J	5		<1
BBL 1995	10/17/1995	HP-4	Methylene Chloride	0.88 J	5		<1
BBL 1995	10/18/1995	HP-2	Methylene Chloride	0.7 J	5		<1
BBL 1995	9/25/1995	MW-5	Naphthalene	260	160	92	2.8
BBL 1995	10/17/1995	HP-3	Naphthalene	5.7	160	92	<1
BBL 1995	9/25/1995	MW-2B	Naphthalene	4.2 J	160	92	<1
BBL 1995	10/18/1995	HP-2	Naphthalene	2.7 J	160	92	<1
BBL 1995	9/25/1995	MW-2B	n-Butylbenzene	0.81 J			
BBL 1995	9/25/1995	MW-2B	sec-Butylbenzene	0.7 J			
BBL 1995	9/25/1995	MW-5	Selenium	57	80		<1
BBL 1995	10/17/1995	HP-5	Selenium	7.8	80		<1
BBL 1995	10/17/1995	HP-4	Silver	95	80	1.5	63
BBL 1995	9/25/1995	MW-5	Styrene	11 J	1600		<1
BBL 1995	9/25/1995	MW-5	Toluene	18 J	640		<1
BBL 1995	9/25/1995	MW-6	Toluene	18	640		<1
BBL 1995	10/17/1995	HP-4	Toluene	4.9 J	640		<1
BBL 1995	10/17/1995	HP-5	Toluene	4.9 J	640		<1
BBL 1995	10/18/1995	HP-2	Toluene	1.7 J	640		<1
BBL 1995	10/18/1995	HP-6	Toluene	1.6 J	640		<1
BBL 1995	10/18/1995	HP-1	Toluene	1.2 J	640		<1
BBL 1995	10/20/1995	MW-1A	Toluene	0.86 J	640		<1
BBL 1995	10/20/1995	MW-3A	Toluene	0.83 J	640		<1
BBL 1995	10/17/1995	HP-3	Toluene	0.82 J	640		<1
BBL 1995	9/25/1995	MW-2B	Toluene	0.6 J	640		<1
BBL 1995	10/17/1995	HP-3	Total Petroleum Hydrocarons[c]	22000	500		44
BBL 1995	10/17/1995	HP-5	Total Petroleum Hydrocarons[c]	13000	500		26
BBL 1995	9/25/1995	MW-5	Total Petroleum Hydrocarons[c]	2400	500		4.8
BBL 1995	10/20/1995	MW-3A	Total Petroleum Hydrocarons[c]	770	500		1.5
BBL 1995	10/18/1995	HP-2	Total Petroleum Hydrocarons[c]	700	500		1.4
BBL 1995	9/25/1995	MW-6	Total Petroleum Hydrocarons[c]	620	500		1.2

Table C-18
Chemicals Detected in Groundwater
Kenyon Business Park

Source	Sample Date	Sample Location	Chemical	Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	Groundwater-Sediment Screening Level[b] (ug/L)	Exceedance Factor
BBL 1995	9/25/1995	MW-5	Total Xylenes	32 J	1000		<1
BBL 1995	9/25/1995	MW-6	Total Xylenes	13.9 J	1000		<1
BBL 1995	10/17/1995	HP-4	Total Xylenes	3.61 J	1000		<1
BBL 1995	10/17/1995	HP-5	Total Xylenes	3.16 J	1000		<1
BBL 1995	9/25/1995	MW-5	Trichloroethene	4.4 J	5		<1
BBL 1995	10/20/1995	MW-3A	Trichloroethene	0.56 J	5		<1
BBL 1995	10/17/1995	HP-4	Trichloroethene	0.5 J	5		<1
BBL 1995	10/18/1995	HP-6	Trichloroethene	0.49 J	5		<1
BBL 1995	10/18/1995	HP-1	Trichloroethene	0.48 J	5		<1
BBL 1995	10/18/1995	HP-2	Trichloroethene	0.46 J	5		<1
BBL 1995	10/17/1995	HP-3	Trichloroethene	0.43 J	5		<1
BBL 1995	10/17/1995	HP-5	Trichloroethene	0.42 J	5		<1
BBL 1995	9/25/1995	MW-6	Vinyl Chloride	43	0.2		215
BBL 1995	10/20/1995	MW-3A	Vinyl Chloride	1.9 J	0.2		9.5
BBL 1995	10/18/1995	HP-1	Vinyl Chloride	0.55 J	0.2		2.8

GW - Groundwater

ug/L - Micrograms per liter

MTCA - Model Toxics Control Act

a - The lower of the MTCA Method A or B cleanup levels was selected, from CLARC database

b - Based on CSL (SAIC 2006)

c - MTCA Method A cleanup level for diesel-range petroleum hydrocarbons

Table presents detected chemicals only

Exceedance factors are th ration of the detected concentration to the MTCA Cleanup Level.

Chemicals and samples with exceedance factors greater than 1 are shaded light yellow.

Table C-19
Chemicals Detected in Soil
International Construction Equipment

Source	Sample Date	Sample Location	Sample Depth (ft bgs)	Chemical	Conc'n (mg/kg)	MTCA Cleanup Level[a] (mg/kg)	Soil-to-Sediment Screening Level[b] (mg/kg)	Maximum Exceedance Factor
B&C Equipment 1992	3/20/1992	X (Comp.)	Surface	Total petroleum hydrocarbons[c]	86,000	2,000		43
Alton Geoscience 1992	10/12/1992	VS-2	3.0	Total petroleum hydrocarbons[c]	1,653	2,000		<1
Alton Geoscience 1992	10/12/1992	VS-1	2.5	Total petroleum hydrocarbons[c]	1,635	2,000		<1
Alton Geoscience 1992	10/16/1992	CS-2	3.5	Total petroleum hydrocarbons[c]	1,390	2,000		<1
Alton Geoscience 1992	10/7/1992	ICE-9	2.0	Total petroleum hydrocarbons[c]	1,231	2,000		<1
Alton Geoscience 1992	10/7/1992	ICE-8	1.5	Total petroleum hydrocarbons[c]	772	2,000		<1
B&C Equipment 1992	2/26/1992	BH #2	2.5	Total petroleum hydrocarbons[c]	720	2,000		<1
Alton Geoscience 1992	10/7/1992	ICE-10	1.5	Total petroleum hydrocarbons[c]	462	2,000		<1
B&C Equipment 1992	2/26/1992	BH #5	5.0	Total petroleum hydrocarbons[c]	450	2,000		<1
Alton Geoscience 1992	10/7/1992	ICE-15	2.0	Total petroleum hydrocarbons[c]	321	2,000		<1
Alton Geoscience 1992	10/7/1992	ICE-11	1.5	Total petroleum hydrocarbons[c]	319	2,000		<1
Alton Geoscience 1992	10/7/1992	ICE-12	2.0	Total petroleum hydrocarbons[c]	195	2,000		<1
Alton Geoscience 1992	10/7/1992	ICE-13	2.0	Total petroleum hydrocarbons[c]	167	2,000		<1
Alton Geoscience 1992	10/12/1992	VS-3	2.0	Total petroleum hydrocarbons[c]	152	2,000		<1
Alton Geoscience 1992	10/12/1992	VS-4	2.0	Total petroleum hydrocarbons[c]	96	2,000		<1
B&C Equipment 1992	2/26/1992	BH #1	2.5	Total petroleum hydrocarbons[c]	55	2,000		<1
B&C Equipment 1992	2/26/1992	BH #4	5.0	Total petroleum hydrocarbons[c]	49	2,000		<1
B&C Equipment 1992	2/26/1992	BH #3	5.0	Total petroleum hydrocarbons[c]	36	2,000		<1
Alton Geoscience 1992	10/16/1992	CS-1	3.0	Total petroleum hydrocarbons[c]	35	2,000		<1
B&C Equipment 1992	2/26/1992	BH #6	5.0	Total petroleum hydrocarbons[c]	24	2,000		<1
B&C Equipment 1992	2/26/1992	BH #2	5.0	Total petroleum hydrocarbons[c]	20	2,000		<1

ft bgs - feet below ground surface
mg/kg - Milligrams per kilogram
MTCA - Model Toxics Control Act

Sample location was excavated during remediation activities.
Sample concentration exceeded MTCA Cleanup Level or Soil-to-Sediment Screening Level.

a - The lower of MTCA Method A or Method B cleanup level was selected, from CLARC database.
b - Screening levels based on CSL and assuming saturated zone soils (SAIC 2006).
c - The MTCA cleanup level for petroleum hydrocarbons is the value for diesel-range and heavy oil-range hydrocarbons.
Table presents detected chemicals only.
Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or the soil-to-sediment screening level, whichever is higher.

Appendix D

Excerpts from Environmental Investigation Reports

South Transfer Station (Former S Kenyon Street Bus Yard)

REMEDIAL INVESTIGATION REPORT

South Kenyon Street Bus Yard
110, 130, 150, and 200 South Kenyon Street
Seattle, Washington

Voluntary Cleanup Program No. NW197

Submitted to:

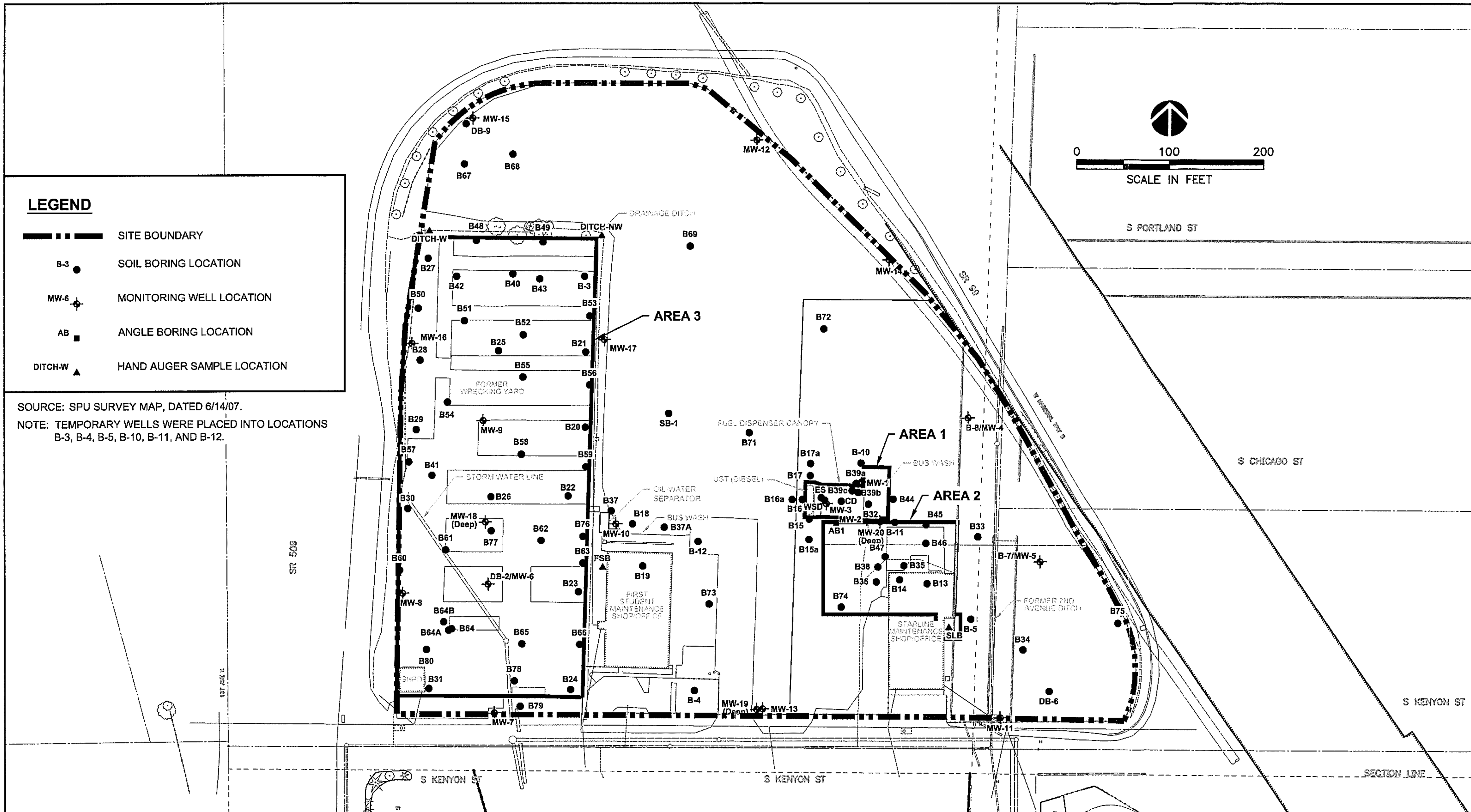
City of Seattle Attorney's Office
P.O. Box 94769
Seattle, Washington 98124

Submitted by:

AMEC Earth & Environmental, Inc.
11810 North Creek Parkway N
Bothell, Washington 98011

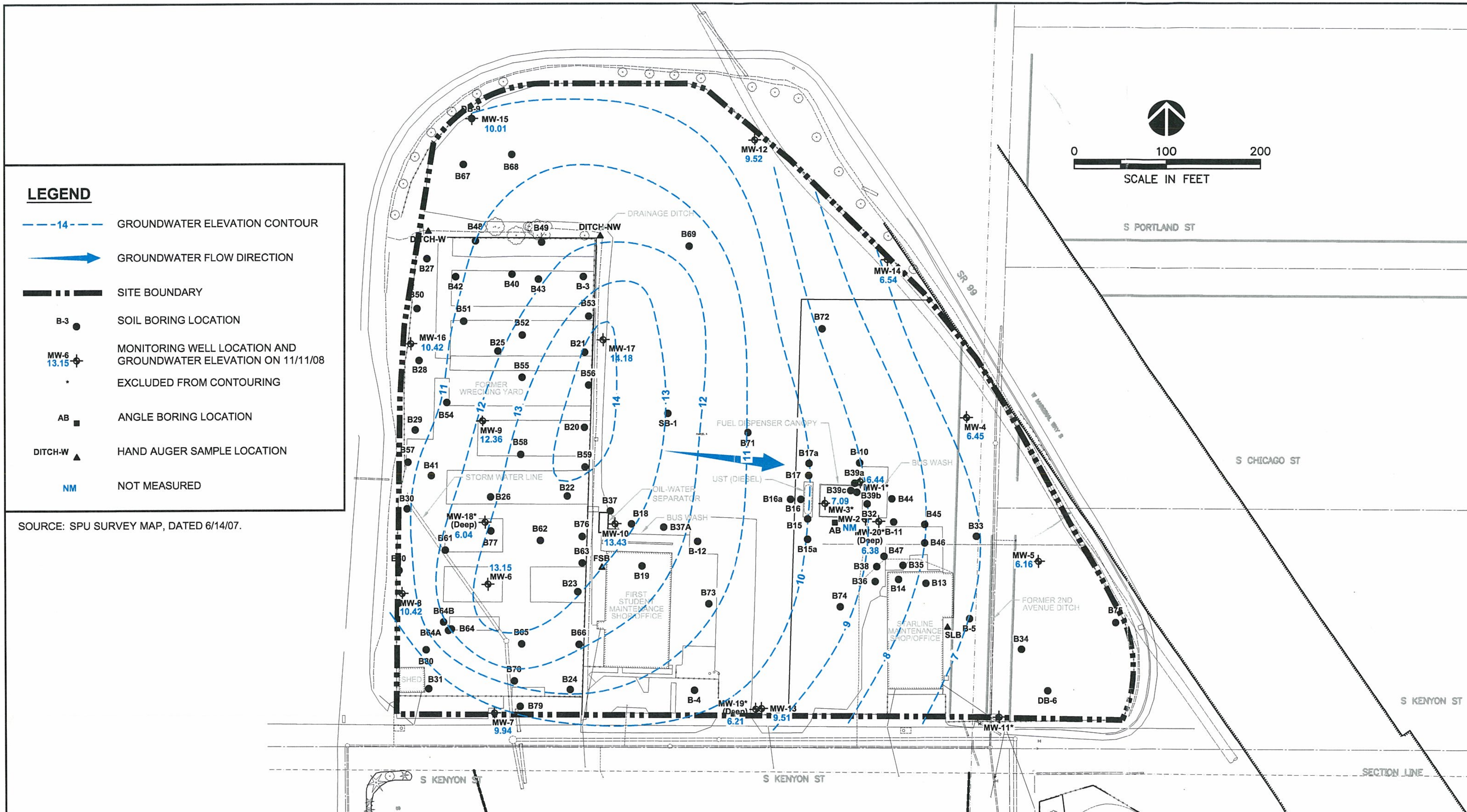
March 31, 2009

AMEC Project No. 8-915-16289-A



CLIENT LOGO	CLIENT: CITY OF SEATTLE	DWN BY: JRS	PROJECT: SOUTH KENYON STREET BUS YARD SITE
		CHK'D BY: CI	DATE: MARCH 2009
			PROJECT NO: 8-915-16289-A
	AMEC Earth & Environmental 11810 North Creek Parkway North Bothell, WA, U.S.A. 98034-8201	DATUM: HPGN (HARN)	TITLE: SOIL BORING AND MONITORING WELL LOCATIONS
	amec	PROJECTION: WA STATE PLANE	REV. NO.:
		SCALE: AS SHOWN	FIGURE No. 3

G:\91\16000\16289-A – SPU Bus Barn\16289-A-19.dwg – Boring Locations – Mar. 26, 2009 4:09pm – jeffrey.sanders



SOURCE: SPU SURVEY MAP, DATED 6/14/07.

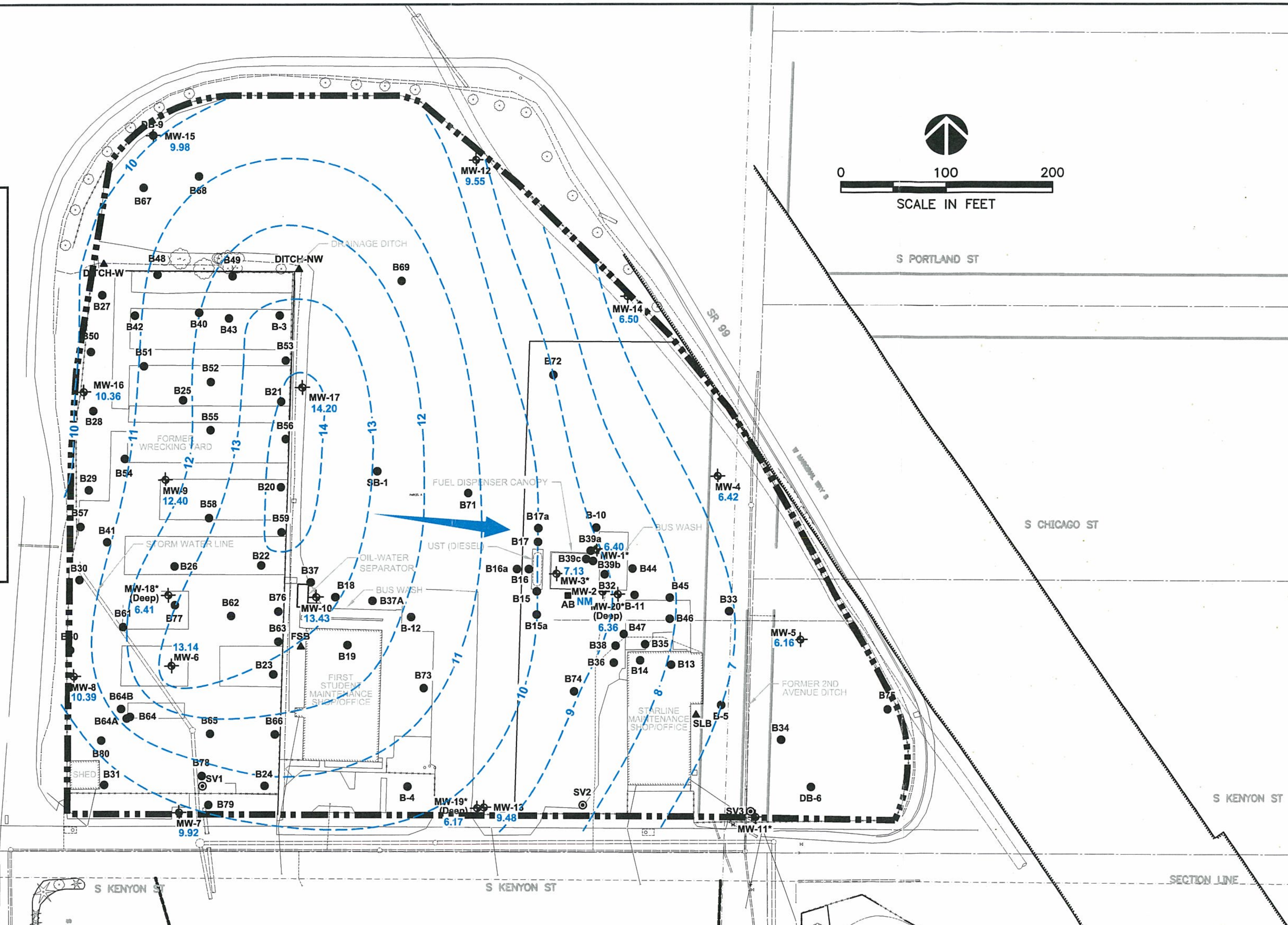
CLIENT LOGO	CLIENT: CITY OF SEATTLE	DWN BY: JRS	PROJECT	SOUTH KENYON STREET BUS YARD SITE	DATE: MARCH 2009
		CHK'D BY: CI			PROJECT NO: 8-915-16289-A
	AMEC Earth & Environmental 11810 North Creek Parkway North Bothell, WA, U.S.A. 98034-8201	DATUM: HPGN (HARN)	TITLE	GROUNDWATER ELEVATION CONTOURS AND FLOW DIRECTION LOW TIDE 11/11/08	REV. NO.:
	amec	PROJECTION: WA STATE PLANE			FIGURE No. 4
		SCALE: AS SHOWN			

G:\91\16000\16289-A – SPU Bus Barn\16289-A-20.dwg – GW LowTide – Mar. 27, 2009 11:14am – jeffrey.sanders

LEGEND

- - -14- - -	GROUNDWATER ELEVATION CONTOUR
→	GROUNDWATER FLOW DIRECTION
▬ ▪ ▪ ▬	SITE BOUNDARY
B-3 ●	SOIL BORING LOCATION
MW-6 13.15 ⌖	MONITORING WELL LOCATION AND GROUNDWATER ELEVATION ON 11/11/08
*	EXCLUDED FROM CONTOURING
AB ■	ANGLE BORING LOCATION
DITCH-W ▲	HAND AUGER SAMPLE LOCATION
NM	NOT MEASURED

SOURCE: SPU SURVEY MAP, DATED 6/14/07.



CLIENT LOGO	CLIENT: CITY OF SEATTLE	DWN BY: JRS	PROJECT: SOUTH KENYON STREET BUS YARD SITE	DATE: MARCH 2009
		CHK'D BY: CI		PROJECT NO: 8-915-16289-A
	AMEC Earth & Environmental 11810 North Creek Parkway North Bothell, WA, U.S.A. 98034-8201 — amec	DATUM: HPGN (HARN)	TITLE: GROUNDWATER ELEVATION CONTOURS AND FLOW DIRECTION HIGH TIDE 11/11/08	REV. NO.:
		PROJECTION: WA STATE PLANE		FIGURE No. 5
		SCALE: AS SHOWN		

G:\91\16000\16289-A – SPU Bus Barn\16289-A-20.dwg – GW High Tide – Mar. 27, 2009 11:13am – jeffrey.sanders

LEGEND

- SITE BOUNDARY
- B-3 SOIL BORING LOCATION/TEMPORARY WELL
- MW-6 MONITORING WELL LOCATION
- AB ANGLE BORING LOCATION
- DITCH-W HAND AUGER SAMPLE LOCATION
- GASOLINE IMPACTED SOIL AREA (APPROXIMATE)
- CEMENT KILN DUST FILL
- HEAVY-OIL IMPACTED/cPAHS IMPACTED AREAS

NOTES:
1. UNIT OF MEASURE = MILLIGRAMS PER KILOGRAM (mg/kg).
2. CHROMIUM SCREENING LEVEL IS FOR HEXAVALENT CHROMIUM. ANALYTICAL RESULTS ARE NOT SPECIATED, THEREFORE A DIRECT COMPARISON CANNOT BE MADE.
3. **BOLD GREEN** VALUES DENOTES CONCENTRATIONS EXCEEDING THE TERRESTIAL CHEMICAL INDICATORS.
4. SOURCE: SPU SURVEY MAP, DATED 6/14/07.
5. OUTLINES OF IMPACTED AREAS ARE APPROXIMATE.
6. DATA SOURCE FOR ES, WSD, AND CD FROM CLEARWATER SITE ASSESSMENT AND CLOSURE REPORT.

MTCA METHOD A CULs UNRESTRICTED AND MTCA MTHOD B CULs CARCINOGENIC SCREENING CRITERIA

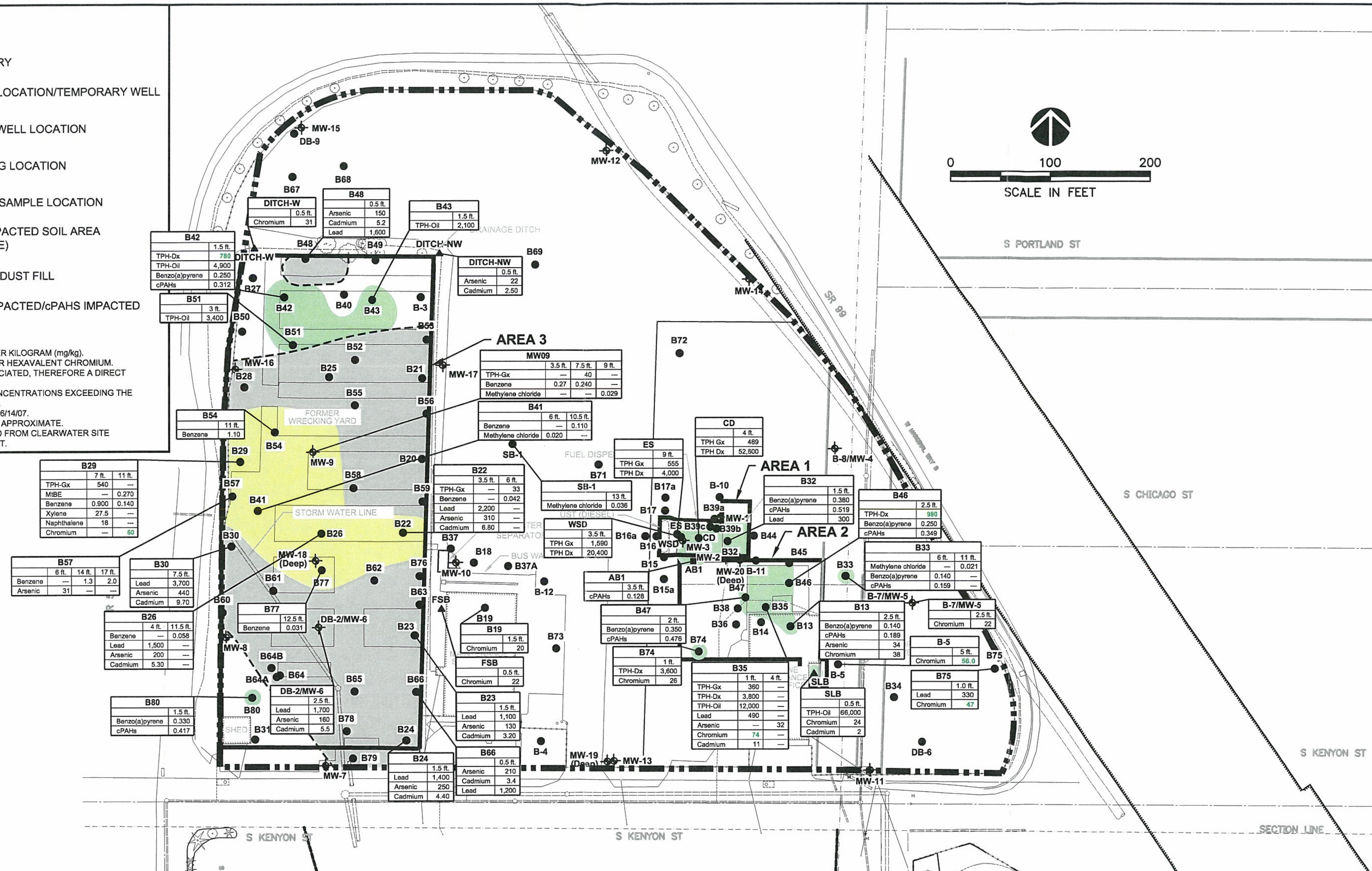
TPH-Gx	100/30*/460****
TPH-Dx	2,000
TPH-Oil	2,000
MtBE	0.1
Benzene	0.03
Xylene	9
Methylene chloride	0.02
Naphthalene	5
Benzo(a)pyrene	0.1
cPAHs	0.1
Lead	250
Arsenic	7***
Chromium	19/2000**/42****
Cadmium	2

* If Benzene is present

** Total Chromium

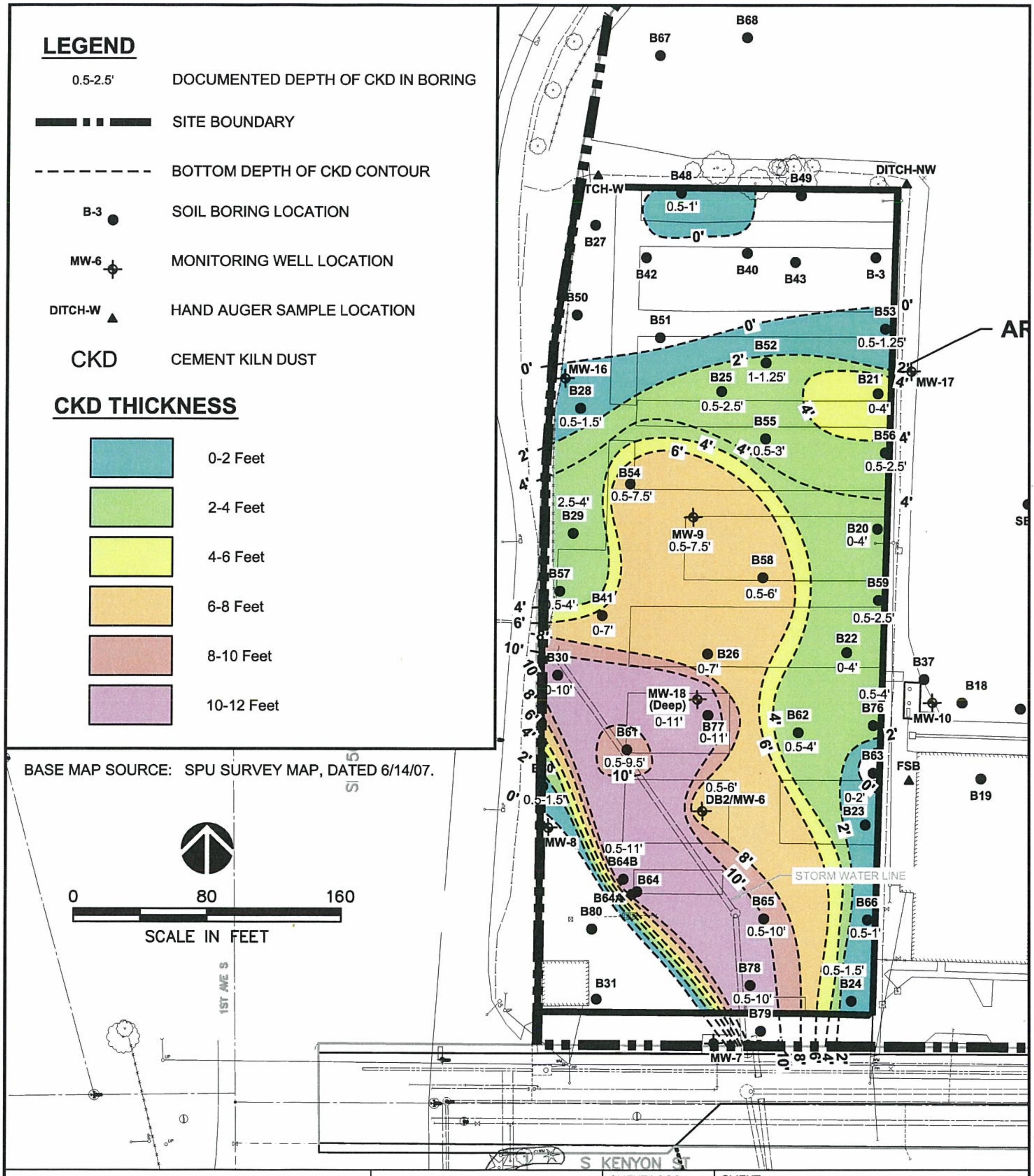
*** MTCA Method B is 0.67; however, background concentration is 7 according to DOE's Natural Background Soil Metals Concentrations in Washington State, 10/94.

**** If concentrations are above terrestial ecological indicator but below MTCA screening criteria.



CLIENT LOGO	CLIENT: CITY OF SEATTLE	DWN BY: JRS	PROJECT: SOUTH KENYON STREET BUS YARD	DATE: MARCH 2009
		CHK'D BY: AS/CI		PROJECT NO: 8-915-16289-A
	AMEC Earth & Environmental 11810 North Creek Parkway North Bothell, WA, U.S.A. 98034-8201	DATUM: HPGN (HARN)	TITLE: DETECTED CONCENTRATIONS OF COPCs ABOVE PRELIMINARY CLEANUP LEVELS	REV. NO.:
	amec	PROJECTION: WA STATE PLANE		FIGURE No. 6
		SCALE: AS SHOWN		

G:\91\16000\16289-A – SPU Bus Barn\16289-A-19.dwg – COPCs – Mar. 27, 2009 11:37am – jeffrey.sanders



G:\91\16000\16289-A - SPU Bus Barn\16289-A-19.dwg - Ash Depth - Mar. 27, 2009 11:22am - jeffrey.sanders

AMEC Earth & Environmental 11810 North Creek Parkway North Bothell, WA, U.S.A. 98011-8201	amec	CLIENT LOGO	CLIENT CITY OF SEATTLE
PROJECT SOUTH KENYON STREET BUS YARD		DWN BY: JRS	DATUM: HPGN (HARN) / DATE: MARCH 2009
TITLE INFERRED BOTTOM DEPTH OF CKD UNIT IN THE FORMER WRECKING YARD		CHK'D BY: CI	REV. NO.: / PROJECT NO: 8-915-16289-A
		PROJECTION: WA STATE PLANE	SCALE: AS SHOWN / FIGURE No. 7

LEGEND

SITE BOUNDARY

B-3 SOIL BORING/TEMPORARY WELL

MW-6 MONITORING WELL LOCATION

ANALYZED FOR TPH Dx, TPH Gx, VOCs, cPAHs, METALS

ANALYZED FOR TPH Dx, TPH Gx, VOCs, cPAHs, METALS, PESTICIDES AND HERBICIDES

ANALYZED FOR TPH Dx, TPH Gx, VOCs, cPAHs, METALS, PESTICIDES AND HERBICIDES, GENERAL CHEMISTRY

ANALYZED FOR TPH Dx, TPH Gx, B, T, E, X, cPAHs, MtBE, METALS, PESTICIDES AND HERBICIDES

ANALYZED FOR TPH Dx, TPH Gx, PESTICIDES AND HERBICIDES

GASOLINE IMPACTED SOIL AREA (APPROXIMATE)

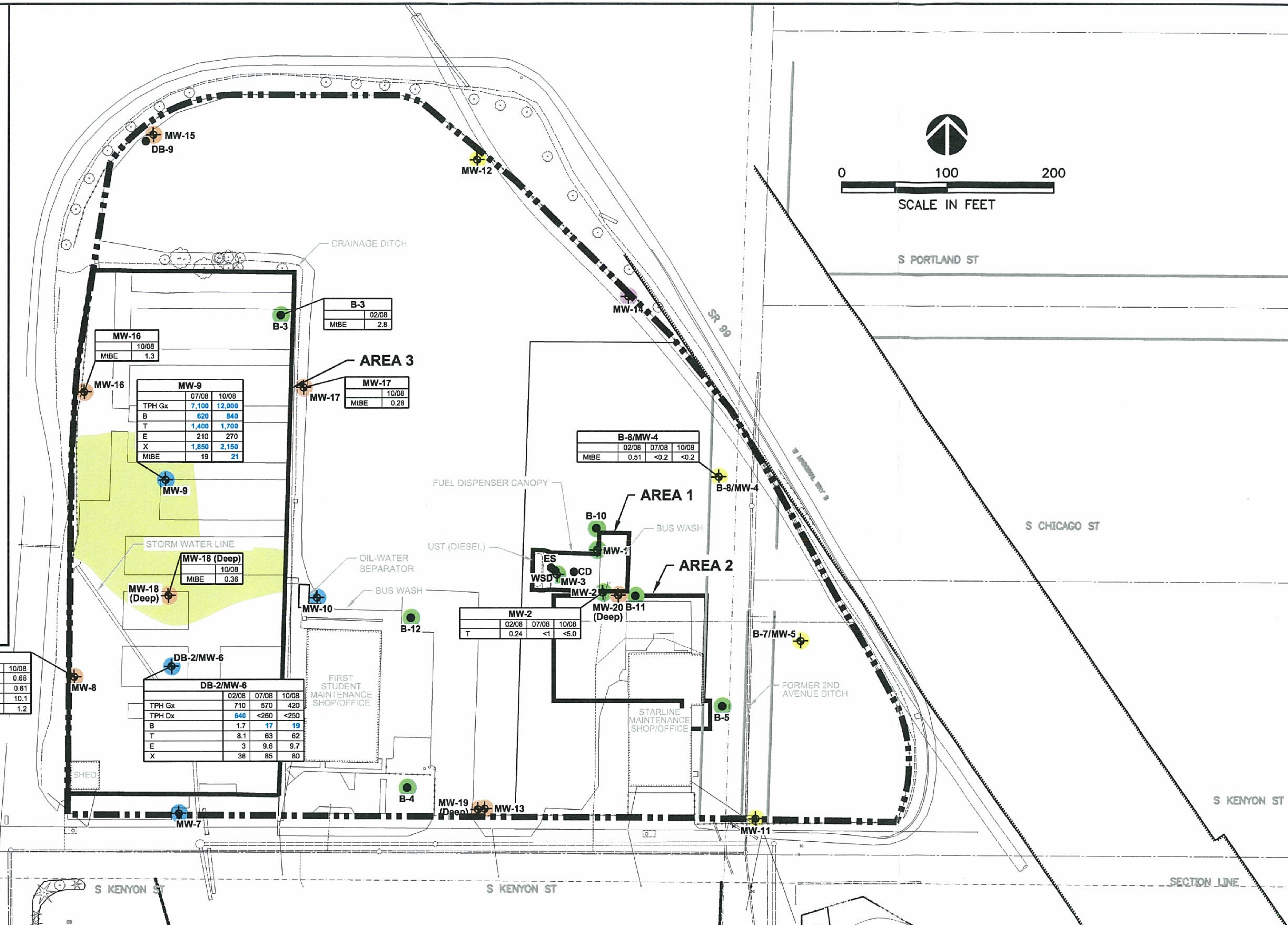
NOTES:

---	NO DATA
TPH Gx	GASOLINE RANGE HYDROCARBONS
TPH Dx	DIESEL RANGE HYDROCARBONS
B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	TOTAL XYLENES
MtBE	METHYLTERTBUTYLETHER
NT	NOT TESTED

1. UNIT OF MEASURE = MICROGRAMS PER LITER (µg/L).
2. MtBE NOT ANALYZED IN MW02, MW03, MW05, AND MW08 IN JULY 2008.
3. SAMPLES COLLECTED FROM MW4 AND MW5 WERE NOT ANALYZED FOR GASOLINE CONSTITUENTS (BTEX) IN OCTOBER 2008.
4. BOLD BLUE TEXT DENOTES CONCENTRATIONS EXCEEDING THE SCREENING CRITERIA (STATE MAXIMUM CONTAMINANT LEVELS [MCL] FOR DRINKING WATER OR METHOD B CLEANUP LEVELS WHEN MCLS ARE NOT AVAILABLE).
5. ONLY COMPOUNDS DETECTED ABOVE THE LABORATORY SCREENING CRITERIA HAVE DATA ILLUSTRATED.
6. BASE MAP SOURCE: SPU SURVEY MAP, DATED 6/14/07.

MTCA METHOD A CULs UNRESTRICTED SCREENING CRITERIA

TPH Gx	800
TPH Dx	500
B	5
T	1,000
E	700
X	1,000
MtBE	20



B-3

	02/08
MtBE	2.8

MW-16

	10/08
MtBE	1.3

MW-9

	07/08	10/08
TPH Gx	**7,100**	**12,000**
B	**620**	**840**
T	**1,400**	**1,700**
E	210	270
X	**1,850**	**2,150**
MtBE	19	**21**

MW-17

	10/08
MtBE	0.28

B-8/MW-4

	02/08	07/08	10/08
MtBE	0.51	<0.2	<0.2

MW-18 (Deep)

	10/08
MtBE	0.36

MW-2

	02/08	07/08	10/08
T	0.24	<1	<5.0

MW-8

	07/08	10/08
B	<4	0.68
E	<4	0.61
X	22	10.1
MtBE	NT	1.2

DB-2/MW-6

	02/08	07/08	10/08
TPH Gx	710	570	420
TPH Dx	**640**	<260	<250
B	1.7	**17**	**19**
T	8.1	63	62
E	3	9.6	9.7
X	36	85	80

CLIENT LOGO

CLIENT: CITY OF SEATTLE

AMEC Earth & Environmental
11810 North Creek Parkway North
Bothell, WA, U.S.A. 98034-8201

amec

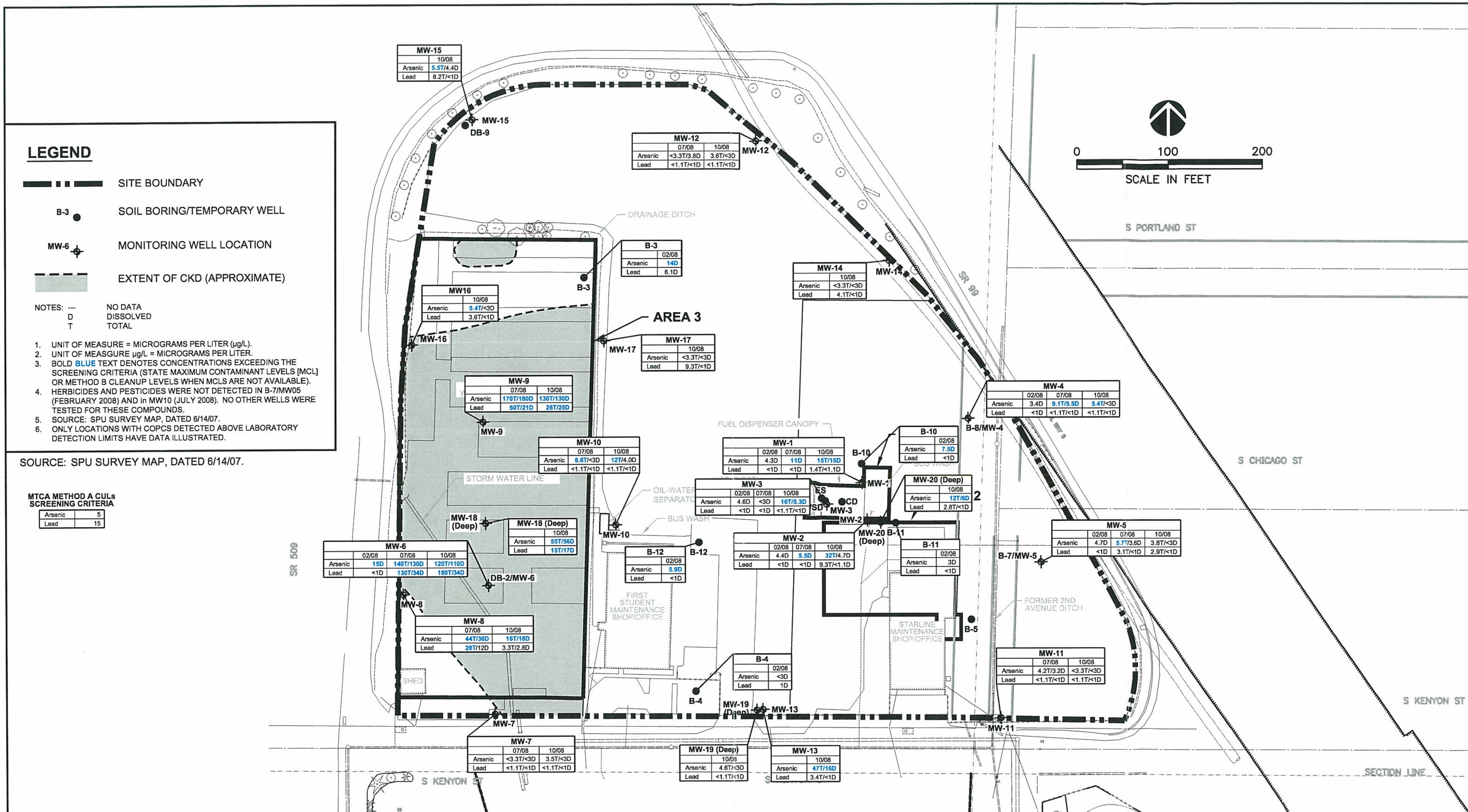
DWN BY:	JRS
CHK'D BY:	AS/CI
DATUM:	HPGN (HARN)
PROJECTION:	WA STATE PLANE
SCALE:	AS SHOWN

PROJECT: SOUTH KENYON STREET BUS YARD

TITLE: DETECTIONS OF PETROLEUM HYDROCARBONS AND GASOLINE CONSTITUENTS IN GROUNDWATER

DATE:	MARCH 2009
PROJECT NO:	8-915-16289-A
REV. NO.:	
FIGURE No.	8

G:\91\16000\16289-A – SPU Bus Barn\16289-A-19.dwg – Hydrocarbons – Mar. 27, 2009 12:17pm – jeffrey.sanders



CLIENT LOGO	CLIENT: CITY OF SEATTLE	DWN BY: JRS	PROJECT: SOUTH KENYON STREET BUS YARD	DATE: MARCH 2009
		CHK'D BY: AS/CI		PROJECT NO: 8-915-16289-A
	AMEC Earth & Environmental, 11810 North Creek Parkway North, Bothell, WA, U.S.A. 98034-8201	DATUM: HPGN (HARN)	TITLE: CONCENTRATION OF LEAD AND ARSENIC IN GROUNDWATER	REV. NO.:
	amec	PROJECTION: WA STATE PLANE		FIGURE No. 9
		SCALE: AS SHOWN		

G:\91\16000\16289-A – SPU Bus Barn\16289-A-19.dwg – Contaminants – Mar. 27, 2009 12:23pm – jeffrey.sanders

LEGEND

SITE BOUNDARY

B-3 SOIL BORING/TEMPORARY WELL

MW-6 MONITORING WELL LOCATION

ANALYZED FOR TPH Dx, TPH Gx, VOCs, cPAHs, METALS

ANALYZED FOR TPH Dx, TPH Gx, VOCs, cPAHs, METALS, PESTICIDES AND HERBICIDES

ANALYZED FOR TPH Dx, TPH Gx, VOCs, cPAHs, METALS, PESTICIDES AND HERBICIDES, GENERAL CHEMISTRY

ANALYZED FOR TPH Dx, TPH Gx, B, T, E, X, cPAHs, MtBE, METALS, PESTICIDES AND HERBICIDES

ANALYZED FOR TPH Dx, TPH Gx, PESTICIDES AND HERBICIDES

NOTES:

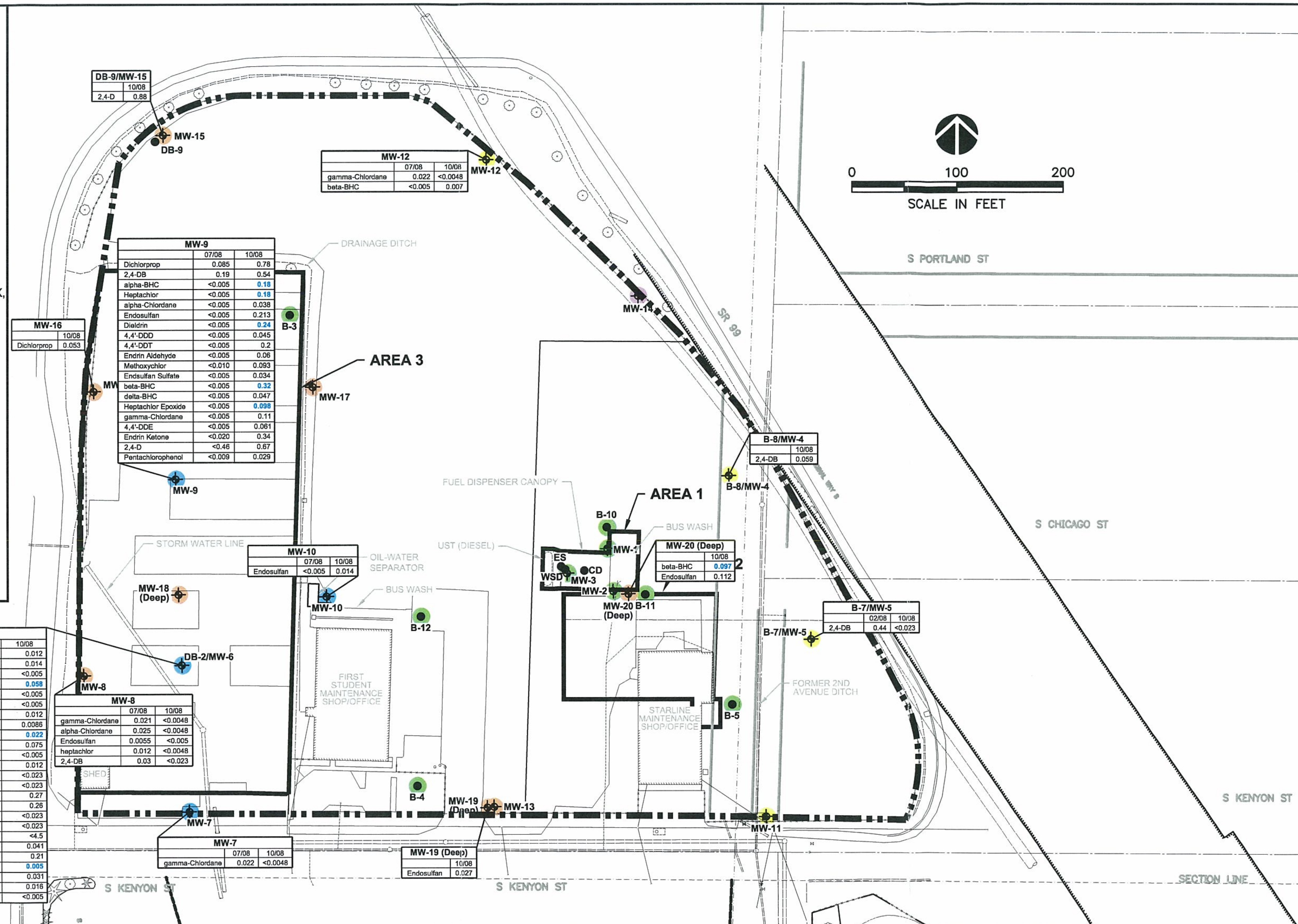
---	NO DATA
TPH Gx	GASOLINE RANGE HYDROCARBONS
TPH Dx	DIESEL RANGE HYDROCARBONS
B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	TOTAL XYLENES
MtBE	METHYLTERTBUTYLETHER

1. UNIT OF MEASURE = MICROGRAMS PER LITER (µg/L).
2. UNIT OF MEASURE µg/L = MICROGRAMS PER LITER.
3. BOLD **BLUE** TEXT DENOTES CONCENTRATIONS EXCEEDING THE SCREENING CRITERIA (STATE MAXIMUM CONTAMINANT LEVELS [MCL] OR METHOD B CLEANUP LEVELS WHEN MCLS ARE NOT AVAILABLE).
4. HERBICIDES AND PESTICIDES WERE NOT DETECTED IN MW11, MW13, MW14, AND MW18 IN OCTOBER 2008. SAMPLES WERE NOT COLLECTED FROM THE REMAINING LOCATIONS WITH NO TEXT BOXES.
5. SOURCE: SPU SURVEY MAP, DATED 6/14/07.
6. ONLY LOCATIONS WITH COPCS DETECTED ABOVE LABORATORY DETECTION LIMITS HAVE DATA ILLUSTRATED.

SOURCE: SPU SURVEY MAP, DATED 6/14/07.

MTCA METHOD B CARCINOGENIC AND NON-CARCINOGENIC SCREENING CRITERIA

alpha-BHC	0.014
beta-BHC	0.049
Dieldrin	0.0055
Heptachlor	0.019
Heptachlor Epoxide	0.0048
MCPA	8



DB-9/MW-15

	10/08
2,4-D	0.88

MW-12

	07/08	10/08
gamma-Chlordane	0.022	<0.0048
beta-BHC	<0.005	0.007

MW-16

	10/08
Dichlorprop	0.053

MW-9

	07/08	10/08
Dichlorprop	0.085	0.78
2,4-DB	0.19	0.54
alpha-BHC	<0.005	**0.18**
Heptachlor	<0.005	**0.18**
alpha-Chlordane	<0.005	0.038
Endosulfan	<0.005	0.213
Dieldrin	<0.005	**0.24**
4,4'-DDD	<0.005	0.045
4,4'-DDT	<0.005	0.2
Endrin Aldehyde	<0.005	0.06
Methoxychlor	<0.010	0.093
Endsulfan Sulfate	<0.005	0.034
beta-BHC	<0.005	**0.32**
delta-BHC	<0.005	0.047
Heptachlor Epoxide	<0.005	**0.098**
gamma-Chlordane	<0.005	0.11
4,4'-DDE	<0.005	0.061
Endrin Ketone	<0.020	0.34
2,4-D	<0.46	0.67
Pentachlorophenol	<0.009	0.029

MW-10

	07/08	10/08
Endosulfan	<0.005	0.014

B-8/MW-4

	10/08
2,4-DB	0.059

MW-20 (Deep)

	10/08
beta-BHC	**0.097**
Endosulfan	0.112

B-7/MW-5

	02/08	10/08
2,4-DB	0.44	<0.023

DB-2/MW-6

	02/08	07/08	10/08
4,4-DDD	0.027	0.010	0.012
4,4-DDE	0.012	0.007	0.014
4,4-DDT	0.016	<0.005	<0.005
alpha-BHC	<0.005	**0.12**	**0.058**
alpha-Chlordane	0.02	<0.005	<0.005
beta-BHC	<0.005	**0.18**	<0.005
delta-BHC	<0.005	0.027	0.012
gamma-BHC	<0.005	0.016	0.0086
Dieldrin	<0.005	**0.023**	**0.022**
Endosulfan	0.037	0.031	0.075
Heptachlor	<0.005	0.012	<0.005
Endrin	0.0085	0.046	0.012
2,4,5-T	0.19	<0.024	<0.023
2,4,5-TP	0.071	<0.025	<0.023
2,4-D	0.16	<0.048	0.27
2,4-DB	0.39	0.24	0.26
Dichlorprop	0.34	0.27	<0.023
Dinoseb	0.47	<0.024	<0.023
MCPA	**100**	<4.8	<4.5
Methoxychlor	<0.01	0.029	0.041
Endrin Ketone	<0.19	<0.02	0.21
Heptachlor Epoxide	<0.005	<0.005	**0.005**
Endrin Aldehyde	<0.005	<0.005	0.031
Pentachlorophenol	<0.009	<0.010	0.016
Endosulfan Sulfate	<0.005	<0.011	<0.005

MW-8

	07/08	10/08
gamma-Chlordane	0.021	<0.0048
alpha-Chlordane	0.025	<0.0048
Endosulfan	0.0055	<0.005
heptachlor	0.012	<0.0048
2,4-DB	0.03	<0.023

MW-7

	07/08	10/08
gamma-Chlordane	0.022	<0.0048

MW-19 (Deep)

	10/08
Endosulfan	0.027

CLIENT LOGO	CLIENT: CITY OF SEATTLE	DWN BY: JRS	PROJECT: SOUTH KENYON STREET BUS YARD		DATE: MARCH 2009
		CHK'D BY: AS/CI			PROJECT NO: 8-915-16289-A
	AMEC Earth & Environmental 11810 North Creek Parkway North Bothell, WA, U.S.A. 98034-8201	DATUM: HPGN (HARN)	TITLE: CONCENTRATION OF HERBICIDES AND PESTICIDES IN GROUNDWATER		REV. NO.:
	amec	PROJECTION: WA STATE PLANE			FIGURE No. 10
		SCALE: AS SHOWN			

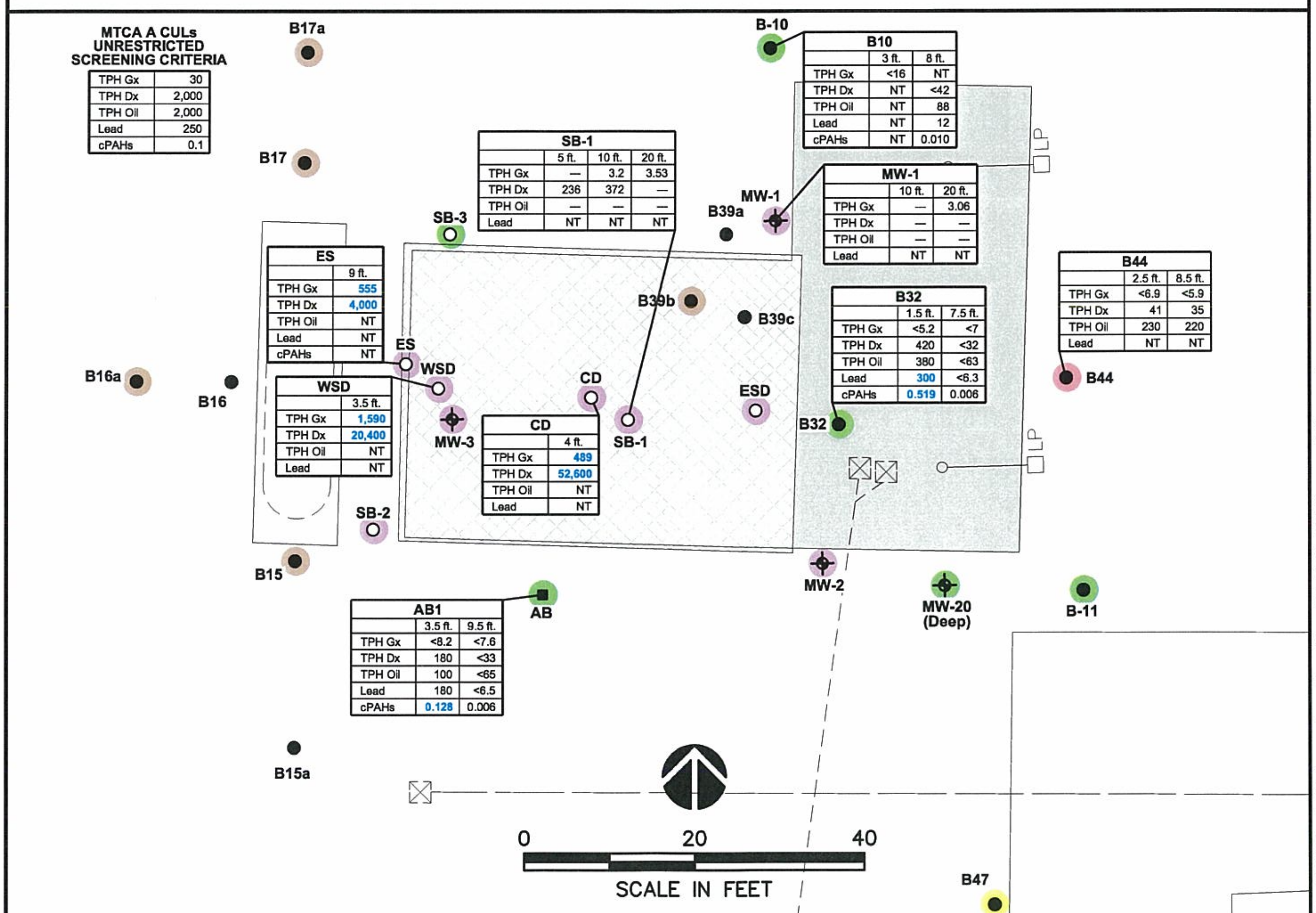
G:\91\16000\16289-A – SPU Bus Barn\16289-A-19.dwg – Pesticides – Mar. 27, 2009 12:26pm – jeffrey.sanders

LEGEND

SB-3 ○	G-LOGICS BORING LOCATION
B-17 ●	SOIL BORING LOCATION
AB ■	ANGLE BORING LOCATION
MW-3 ⌖	MONITORING WELL LOCATION
(green)	ANALYZED FOR TPH Dx, TPH Gx, B, T, E, X, MtBE, cPAHs
(brown)	ANALYZED FOR TPH Dx, B, T, E, X, MtBE, cPAHs
(yellow)	ANALYZED FOR TPH Dx, cPAHs
(purple)	ANALYZED FOR TPH Dx, TPH Gx
(pink)	ANALYZED FOR Dx, Gx, B, T, E, X, MtBE

NOTES:
- TPH Gx GASOLINE RANGE HYDROCARBONS
- TPH Dx DIESEL RANGE HYDROCARBONS
- cPAHs CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS TOXICITY EQUIVALENT
- --- REPORTED TO BE BELOW LABORATORY DETECTION LIMITS WHICH WERE NOT PROVIDED IN THE GLOGICS MAY 2007 REPORT
- NT NOT TESTED

1. UNIT OF MEASURE = MILLIGRAMS PER KILOGRAM (mg/kg).
2. BOLD **BLUE** TEXT DENOTES CONCENTRATIONS EXCEEDING THE SCREENING CRITERIA (MTCA METHOD A CULs UNRESTRICTED).
3. DATA SOURCE FOR SB-1, SB-2, SB-3, ESD, CD, WSD, ES, MW-1, MW-2, AND MW-3 FROM CLEARWATER SITE ASSESSMENT AND CLOSURE REPORT - 1999.
4. NO SAMPLES COLLECTED FROM B39a, B39c, B15A, and B16.
5. BASE MAP SOURCE: SPU SURVEY MAP, DATED 6/14/07.
6. ONLY COMPOUNDS WITH DETECTIONS ABOVE THE LABORATORY DETECTION LIMITS HAVE DATA ILLUSTRATED.



MTCA A CULs UNRESTRICTED SCREENING CRITERIA

TPH Gx	30
TPH Dx	2,000
TPH Oil	2,000
Lead	250
cPAHs	0.1

B10

	3 ft.	8 ft.
TPH Gx	<16	NT
TPH Dx	NT	<42
TPH Oil	NT	88
Lead	NT	12
cPAHs	NT	0.010

SB-1

	5 ft.	10 ft.	20 ft.
TPH Gx	—	3.2	3.53
TPH Dx	236	372	—
TPH Oil	—	—	—
Lead	NT	NT	NT

MW-1

	10 ft.	20 ft.
TPH Gx	—	3.06
TPH Dx	—	—
TPH Oil	—	—
Lead	NT	NT

ES

	9 ft.
TPH Gx	**555**
TPH Dx	**4,000**
TPH Oil	NT
Lead	NT
cPAHs	NT

B44

	2.5 ft.	8.5 ft.
TPH Gx	<6.9	<5.9
TPH Dx	41	35
TPH Oil	230	220
Lead	NT	NT

B32

	1.5 ft.	7.5 ft.
TPH Gx	<5.2	<7
TPH Dx	420	<32
TPH Oil	380	<63
Lead	**300**	<6.3
cPAHs	**0.519**	0.006

WSD

	3.5 ft.
TPH Gx	**1,590**
TPH Dx	**20,400**
TPH Oil	NT
Lead	NT

CD

	4 ft.
TPH Gx	**489**
TPH Dx	**52,600**
TPH Oil	NT
Lead	NT

AB1

	3.5 ft.	9.5 ft.
TPH Gx	<8.2	<7.6
TPH Dx	180	<33
TPH Oil	100	<65
Lead	180	<6.5
cPAHs	**0.128**	0.006

AMEC Earth & Environmental
11810 North Creek Parkway North
Bothell, WA, U.S.A. 98011-8201

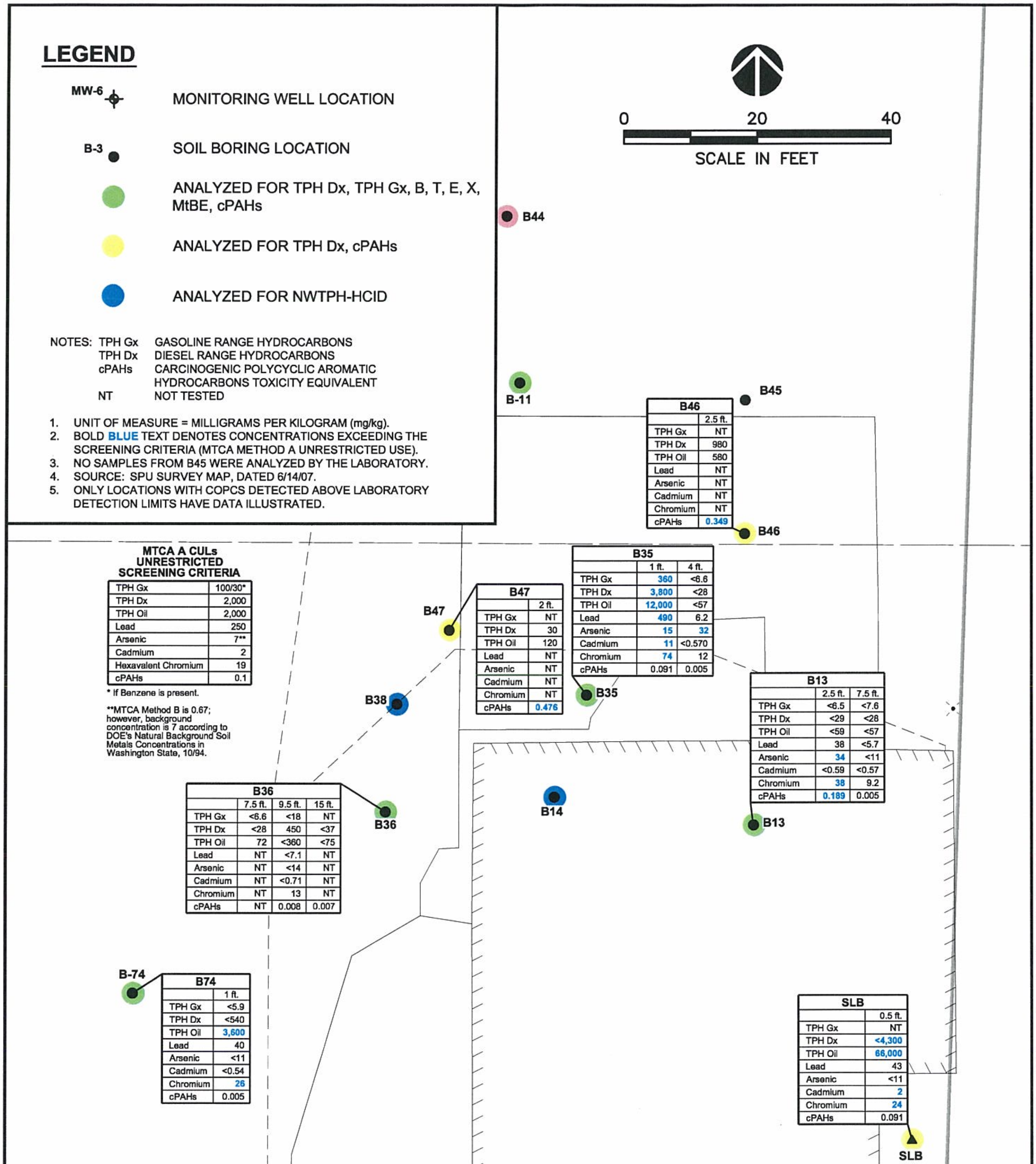
amec

CLIENT LOGO

CLIENT: CITY OF SEATTLE

PROJECT: SOUTH KENYON STREET BUS YARD	DWN BY: JRS	DATUM: HPGN (HARN)	DATE: MARCH 2009
TITLE: DETECTIONS OF PETROLEUM COMPOUNDS IN SOIL IN AREA 1	CHK'D BY: CI	REV. NO.:	PROJECT NO: 8-915-16289-A
	PROJECTION: WA STATE PLANE	SCALE: AS SHOWN	FIGURE No. 11

G:\91\16000\16289-A - SPU Bus Barn\16289-A-19.dwg - Area 1 - Mar. 27, 2009 11:24am - jeffrey.sanders



LEGEND

MW-6 MONITORING WELL LOCATION

B-3 SOIL BORING LOCATION

ANALYZED FOR TPH Dx, TPH Gx, B, T, E, X, MtBE, cPAHs

ANALYZED FOR TPH Dx, cPAHs

ANALYZED FOR NWTPH-HCID

NOTES:
TPH Gx GASOLINE RANGE HYDROCARBONS
TPH Dx DIESEL RANGE HYDROCARBONS
cPAHs CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS TOXICITY EQUIVALENT
NT NOT TESTED

1. UNIT OF MEASURE = MILLIGRAMS PER KILOGRAM (mg/kg).
2. BOLD **BLUE** TEXT DENOTES CONCENTRATIONS EXCEEDING THE SCREENING CRITERIA (MTCA METHOD A UNRESTRICTED USE).
3. NO SAMPLES FROM B45 WERE ANALYZED BY THE LABORATORY.
4. SOURCE: SPU SURVEY MAP, DATED 6/14/07.
5. ONLY LOCATIONS WITH COPCS DETECTED ABOVE LABORATORY DETECTION LIMITS HAVE DATA ILLUSTRATED.

MTCA A CULs UNRESTRICTED SCREENING CRITERIA

TPH Gx	100/30*
TPH Dx	2,000
TPH Oil	2,000
Lead	250
Arsenic	7**
Cadmium	2
Hexavalent Chromium	19
cPAHs	0.1

* If Benzene is present.

**MTCA Method B is 0.67; however, background concentration is 7 according to DOE's Natural Background Soil Metals Concentrations in Washington State, 10/94.

B46

	2.5 ft.
TPH Gx	NT
TPH Dx	980
TPH Oil	580
Lead	NT
Arsenic	NT
Cadmium	NT
Chromium	NT
cPAHs	**0.349**

B35

	1 ft.	4 ft.
TPH Gx	**360**	<6.6
TPH Dx	**3,800**	<28
TPH Oil	**12,000**	<57
Lead	**490**	6.2
Arsenic	**15**	**32**
Cadmium	**11**	<0.570
Chromium	**74**	12
cPAHs	0.091	0.005

B47

	2 ft.
TPH Gx	NT
TPH Dx	30
TPH Oil	120
Lead	NT
Arsenic	NT
Cadmium	NT
Chromium	NT
cPAHs	**0.476**

B13

	2.5 ft.	7.5 ft.
TPH Gx	<6.5	<7.6
TPH Dx	<29	<28
TPH Oil	<59	<57
Lead	38	<5.7
Arsenic	**34**	<11
Cadmium	<0.59	<0.57
Chromium	**38**	9.2
cPAHs	**0.189**	0.005

B36

	7.5 ft.	9.5 ft.	15 ft.
TPH Gx	<6.6	<18	NT
TPH Dx	<28	450	<37
TPH Oil	72	<360	<75
Lead	NT	<7.1	NT
Arsenic	NT	<14	NT
Cadmium	NT	<0.71	NT
Chromium	NT	13	NT
cPAHs	NT	0.008	0.007

B74

	1 ft.
TPH Gx	<5.9
TPH Dx	<540
TPH Oil	**3,600**
Lead	40
Arsenic	<11
Cadmium	<0.54
Chromium	**26**
cPAHs	0.005

SLB

	0.5 ft.
TPH Gx	NT
TPH Dx	**<4,300**
TPH Oil	**66,000**
Lead	43
Arsenic	<11
Cadmium	**2**
Chromium	**24**
cPAHs	0.091

AMEC Earth & Environmental
11810 North Creek Parkway North
Bothell, WA, U.S.A. 98011-8201

amec

CLIENT LOGO

CLIENT: CITY OF SEATTLE

PROJECT: SOUTH KENYON STREET BUS YARD	DWN BY: JRS	DATUM: HPGN (HARN)	DATE: MARCH 2009
TITLE: DETECTIONS OF PETROLEUM COMPOUNDS AND METALS IN SOIL IN AREA 2	CHK'D BY: CI	REV. NO.:	PROJECT NO: 8-915-16289-A
	PROJECTION: WA STATE PLANE	SCALE: AS SHOWN	FIGURE No. 12

LEGEND

MW-6 (crosshair)	MONITORING WELL LOCATION
B-3 (dot)	SOIL BORING LOCATION
DITCH-W (triangle)	HAND AUGER SAMPLE LOCATION
Green	ANALYZED FOR TPH Dx, TPH Gx, B, T, E, X, MtBE, cPAHs
Tan	ANALYZED FOR TPH Dx, B, T, E, X, MtBE, cPAHs
Orange	ANALYZED FOR TPH Gx, B, T, E, X, MtBE
Light blue	ANALYZED FOR TPH Dx, B, T, E, X, MtBE
Yellow	ANALYZED FOR TPH Dx, cPAHs
Lavender	ANALYZED FOR TPH Dx, TPH Gx
Dark blue	ANALYZED FOR NWTPH-HCID
Teal	ANALYZED FOR B, T, E, X
Yellow area	GASOLINE IMPACTED AREA
Dashed line / grey area	EXTENT OF CKD
Green area	HEAVY-OIL IMPACTED/cPAHS IMPACTED AREAS

NOTES:

TPH Gx	GASOLINE RANGE HYDROCARBONS
TPH Dx	DIESEL RANGE HYDROCARBONS
B	BENZENE
T	TOLUENE
E	ETHYLBENZENE
X	TOTAL XYLENES
cPAHs	CARCINOGENIC POLYCYCLIC AROMATIC HYDROCARBONS TOXICITY EQUIVALENT
MtBE	METHYLTERTBUTYLETHER
---	REPORTED TO BE BELOW LABORATORY DETECTION LIMITS WHICH WERE NOT PROVIDED IN THE GLOGICS MAY 2007 REPORT
NT	NOT TESTED
*	NWTPH HCID ANALYSES

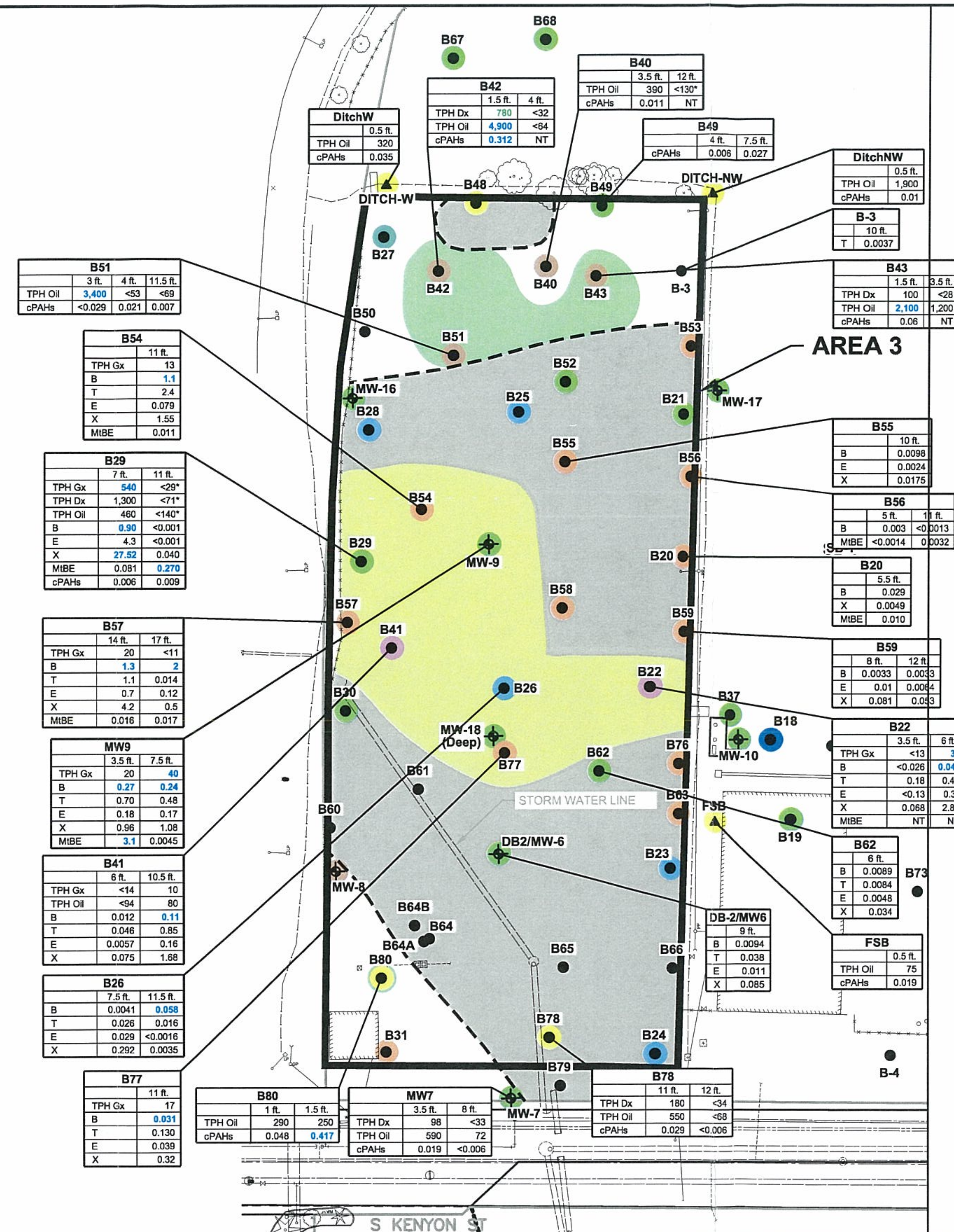
1. UNIT OF MEASURE = MILLIGRAMS PER KILOGRAM.
2. BOLD BLUE TEXT DENOTES CONCENTRATIONS EXCEEDING THE SCREENING CRITERIA (MTCA METHOD A CUL UNRESTRICTED USE).
3. BOLD GREEN VALUES DENOTES CONCENTRATIONS EXCEEDING THE TERRESTIAL CHEMICAL INDICATORS.
4. DATA FROM SAMPLES WITH DETECTIONS ABOVE THE LABORATORY DETECTION LIMITS ARE ILLUSTRATED.
5. SOURCE: SPU SURVEY MAP, DATED 6/14/07.

MTCA A CULs UNRESTRICTED USE SCREENING CRITERIA

TPH Gx	100/30*
TPH Dx	2,000
TPH Oil	2,000
B	0.03
T	7
E	6
X	9
MtBE	0.1
cPAHs	0.1

* IF BENZENE IS PRESENT

SCALE IN FEET: 0 — 80 — 160



CLIENT LOGO	
CLIENT:	CITY OF SEATTLE
	AMEC Earth & Environmental 11810 North Creek Parkway North Bothell, WA, U.S.A. 98034-8201
DWN BY:	JRS
CHK'D BY:	CI
DATUM:	NAD83
PROJECTION:	HPGN (HARN)
SCALE:	AS SHOWN
PROJECT	SOUTH KENYON STREET BUS YARD
TITLE	DETECTIONS OF GASOLINE AND PETROLEUM COMPOUNDS IN SOIL IN AREA 3
DATE:	MARCH 2009
PROJECT NO:	8-915-16289-A
REV. NO.:	
FIGURE No.	13

G:\91\16000\16289-A – SPU Bus Barn\16289-A-19.dwg – Area 3I 11x17 – Mar. 27, 2009 8:30am – jeffrey.sanders

LEGEND

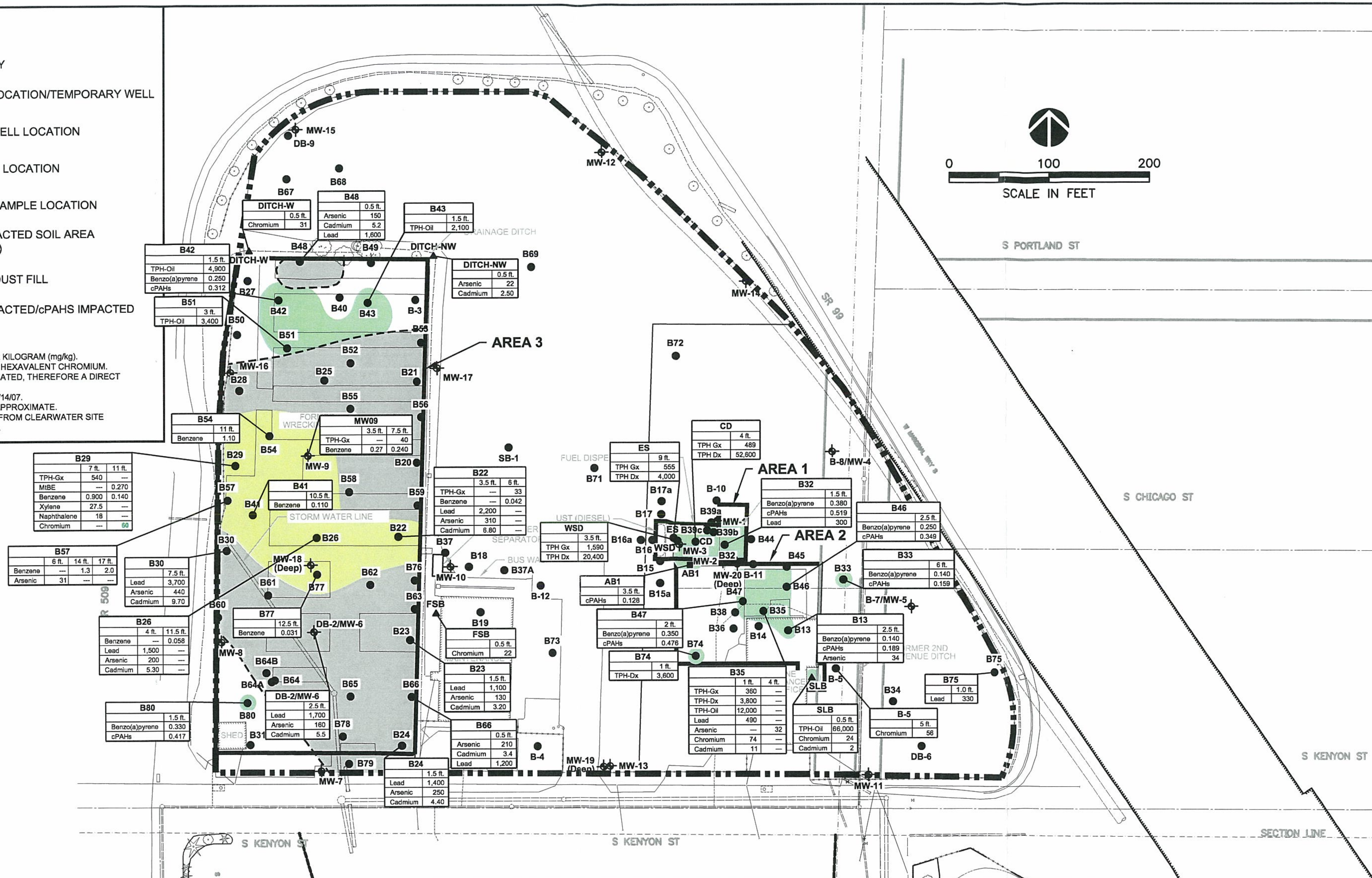
- SITE BOUNDARY
- B-3 — SOIL BORING LOCATION/TEMPORARY WELL
- MW-6 — MONITORING WELL LOCATION
- AB — ANGLE BORING LOCATION
- DITCH-W — HAND AUGER SAMPLE LOCATION
- GASOLINE IMPACTED SOIL AREA (APPROXIMATE)
- CEMENT KILN DUST FILL
- HEAVY-OIL IMPACTED/cPAHS IMPACTED AREAS

NOTES:
1. UNIT OF MEASURE = MILLIGRAMS PER KILOGRAM (mg/kg).
2. CHROMIUM SCREENING LEVEL IS FOR HEXAVALENT CHROMIUM. ANALYTICAL RESULTS ARE NOT SPECIATED, THEREFORE A DIRECT COMPARISON CANNOT BE MADE.
3. SOURCE: SPU SURVEY MAP, DATED 6/14/07.
4. OUTLINES OF IMPACTED AREAS ARE APPROXIMATE.
6. DATA SOURCE FOR ES, WSD, AND CD FROM CLEARWATER SITE ASSESSMENT AND CLOSURE REPORT.

MTCA METHOD A CULs UNRESTRICTED AND MTCA MTHOD B CULs CARCINOGENIC SCREENING CRITERIA

TPH-Gx	100/30*
TPH-Dx	2,000
TPH-Oil	2,000
MtBE	0.1
Benzene	0.03
Xylene	9
Naphthalene	5
Benzo(a)pyrene	0.1
cPAHs	0.1
Lead	250
Arsenic	7***
Chromium	19/2000**
Cadmium	2

* If Benzene is present
** Total Chromium
*** MTCA Method B is 0.67; however, background concentration is 7 according to DOE's Natural Background Soil Metals Concentrations in Washington State, 10/94.



CLIENT LOGO

CLIENT: CITY OF SEATTLE

AMEC Earth & Environmental
11810 North Creek Parkway North
Bothell, WA, U.S.A. 98034-8201

amec

DWN BY:	JRS
CHK'D BY:	AS/CI
DATUM:	HPGN (HARN)
PROJECTION:	WA STATE PLANE
SCALE:	AS SHOWN

PROJECT: SOUTH KENYON STREET BUS YARD

TITLE: SITE CONTAMINANTS OF CONCERN IN SOIL

DATE: MARCH 2009
PROJECT NO: 8-915-16289-A
REV. NO.:
FIGURE No. 14

G:\91\16000\16289-A – SPU Bus Barn\16289-A-19.dwg – Site Contaminants – Mar. 27, 2009 12:15pm – jeffrey.sanders

Appendix E

Excerpts from
Environmental Investigation Reports

Former South Park Landfill

GEOTECHNICAL ENGINEERING AND
ENVIRONMENTAL ASSESSMENT

SOUTH PARK DETENTION PROJECT

Seattle, Washington

Prepared For

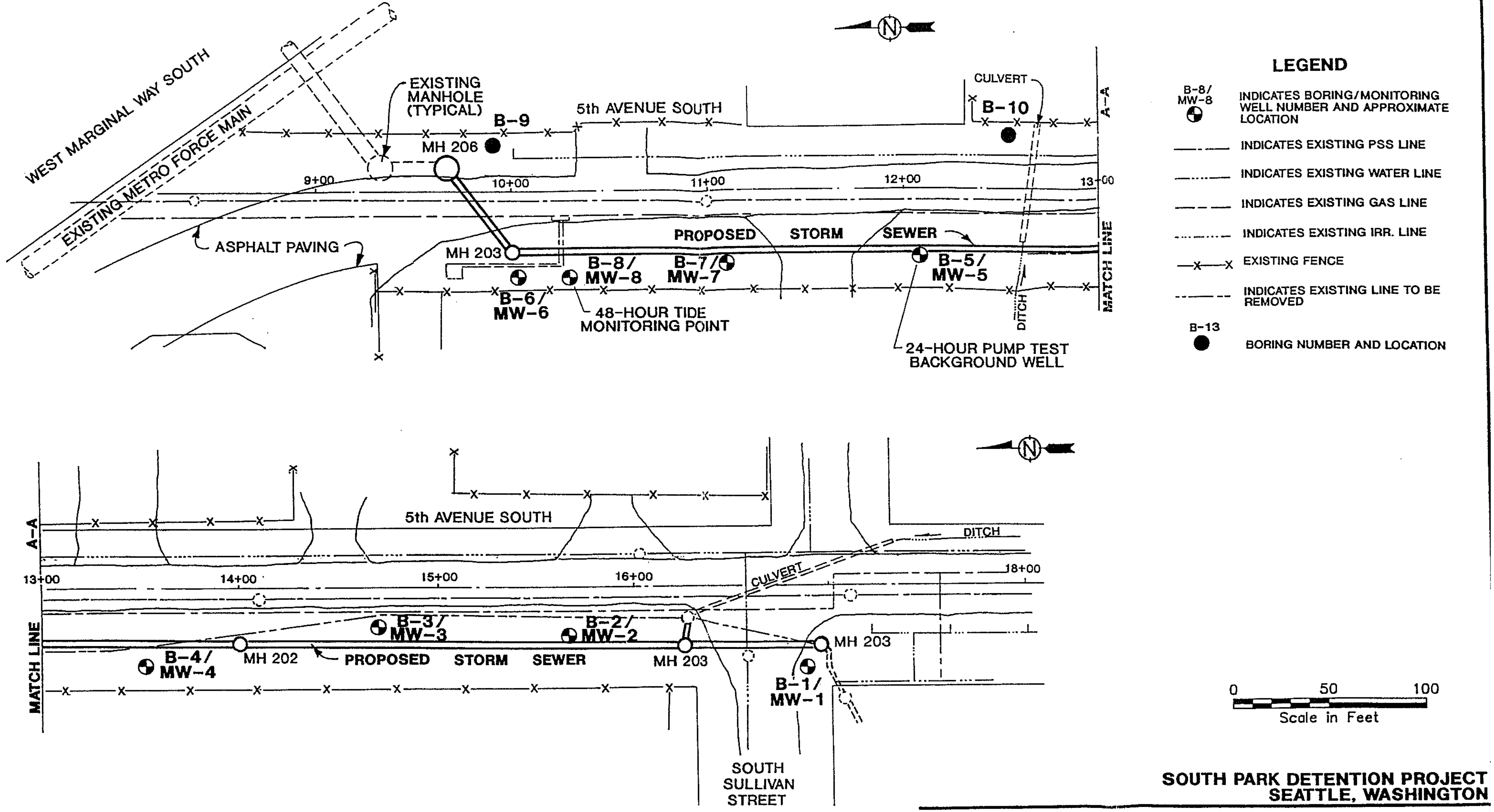
Seattle Engineering Department

W-7490

March, 1992

RZA AGRA, Inc.
Engineering & Environmental Services

AGRA
Earth & Environmental Group



SOUTH PARK DETENTION PROJECT
SEATTLE, WASHINGTON

SITE & EXPLORATION PLAN
5TH AVENUE SOUTH
FIGURE 2

W.O. W-7490
BY WB
DATE SEPT 1991
SCALE 1"=50'

RITTENHOUSE-ZEMAN & ASSOCIATES, INC.
Geotechnical & Environmental Consultants
1400 140th Avenue N.E.
Bellevue, Washington 98005

BASED ON A SITE PLAN SUPPLIED BY THE SEATTLE ENGINEERING DEPARTMENT.

Table 2: Analytical Results - Soil
South Park Detention Project
RZA Job No. W-7490

Sample Number	Depth (feet)	TPH EPA 418.1 (ppm)	TOX (ppm)	Volatile Organic Compounds by EPA Method 8240 PCE (ppm)	TCE (ppm)	Toluene (ppm)	Ethyl Benzene (ppm)	Xylene (ppm)
B-1/S-2	8.0	23.8	—	ND	ND	ND	ND	ND
B-1/S-4	18.5	28.8	—	—	—	—	—	—
B-2/S-2	8.0	14.0	—	ND	ND	ND	ND	ND
B-2/S-4	18.0	12.2	—	—	—	—	—	—
B-3/S-1	3.0	59.0	—	ND	ND	ND	ND	ND
B-3/S-2	8.0	249.0	—	—	—	—	—	—
B-4/S-1	4.0	ND	—	ND	ND	ND	ND	ND
B-4/S-3	14.0	42.8	—	—	—	—	—	—
B-5/S-2	8.0	776.0	—	ND	ND	ND	ND	ND
B-5/S-3	13.0	240.0	—	—	—	—	—	—
B-6/S-3	13.0	1590.0	2.7	1.6	0.48	0.58	0.76	1.1
B-6/S-5	23.0	717.0	—	—	—	—	—	—
B-7/S-2	9.0	386.0	—	ND	ND	ND	ND	ND
B-7/S-3	14.0	14900.0	2.6	—	—	—	—	—
B-8/S-2	7.5	340.0	—	ND	ND	ND	ND	ND
B-8/S-3	12.5	15800.0	—	—	—	—	—	—
B-9/S-2	7.5	53	ND	ND	ND	ND	ND	ND
B-9/S-3	12.5	220	ND	—	—	—	—	—
B-10/S-2	7.5	53	ND	ND	ND	ND	ND	ND
B-10/S-3	12.5	14	ND	—	—	—	—	—
MTCA METHOD A CLEANUP LEVEL		100* 200**	N/G	0.5	0.5	40.0	20.0	20.0

Notes:

TPH	- Total Petroleum Hydrocarbons	TOX - Total Halogens
ND	- Not Detected	PCE - Tetrachloroethylene
—	- Not Analyzed	TCE - Trichloroethylene
*	- TPH 418.1 Cleanup Level for Gasoline	
**	- TPH 418.1 Cleanup Level for Heavy Oil	
N/G	- These compounds not included in Method A Cleanup Table	
(shaded)	- Above MTCA, Method A, Cleanup Levels	

Table 3: Analytical Results - Water
South Park Detention Project
RZA Job No. W-7490

Sample Number	TPH EPA 418.1 (ppm)	Halogenated Volatiles - EPA 601					Aromatic Volatile Compounds - EPA 602						
		Vinyl Chloride (ppm)	PCE (ppm)	TCE (ppm)	Chloro-Benzene (ppm)	1,4 DCB (ppm)	Benzene (ppm)	Toluene (ppm)	Chloro-Benzene (ppm)	Ethyl Benzene (ppm)	Total Xylenes (ppm)	1,4 DCB (ppm)	1,2 DCB (ppm)
MW-1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-2	ND	ND	ND	ND	0.001	ND	ND	ND	0.001	ND	ND	ND	ND
MW-3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-4	ND	ND	ND	ND	0.001	ND	ND	ND	0.001	ND	ND	ND	ND
MW-5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
MW-6	1.7	ND	0.072	0.093	ND	0.001	0.001	0.017	ND	0.004	0.02	0.001	ND
MW-7	1.3	ND	ND	ND	0.002	0.01	0.001	0.001	0.002	ND	ND	0.01	ND
MW-8	1.5	0.003	0.03	0.019	ND	0.001	0.002	0.028	ND	0.008	0.034	0.001	0.001
MTCA METHOD A CLEANUP LEVEL	1.0	0.0002	0.005	0.005	N/G	N/G	0.005	0.04	N/G	0.03	0.02	N/G	N/G

Notes:
- TPH - Total Petroleum Hydrocarbons
- PCE - Tetrachloroethylene
- TCE - Trichloroethylene
- 1,4 DCB - 1,4 Dichlorobenzene
- 1,2 DCB - 1,2 Dichlorobenzene
- ND - Not Detected
- N/G - These compounds not included in Method A Cleanup Table
- (shaded) - Above MTCA, Method A, Cleanup levels

King County Solid Waste Division

SOUTH PARK CUSTODIAL LANDFILL ENVIRONMENTAL SITE INVESTIGATION DATA GAPS MEMORANDUM

JULY 27, 1998

prepared by:

ASSOCIATED EARTH SCIENCES, INC

In Association With:
Floyd & Snider Inc.
Udaloy Environmental Services

KING COUNTY
Department of Natural Resources

BAINBRIDGE ISLAND OFFICE
179 Madrone Lane North
Bainbridge Island, WA 98110
(206) 780-9370
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ASSOCIATED EARTH SCIENCES, INC

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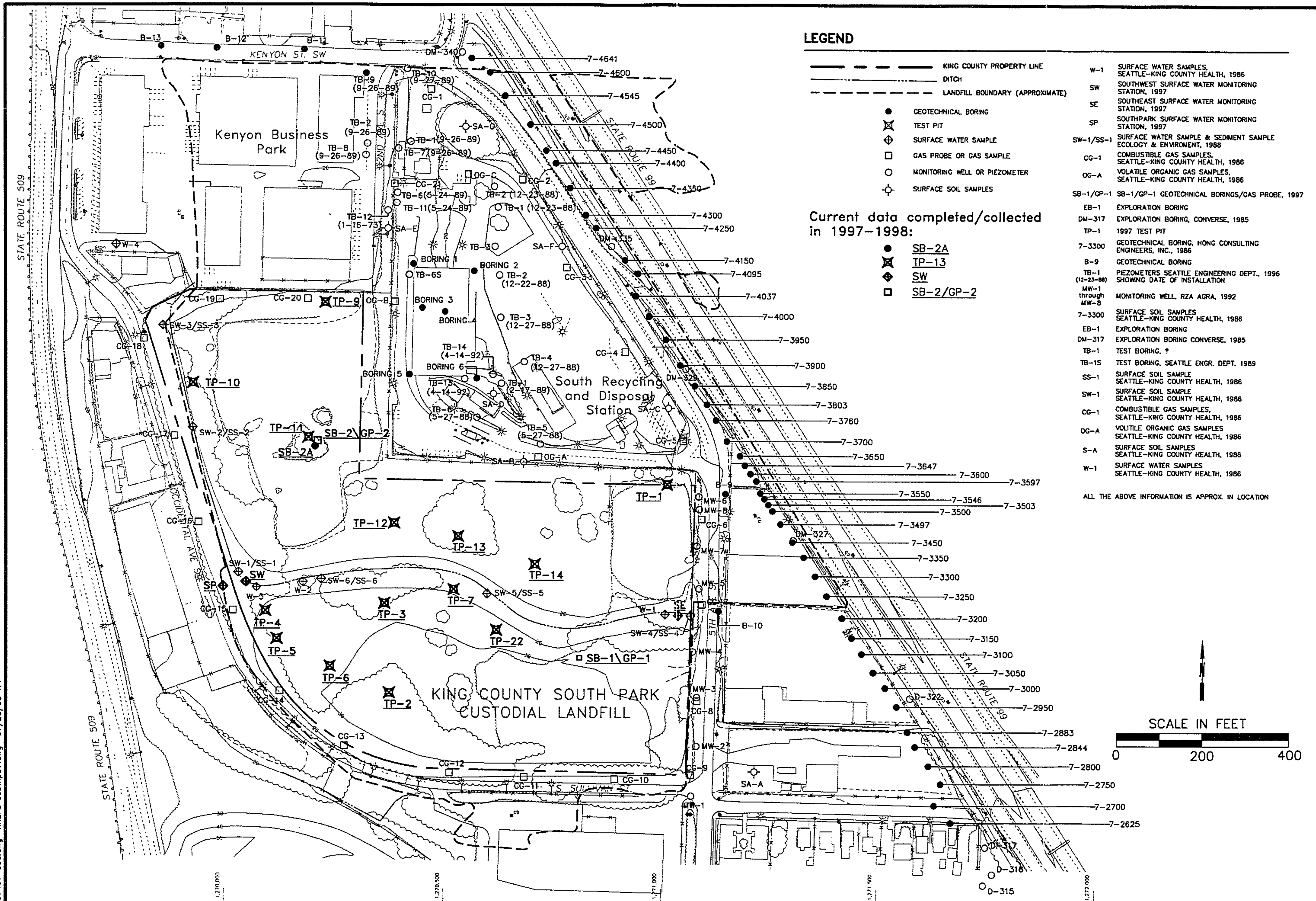
911 Fifth Avenue, Suite 100
Kirkland, Washington 98033
(425) 827-7701
FAX (425) 827-5424



REFERENCE: BASE MAP AND TOPOGRAPHY BY DEGROSS AERIAL MAPPING, 5/7/97

PROJECT NO. VB9741B

FIGURE NO. 2-1

Locations of Explorations and Samples

South Park Custodial Landfill
KING COUNTY, WASHINGTON

DATE: 07/28/98

DESIGNED/DWN: JS/BLB

ASSOCIATED EARTH SCIENCES, INC

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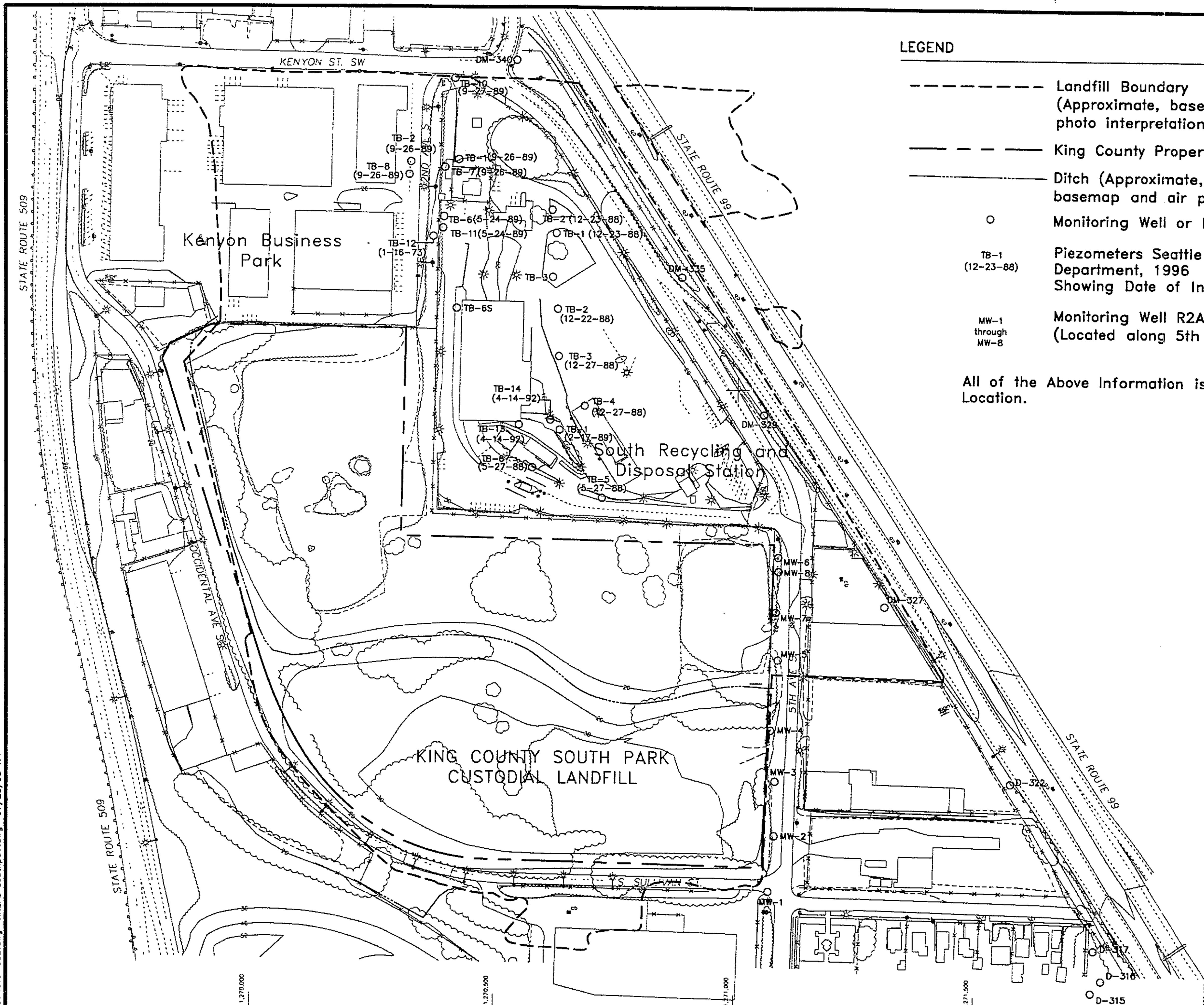

LEGEND

Landfill Boundary (Approximate, based on Air photo interpretation by others).

King County Property Line

Ditch (Approximate, based on basemap and air photo).

Monitoring Well or Piezometer

TB-1 (12-23-88) — Piezometers Seattle Engineering Department, 1996 Showing Date of Installation

MW-1 through MW-8 — Monitoring Well R2A AGRA, 1992 (Located along 5th Ave South)

All of the Above Information is Approximate in Location.

SCALE IN FEET

0 200 400

REFERENCE: BASE MAP AND TOPOGRAPHY BY DEGROSS AERIAL MAPPING, 5/7/97

Monitoring Well and Piezometer Location Map

South Park Custodial Landfill
KING COUNTY, WASHINGTON

PROJECT NO. VB9741B

FIGURE NO. 2-2

DATE: 07/28/98

DESIGNED/DWN: JJS/BLB

ASSOCIATED EARTH SCIENCES, INC

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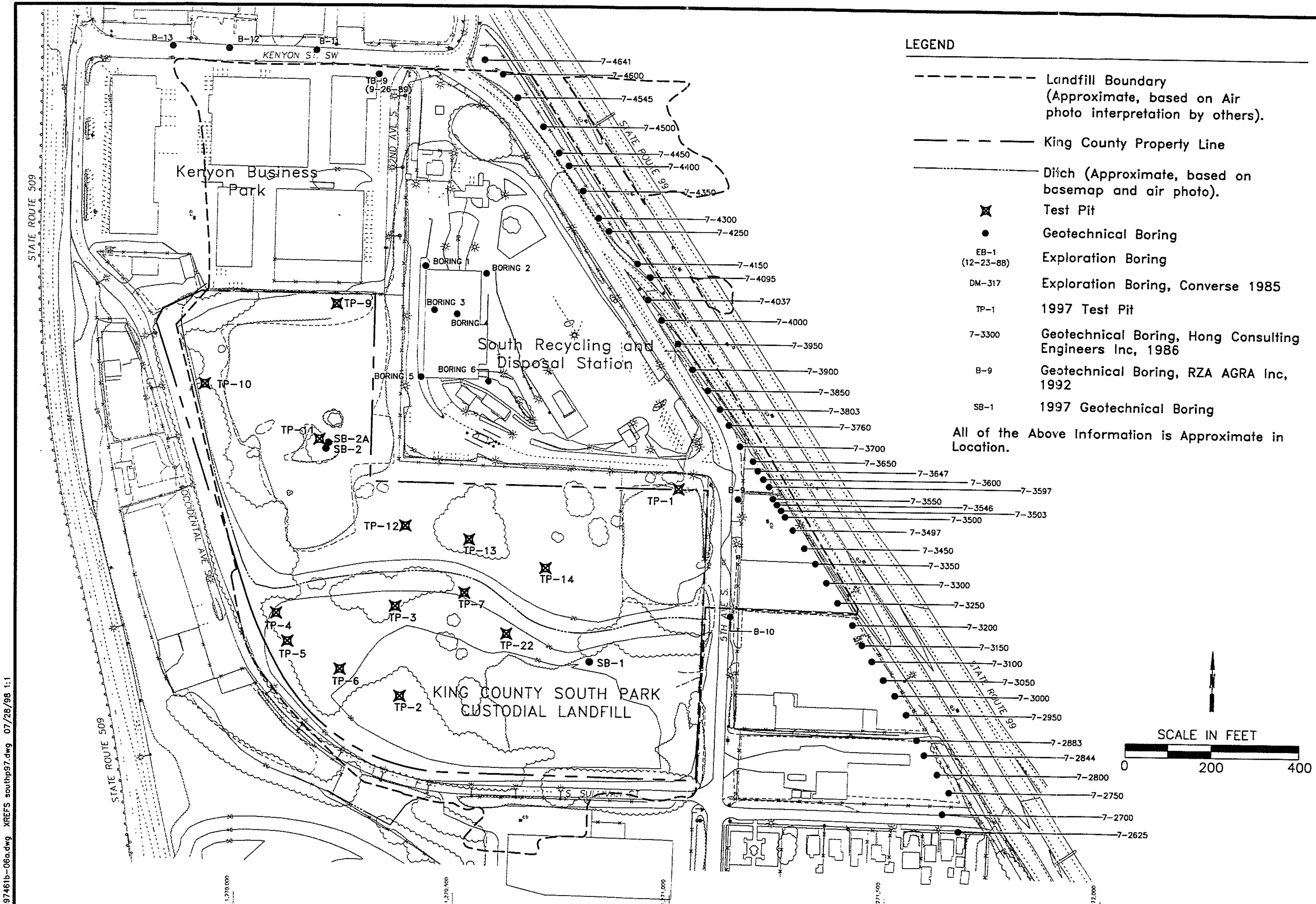

REFERENCE: BASE MAP AND TOPOGRAPHY BY DEGROSS AERIAL MAPPING, 5/7/97

PROJECT NO. VB9741B

FIGURE NO. 2-3

Geotechnical Borings and Test Pits

South Park Custodial Landfill
KING COUNTY, WASHINGTON

DATE: 07/28/98

DESIGNED/DWN: JJS/BLB

ASSOCIATED EARTH SCIENCES, INC

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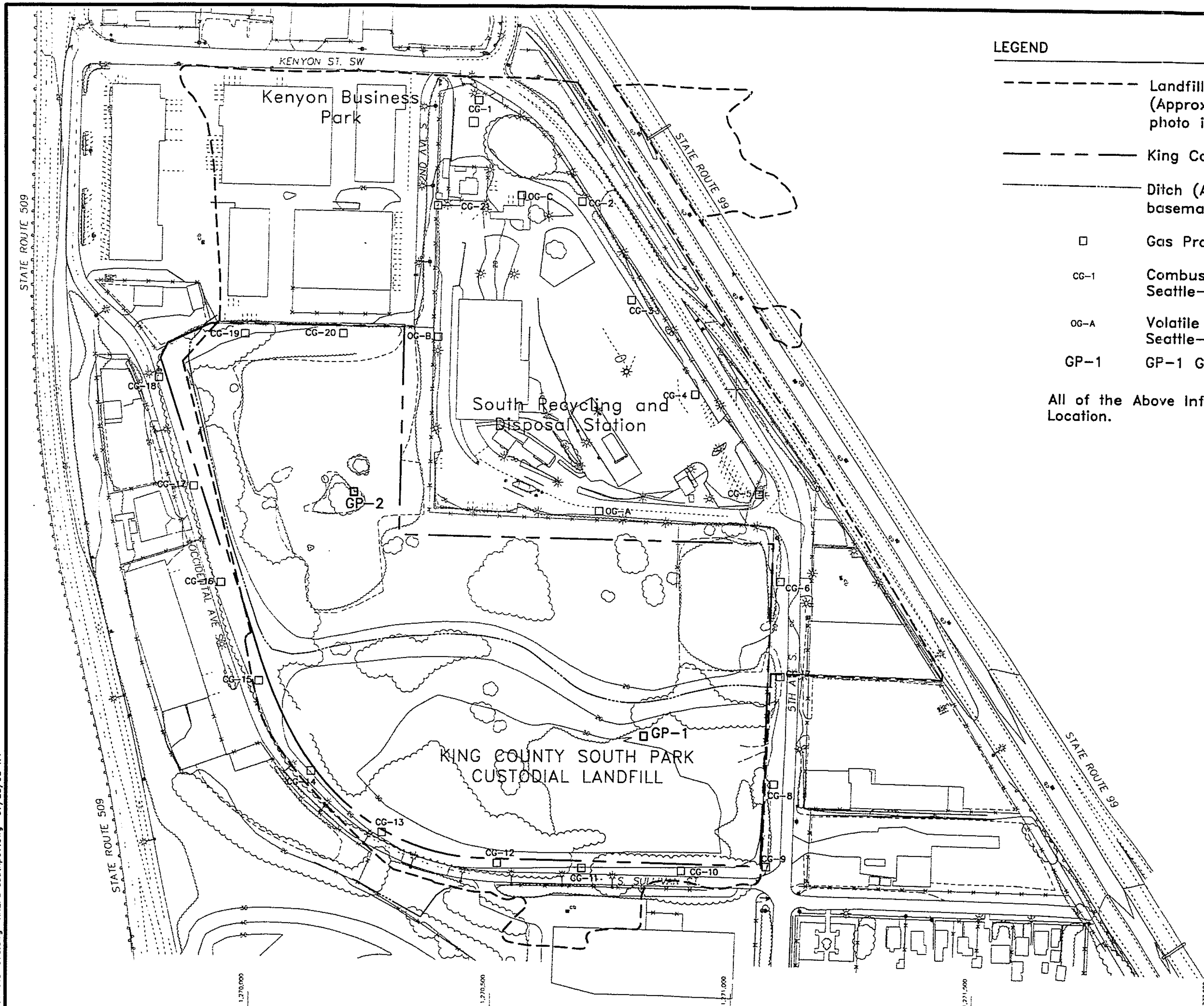

LEGEND

Landfill Boundary (Approximate, based on Air photo interpretation by others).

King County Property Line

Ditch (Approximate, based on basemap and air photo).

Gas Probe or Gas Sample

CG-1 Combustible Gas Samples. Seattle-King County Health, 1986.

OG-A Volatile Organic Gas Samples. Seattle-King County Health, 1986

GP-1 GP-1 Gas Probe, 1997

All of the Above Information is Approximate in Location.

REFERENCE: BASE MAP AND TOPOGRAPHY BY DEGROSS AERIAL MAPPING, 5/7/97

Gas Probe and Gas Sample Location Map

South Park Custodial Landfill
KING COUNTY, WASHINGTON

PROJECT NO. VB9741B

FIGURE NO.: 2-4

DATE: 07/28/98

DESIGNED/DRAWN: JJS/BLB

ASSOCIATED EARTH SCIENCES, INC

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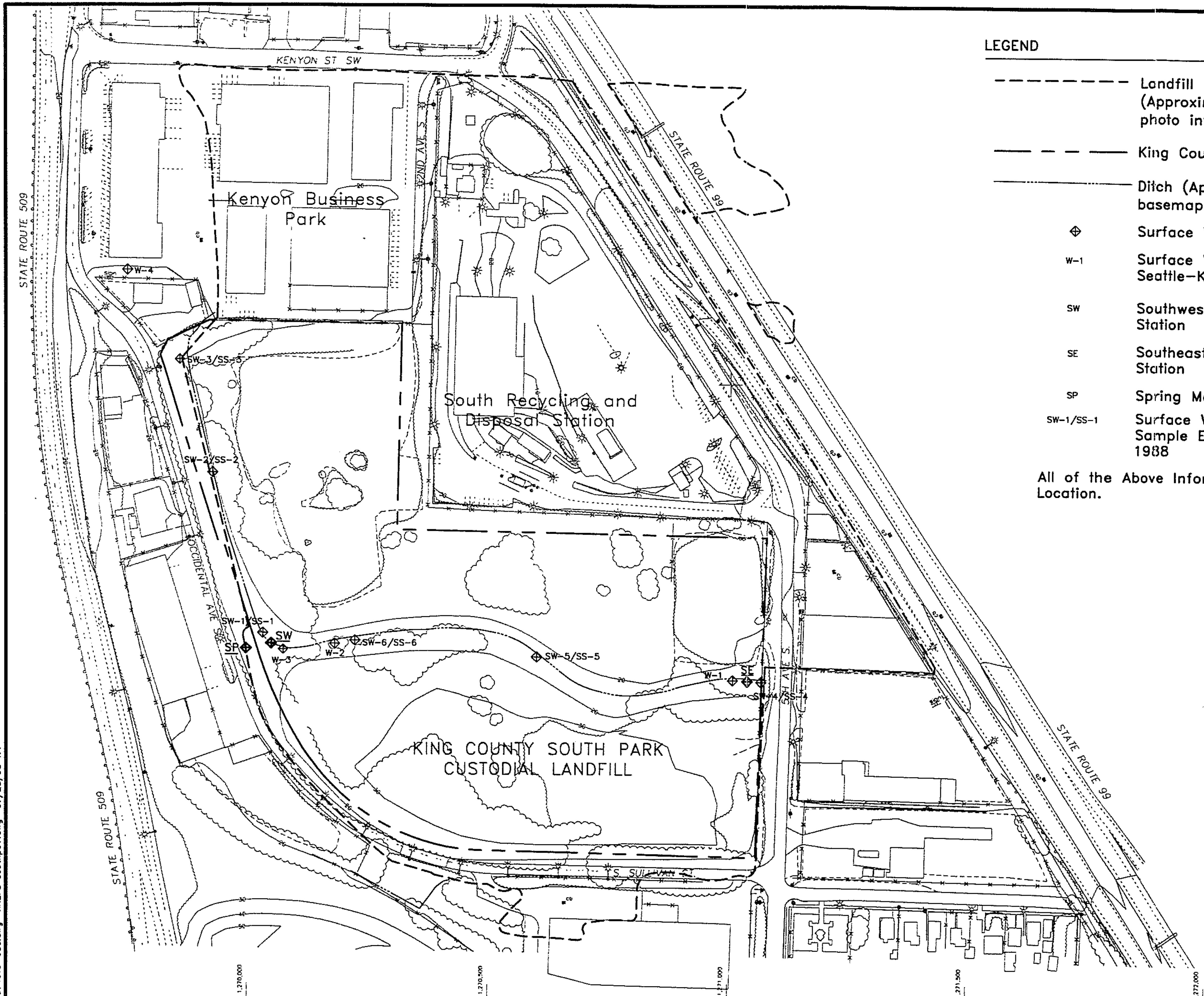

LEGEND

- Landfill Boundary (Approximate, based on Air photo interpretation by others)
- King County Property Line
- Ditch (Approximate, based on basemap and air photo).
- Surface Water Sample
- W-1 — Surface Water Samples Seattle-King County Health, 1986
- SW — Southwest Surface Water Monitoring Station
- SE — Southeast Surface Water Monitoring Station
- SP — Spring Monitoring Station
- SW-1/SS-1 — Surface Water Sample and Sediment Sample Ecology and Environment, 1988

All of the Above Information is Approximate in Location.

REFERENCE: BASE MAP AND TOPOGRAPHY BY DEGROSS AERIAL MAPPING, 5/7/97

Surface Water Sample Location Map
South Park Custodial Landfill
KING COUNTY, WASHINGTON

PROJECT NO. VB9741B
FIGURE NO.: 2-5
DATE: 07/28/98
DESIGNED/DWN: JJS/BLB

ASSOCIATED EARTH SCIENCES, INC

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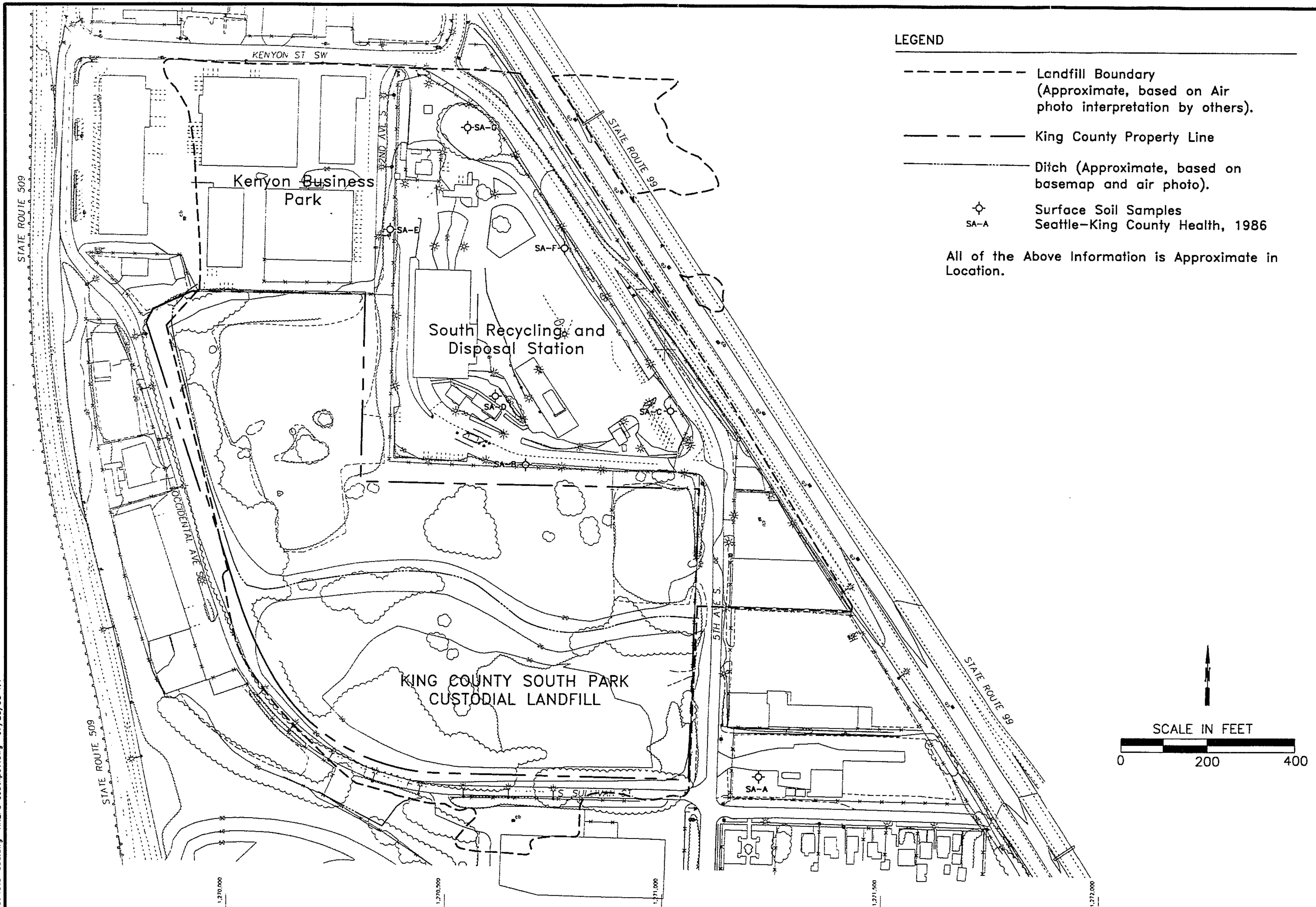

REFERENCE: BASE MAP AND TOPOGRAPHY BY DEGROSS AERIAL MAPPING, 5/7/97

Surface Soil Sample Location Map

South Park Custodial Landfill

KING COUNTY, WASHINGTON

ASSOCIATED EARTH SCIENCES, INC

DATE:	07/28/98
DESIGNED/DWN:	JJS/BLB
PROJECT NO.	VB9741B
FIGURE NO.:	2-6

vb97461b-09a.dwg XREFS southp97.dwg 07/28/98 1:1

King County Solid Waste Division

SOUTH PARK CUSTODIAL LANDFILL COVER SOILS INVESTIGATION

MARCH 22, 1999

prepared by:

ASSOCIATED EARTH SCIENCES, INC

In Association With:
Floyd & Snider Inc.
Udaloy Environmental Services

KING COUNTY
Department of Natural Resources

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179 Madrone Lane North
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ASSOCIATED EARTH SCIENCES, INC

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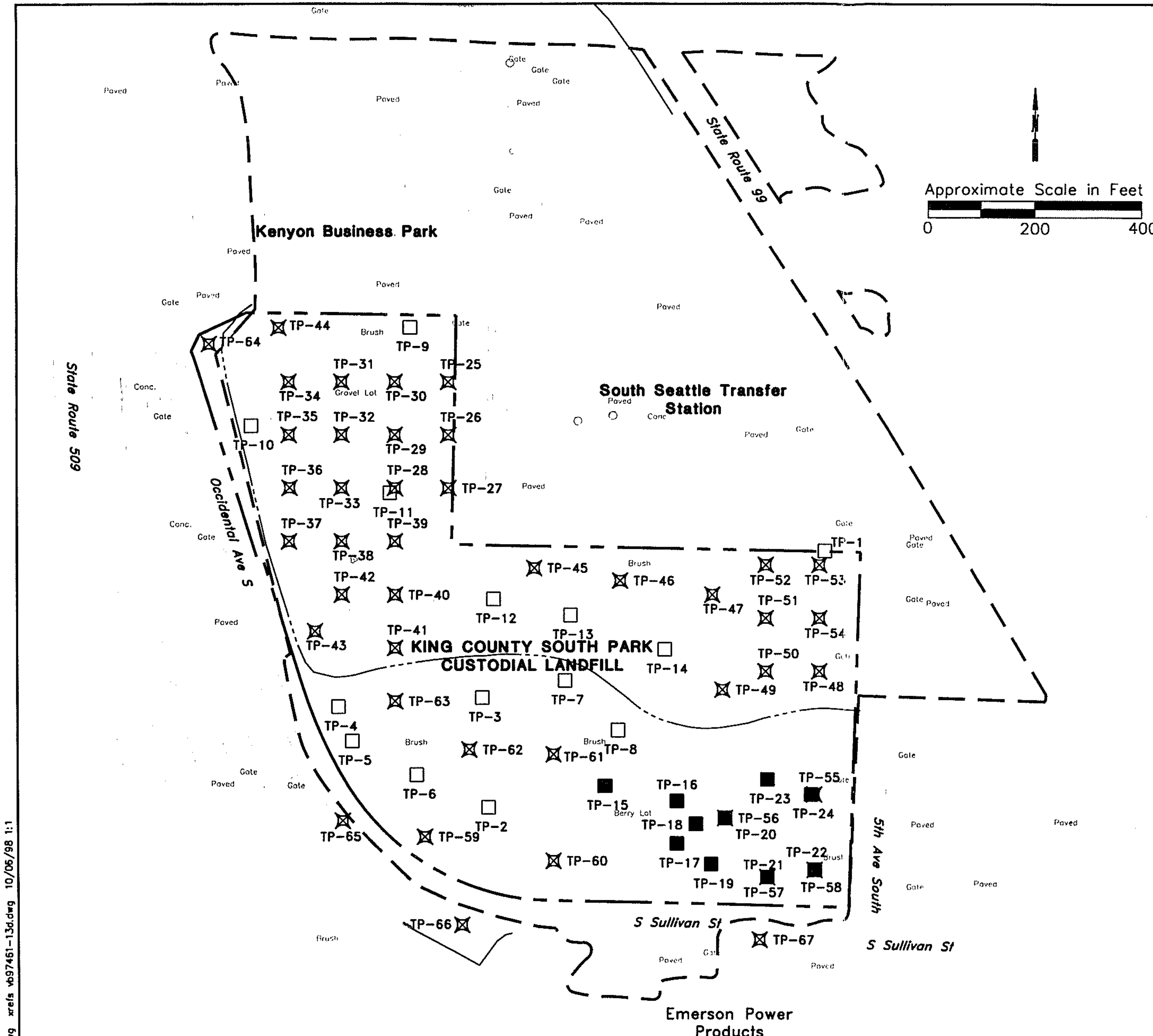
911 Fifth Avenue, Suite 100
Kirkland, Washington 98033
(206) 827-7701
FAX (206) 827-5424



LEGEND

Landfill Boundary (Approximate, based on Air photo interpretation and soil borings).

King County Property Line

Ditch (Approximate, based on basemap and air photo).

TP-14 Test Pits TP-1 thru TP-14 Completed by Udaloy Environmental Services, April 1997.

TP-24 Test Pits TP-15 thru TP-24 Completed by Olympus Environmental, October 1997.

TP-67 Test Pits TP-25 thru TP-67 Completed by Associated Earth Sciences, May/June 1998.

Test Pit Location

TP-1	N 196682	E 1271012	TP-44	N 197102	E 1269981
TP-2	N 196200	E 1270375	TP-45	N 196650	E 1270463
TP-3	N 196407	E 1270364	TP-46	N 196626	E 1270626
TP-4	N 169389	E 1270093	TP-47	N 196600	E 1270800
TP-5	N 196325	E 1270119	TP-48	N 196456	E 1271002
TP-6	N 196261	E 1270240	TP-49	N 196421	E 1270819
TP-7	N 196438	E 1270522	TP-50	N 196456	E 1270902
TP-8	N 196345	E 1270622	TP-51	N 196556	E 1270902
TP-9	N 197103	E 1270229	TP-52	N 196656	E 1270902
TP-10	N 196917	E 1269928	TP-53	N 196656	E 1271002
TP-11	N 196791	E 1270190	TP-54	N 196556	E 1271002
TP-12	N 196592	E 1270385	TP-55	N 196224	E 1270992
TP-13	N 196562	E 1270533	TP-56	N 196180	E 1270824
TP-14	N 196497	E 1270710	TP-57	N 196069	E 1270905
TP-15	N 196240	E 1270598	TP-58	N 196083	E 1270993
TP-16	N 196211	E 1270733	TP-59	N 196145	E 1270256
TP-17	N 196132	E 1270733	TP-60	N 196100	E 1270500
TP-18	N 169169	E 1270769	TP-61	N 196300	E 1270500
TP-19	N 196093	E 1270798	TP-62	N 196309	E 1270339
TP-20	N 196179	E 1270824	TP-63	N 196400	E 1270200
TP-21	N 196069	E 1270905	TP-64	N 197072	E 1269849
TP-22	N 196083	E 1270994	TP-65	N 196175	E 1270102
TP-23	N 196252	E 1270905	TP-66	N 195980	E 1270324
TP-24	N 196224	E 1270993	TP-67	N 195953	E 1270891
TP-25	N 197000	E 1270300			
TP-26	N 196900	E 1270300			
TP-27	N 196800	E 1270300			
TP-28	N 196800	E 1270200			
TP-29	N 196900	E 1270200			
TP-30	N 197000	E 1270200			
TP-31	N 197000	E 1270100			
TP-32	N 196900	E 1270100			
TP-33	N 196800	E 1270100			
TP-34	N 197000	E 1270000			
TP-35	N 196900	E 1270000			
TP-36	N 196801	E 1270002			
TP-37	N 196700	E 1270000			
TP-38	N 196700	E 1270100			
TP-39	N 196700	E 1270200			
TP-40	N 196600	E 1270200			
TP-41	N 196500	E 1270200			
TP-42	N 196600	E 1270100			
TP-43	N 196531	E 1270049			

REFERENCE: BASE MAP AND TOPOGRAPHY BY DEGROSS AERIAL MAPPING, 5/7/97

PROJECT NO. VB9741B

FIGURE NO. 2.1

Test Pit Location Map

South Park Custodial Landfill

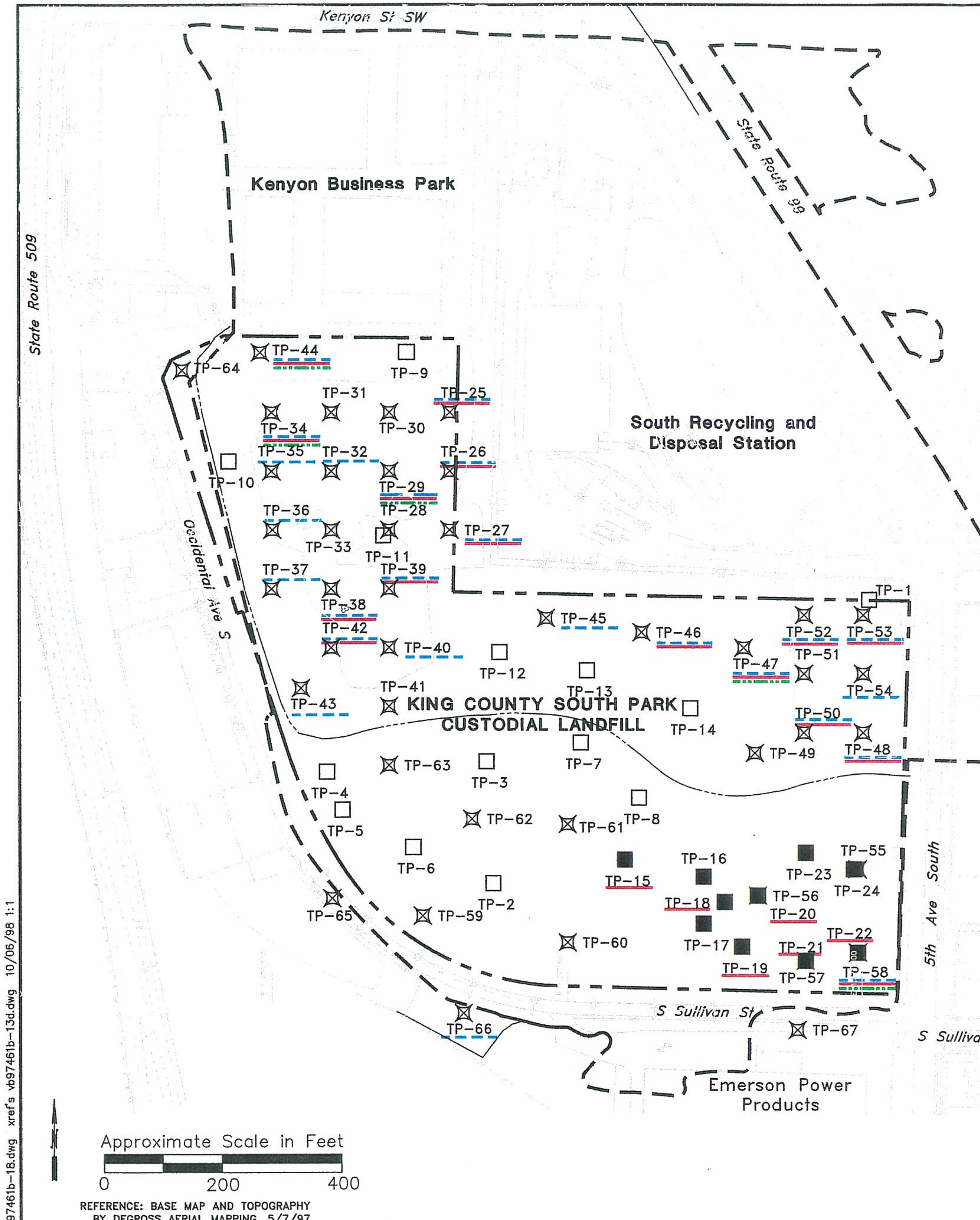
KING COUNTY, WASHINGTON

DATE: 10/06/98

DESIGNED/DWN: JJS/BLB

ASSOCIATED EARTH SCIENCES, INC

vb97461-13c.dwg xrefs vb97461-13d.dwg 10/06/98 1:1



TPH SUMMARY

TPH detected by NWTPH – HCID and submitted for Quantitative analysis by NWTPH –DX

NWTPH–DX elevated above MTCA Method A Industrial Cleanup Level of 200 ppm for diesel and other heavy oil

Extractable Petroleum Hydrocarbon (EPH) Analysis performed

LEGEND

Landfill Boundary (Approximate, based on Air photo interpretation and soil borings).

King County Property Line

Ditch (Approximate, based on basemap and air photo).

TP-14 Test Pits TP-1 thru TP-14 Completed by Udaloy Environmental Services, April 1997.

TP-24 Test Pits TP-15 thru TP-24 Completed by Olympus Environmental, October 1997.

TP-67 Test Pits TP-25 thru TP-67 Completed by Associated Earth Sciences, May/June 1998.

Soil Samples Collected By Olympus Environmental October 1997

TEST PIT ID	WTPH-Gasoline	WTPH-Diesel	TPH (Other by 418.1)
TP-15 (TP -1)	<2.2	23	240
TP-16 (TP-2)	<2.1	17	81
TP-17 (TP-3)	<2.3	19	110
TP-18 (TP-4)	<2.2	54	310
TP-19 (TP-5)	<2.2	29	220
TP-20 (TP-6)	<2.5	45	270
TP-21 (TP-7)	<2.2	73	770
TP-22 (TP-8)	<2.5	1100	5200
TP-23 (TP-9)	<2.2	34	150
TP-24 (TP-10)	<2.3	53	180

Soil Samples Collected By Associated Earth Sciences, Inc. May/June 1998

TEST PIT ID	DATE	SAMPLE ID	Gx Range Hydrocarbons <C10 (NWTPH-Dx)	Diesel (NWTPH Dx)	Kerosene (NWTPH Dx)	Heavy Fuel Oil Range Hydrocarbons (NWTPH Dx)	Insulating Oil Range Hydrocarbons (NWTPH Dx)	Lube Oil Range Hydrocarbons (NWTPH Dx)
DS-25-1	5/26/98	DS25985261	<10 U	<10 U	<10 U	<25 U	<25 U	191
DS-25-2	5/26/98	DS25985262	<10 U	<10 U	<10 U	<25 U	<25 U	356
DS-26-1	5/26/98	DS26985261	<10 U	<10 U	<10 U	<25 U	<25 U	228
DS-27-1	5/26/98	DS27985261	<50 U	<50 U	<50 U	<125 U	<125 U	371
DS-29-1	5/26/98	DS29985261	<50 U	367	<50 U	<125 U	<125 U	968
DS-32-1	5/26/98	DS32985261	<10 U	<10 U	<10 U	<25 U	<25 U	145
DS-34-1	5/27/98	DS34985271	<50 U	<50 U	<50 U	<125 U	<125 U	546
DS-34-2	5/27/98	DS34985272	<50 U	<50 U	<50 U	<125 U	<125 U	857
DS-34-3	5/27/98	DS34985273	<50 U	1960	<50 U	<125 U	<125 U	5680
DS-35-1	5/27/98	DS35985271	<10 U	<10 U	<10 U	<25 U	<25 U	37.1
DS-35-2	5/27/98	DS35985272	<10 U	<10 U	<10 U	<25 U	<25 U	152
DS-36-1	5/27/98	DS36985271	<10 U	86.9	<10 U	<25 U	<25 U	185
DS-37-2	5/27/98	DS37985272	<10 U	<10 U	<10 U	<25 U	<25 U	123
DS-38-1	5/27/98	DS38985271	<50 U	<50 U	<50 U	<125 U	<125 U	720
DS-38-2	5/27/98	DD38985272	<50 U	<50 U	<50 U	<125 U	<125 U	521
DS-38-2	5/27/98	DS38985272	<10 U	32.1	<10 U	<25 U	<25 U	228
DS-39-1	5/27/98	DS39985271	<50 U	<50 U	<50 U	<125 U	<125 U	558
DS-40-1	5/27/98	DS40985271	<10 U	<10 U	<10 U	<25 U	<25 U	158
DS-42-1	5/28/98	DS42985281	<50 U	<50 U	<50 U	<125 U	<125 U	536
DS-43-2	5/28/98	DS43985282	<10 U	<10 U	<10 U	<25 U	<25 U	44.2
DS-44-1	5/28/98	DS44985281	<50 U	<50 U	<50 U	<125 U	<125 U	696
DS-44-2	5/28/98	DD44985282	<50 U	<50 U	<50 U	<125 U	<125 U	1320
DS-44-2	5/28/98	DS44985282	<110 U	<110 U	<110 U	<275 U	<275 U	2350
DS-45-1	5/28/98	DS45985281	<10 U	<10 U	<10 U	<25 U	<25 U	313
DS-46-1	5/28/98	DS46985281	<50 U	<50 U	<50 U	<125 U	<125 U	437
DS-47-1	5/28/98	DD47985281	<10 U	405	<10 U	<25 U	<25 U	563
DS-47-1	5/28/98	DS47985281	<10 U	194	<10 U	<25 U	<25 U	277
DS-47-2	5/28/98	DS47985282	<210 U	<210 U	<210 U	<525 U	<525 U	5940
DS-48-1	5/28/98	DS48985281	<50 U	<50 U	<50 U	<125 U	<125 U	435
DS-50-1	5/29/98	DD50985291	<10 U	<10 U	<10 U	<25 U	<25 U	290
DS-50-1	5/29/98	DS50985291	<10 U	<10 U	<10 U	<25 U	<25 U	352
DS-50-2	5/29/98	DS50985292	<10 U	<10 U	<10 U	<25 U	<25 U	134
DS-52-1	5/29/98	DS52985291	<50 U	<50 U	<50 U	<125 U	<125 U	272
DS-53-1	5/29/98	DS53985291	<10 U	<10 U	<10 U	<25 U	<25 U	235
DS-54-1	5/29/98	DS54985291	<10 U	<10 U	<10 U	<25 U	<25 U	143
DS-58-2	6/1/98	DS58986012		2580				130
DS-66-1	5/29/98	DS66985291	<10 U	<10 U	<10 U	<25 U	<25 U	84.6

PROJECT NO. VB974IB

FIGURE NO. 4.1

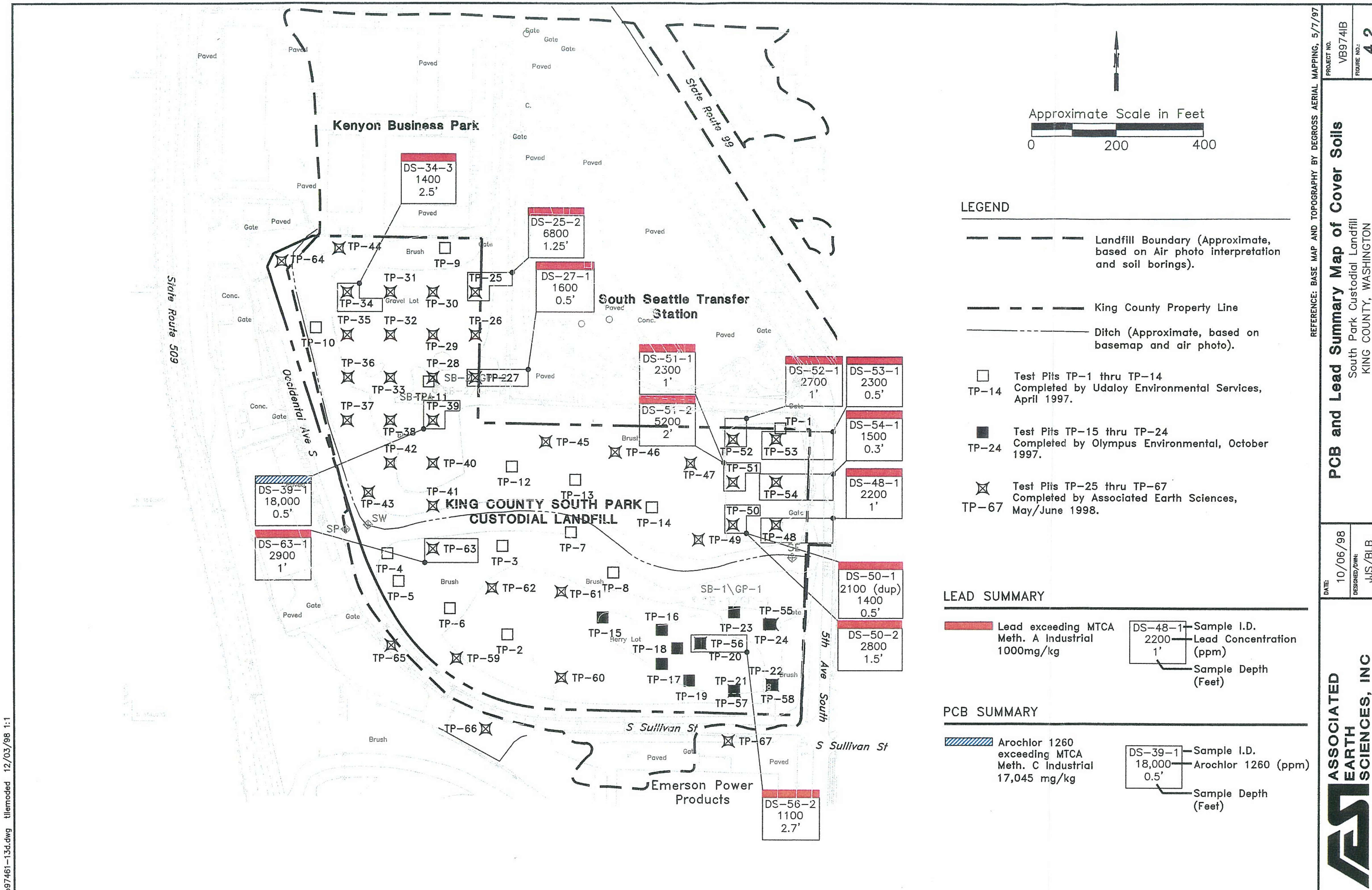
TPH Summary Map of Cover Soils

South Park Custodial Landfill
KING COUNTY, WASHINGTON

DATE: 10/06/98

DESIGNED/DWN: JUS/BLB

ASSOCIATED EARTH SCIENCES, INC



PCB and Lead Summary Map of Cover Soils
South Park Custodial Landfill
KING COUNTY, WASHINGTON
REFERENCE: BASE MAP AND TOPOGRAPHY BY DEGROSS AERIAL MAPPING, 5/7/97
PROJECT NO. VB9741B
FIGURE NO. 4.2
DATE: 10/06/98
DESIGNED/DWN: JJS/BLB
ASSOCIATED EARTH SCIENCES, INC
Approximate Scale in Feet
0
200
400
LEGEND
Landfill Boundary (Approximate, based on Air photo interpretation and soil borings).
King County Property Line
Ditch (Approximate, based on basemap and air photo).
TP-14 Test Pits TP-1 thru TP-14 Completed by Udaloy Environmental Services, April 1997.
TP-24 Test Pits TP-15 thru TP-24 Completed by Olympus Environmental, October 1997.
TP-67 Test Pits TP-25 thru TP-67 Completed by Associated Earth Sciences, May/June 1998.
LEAD SUMMARY
Lead exceeding MTCA Meth. A Industrial 1000mg/kg
DS-48-1 2200 1' — Sample I.D. — Lead Concentration (ppm) — Sample Depth (Feet)
PCB SUMMARY
Arochlor 1260 exceeding MTCA Meth. C Industrial 17,045 mg/kg
DS-39-1 18,000 0.5' — Sample I.D. — Arochlor 1260 (ppm) — Sample Depth (Feet)
Kenyon Business Park
South Seattle Transfer Station
KING COUNTY SOUTH PARK CUSTODIAL LANDFILL
Emerson Power Products
State Route 509
State Route 99
Occidental Ave S
5th Ave South
S Sullivan St
DS-34-3 1400 2.5'
DS-25-2 6800 1.25'
DS-27-1 1600 0.5'
DS-51-1 2300 1'
DS-51-2 5200 2'
DS-52-1 2700 1'
DS-53-1 2300 0.5'
DS-54-1 1500 0.3'
DS-48-1 2200 1'
DS-50-1 2100 (dup) 1400 0.5'
DS-50-2 2800 1.5'
DS-56-2 1100 2.7'
DS-39-1 18,000 0.5'
DS-63-1 2900 1'
TP-1 TP-2 TP-3 TP-4 TP-5 TP-6 TP-7 TP-8 TP-9 TP-10 TP-12 TP-13 TP-14
TP-15 TP-16 TP-17 TP-18 TP-19 TP-20 TP-21 TP-22 TP-23 TP-24
TP-25 TP-26 TP-27 TP-28 TP-29 TP-30 TP-31 TP-32 TP-33 TP-34 TP-35 TP-36 TP-37 TP-38 TP-39 TP-40 TP-41 TP-42 TP-43 TP-44 TP-45 TP-46 TP-47 TP-48 TP-49 TP-50 TP-51 TP-52 TP-53 TP-54 TP-55 TP-56 TP-57 TP-58 TP-59 TP-60 TP-61 TP-62 TP-63 TP-64 TP-65 TP-66 TP-67
SB-TP-11
SB-1\GP-1
SW
SP
Paved
Gate
Brush
Conc.
Gravel Lot
Ferry Lot
vb97461-13d.dwg tilemoded 12/03/98 1:1

KING COUNTY
Department of Natural Resources

SOUTH PARK CUSTODIAL LANDFILL MONITORING WELL AND GAS PROBE INSTALLATION TECHNICAL MEMORANDUM

AUGUST 15, 2000

prepared by:

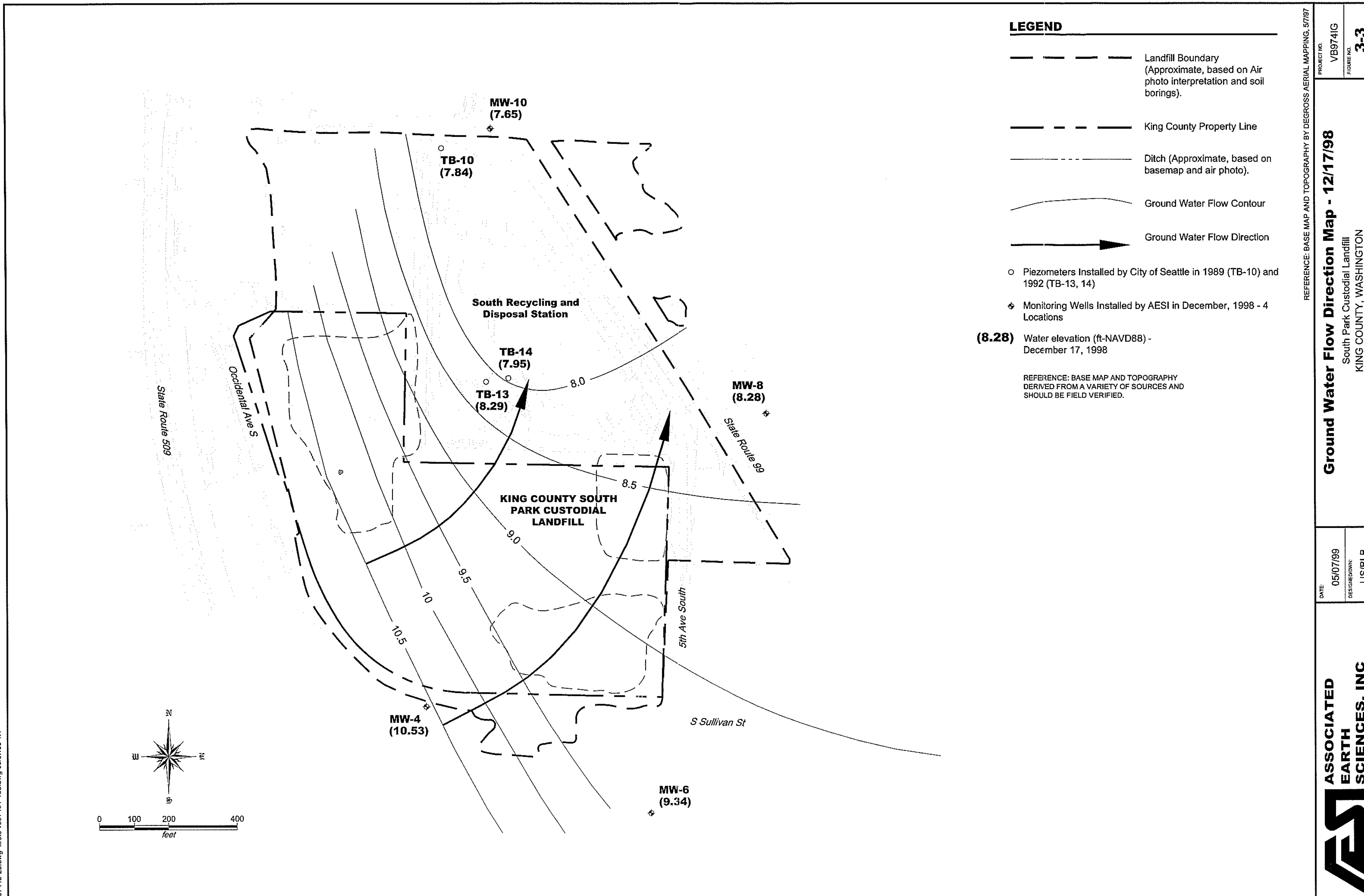
ASSOCIATED EARTH SCIENCES, INC

King County Solid Waste Division

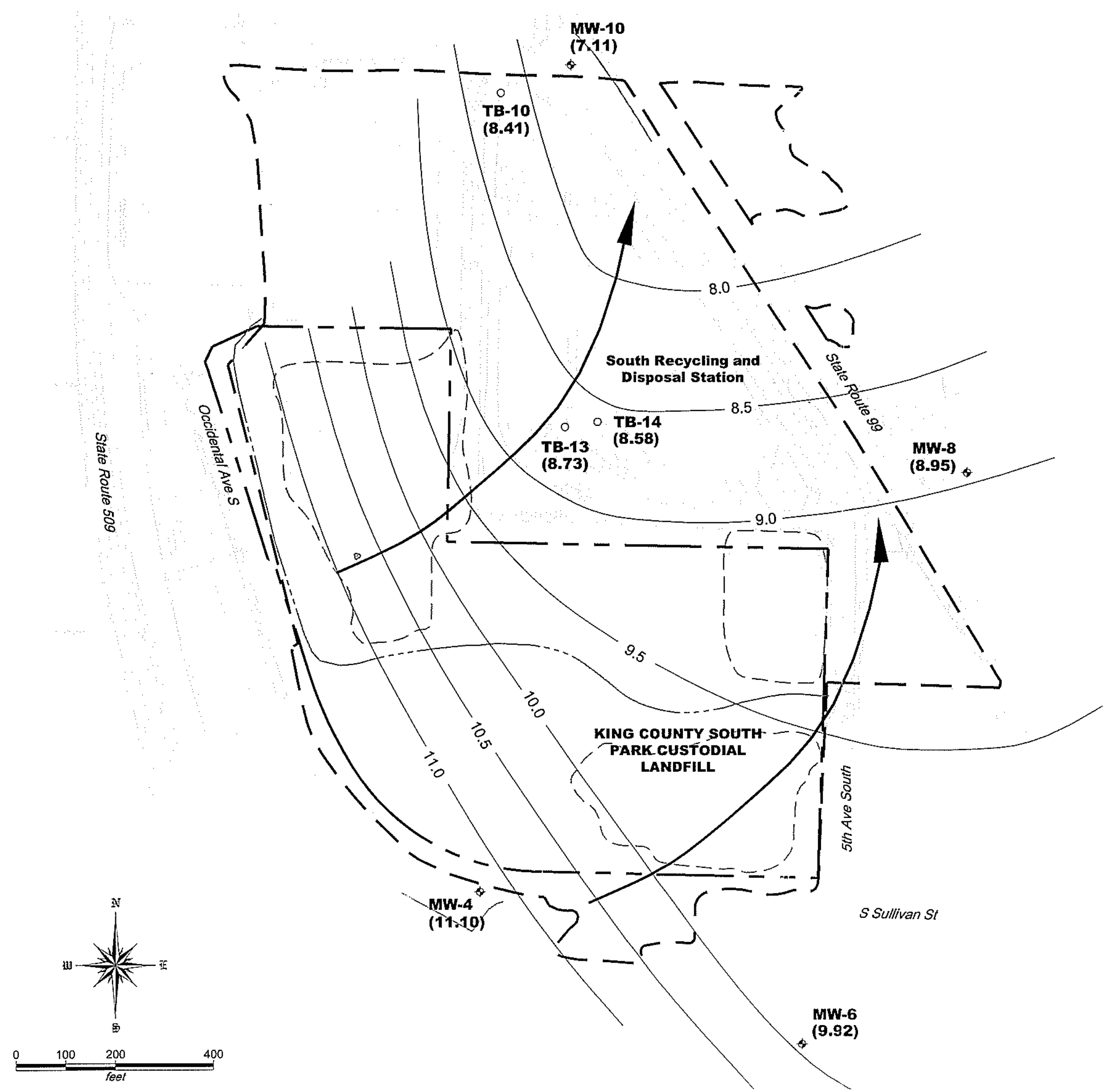
BAINBRIDGE ISLAND OFFICE
179 Madrone Lane North
Bainbridge Island, WA 98110
(206) 780-9370
FAX (206) 780-9438

ASSOCIATED EARTH SCIENCES, INC

CORPORATE OFFICE
911 Fifth Avenue, Suite 100
Kirkland, Washington 98033
(425) 827-7701
FAX (425) 827-5424



LEGEND
Landfill Boundary (Approximate, based on Air photo interpretation and soil borings).
King County Property Line
Ditch (Approximate, based on basemap and air photo).
Ground Water Flow Contour
Ground Water Flow Direction
Piezometers Installed by City of Seattle in 1989 (TB-10) and 1992 (TB-13, 14)
Monitoring Wells Installed by AESI in December, 1998 - 4 Locations
(8.28) Water elevation (ft-NAVD88) - December 17, 1998
REFERENCE: BASE MAP AND TOPOGRAPHY DERIVED FROM A VARIETY OF SOURCES AND SHOULD BE FIELD VERIFIED.
MW-10 (7.65)
TB-10 (7.84)
South Recycling and Disposal Station
TB-14 (7.95)
TB-13 (8.29)
MW-8 (8.28)
8.0
8.5
9.0
9.5
10
10.5
KING COUNTY SOUTH PARK CUSTODIAL LANDFILL
State Route 509
Occidental Ave S
State Route 99
5th Ave South
S Sullivan St
MW-4 (10.53)
MW-6 (9.34)
N
E
S
W
0
100
200
400
feet
REFERENCE: BASE MAP AND TOPOGRAPHY BY DEGROSS AERIAL MAPPING, 5/7/97
Ground Water Flow Direction Map - 12/17/98
South Park Custodial Landfill
KING COUNTY, WASHINGTON
PROJECT NO. VB9741G
FIGURE NO. 3-3
DATE: 05/07/99
DESIGNED/DWN: JJS/BLB
ASSOCIATED EARTH SCIENCES, INC
vb9741b-26.dwg xrefs vb97461-13d.dwg 05/07/99 1:1



LEGEND

Landfill Boundary (Approximate, based on Air photo interpretation and soil borings).

King County Property Line

Ditch (Approximate, based on basemap and air photo).

Ground Water Flow Contour

Ground Water Flow Direction

○ Piezometers Installed by City of Seattle in 1989: TB-10 and 1992: TB-13, 14

◈ Monitoring Wells Installed by AESI December, 1998 - 4 Locations

(8.58) Water Elevation (ft-NAVD88) taken on January 22, 1999

REFERENCE: BASE MAP AND TOPOGRAPHY DERIVED FROM A VARIETY OF SOURCES AND SHOULD BE FIELD VERIFIED.

REFERENCE: BASE MAP AND TOPOGRAPHY BY DEGROSS AERIAL MAPPING, 5/7/97

Ground Water Flow Direction Map - 1/22/99

South Park Custodial Landfill
KING COUNTY, WASHINGTON

PROJECT NO. VB9741G

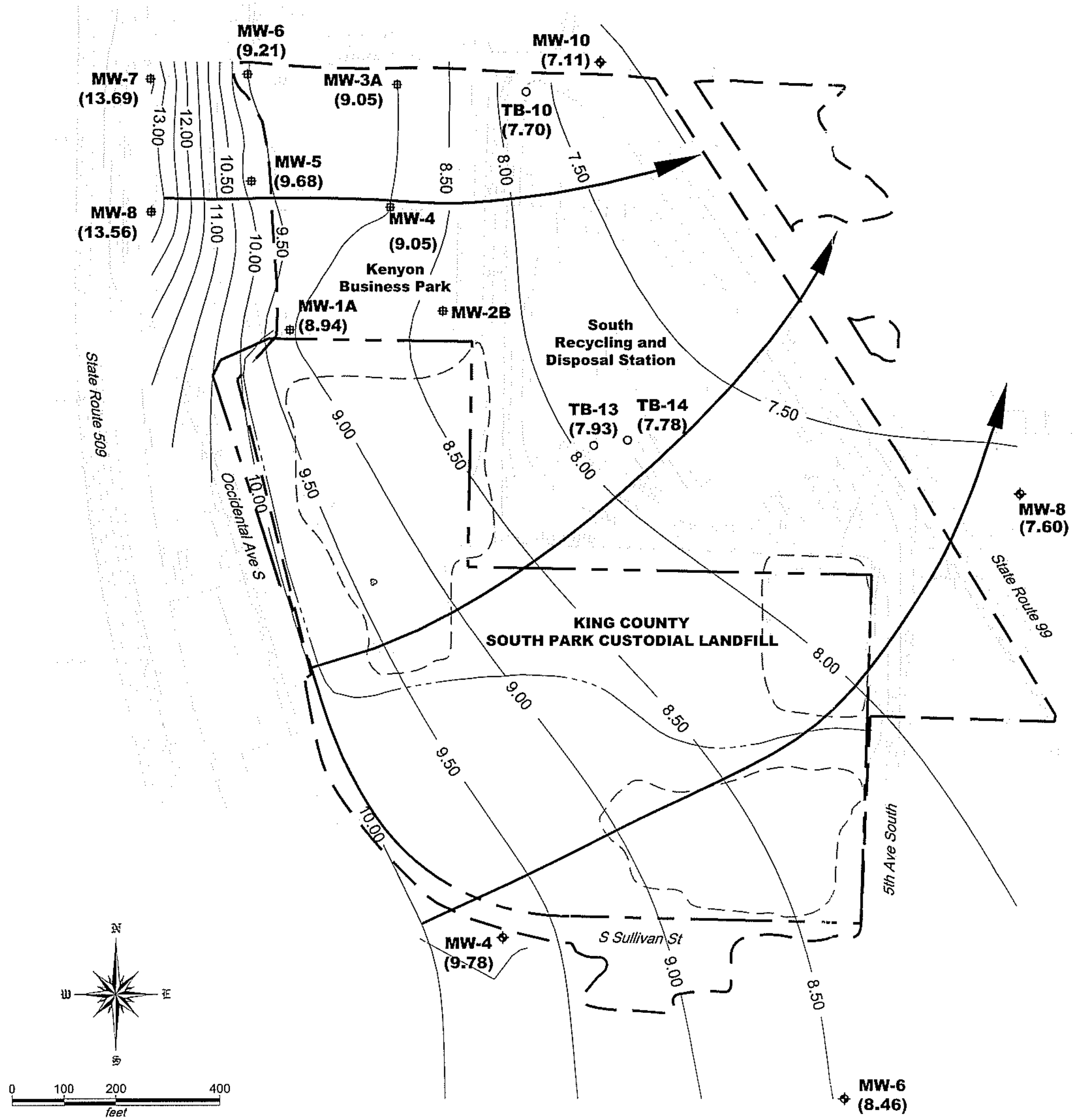
FIGURE NO. 3-4

DATE: 05/07/99

DESIGNED/DWN: JJS/BLB

ASSOCIATED EARTH SCIENCES, INC

vb9741b-27.dwg xrefs vb97461-13d.dwg 05/07/99 1:1



LEGEND

Landfill Boundary (Approximate, based on Air photo interpretation and soil borings).

King County Property Line

Ditch (Approximate, based on basemap and air photo).

Ground Water Elevation Contours

Ground Water Flow Direction

Piezometers Installed by City of Seattle in 1989 (TB-10) and 1992 (TB-13, 14)

Monitoring Wells Installed by AESI in December 1998 - 4 Locations

Monitoring Wells Installed in Kenyon Business Park - 8 Locations

(7.60) Ground Water Elevation (ft-NAVD88) taken on April 20, 1999

REFERENCE: BASE MAP AND TOPOGRAPHY DERIVED FROM A VARIETY OF SOURCES AND SHOULD BE FIELD VERIFIED.

REFERENCE: BASE MAP AND TOPOGRAPHY BY DEGROSS AERIAL MAPPING, 5/7/97

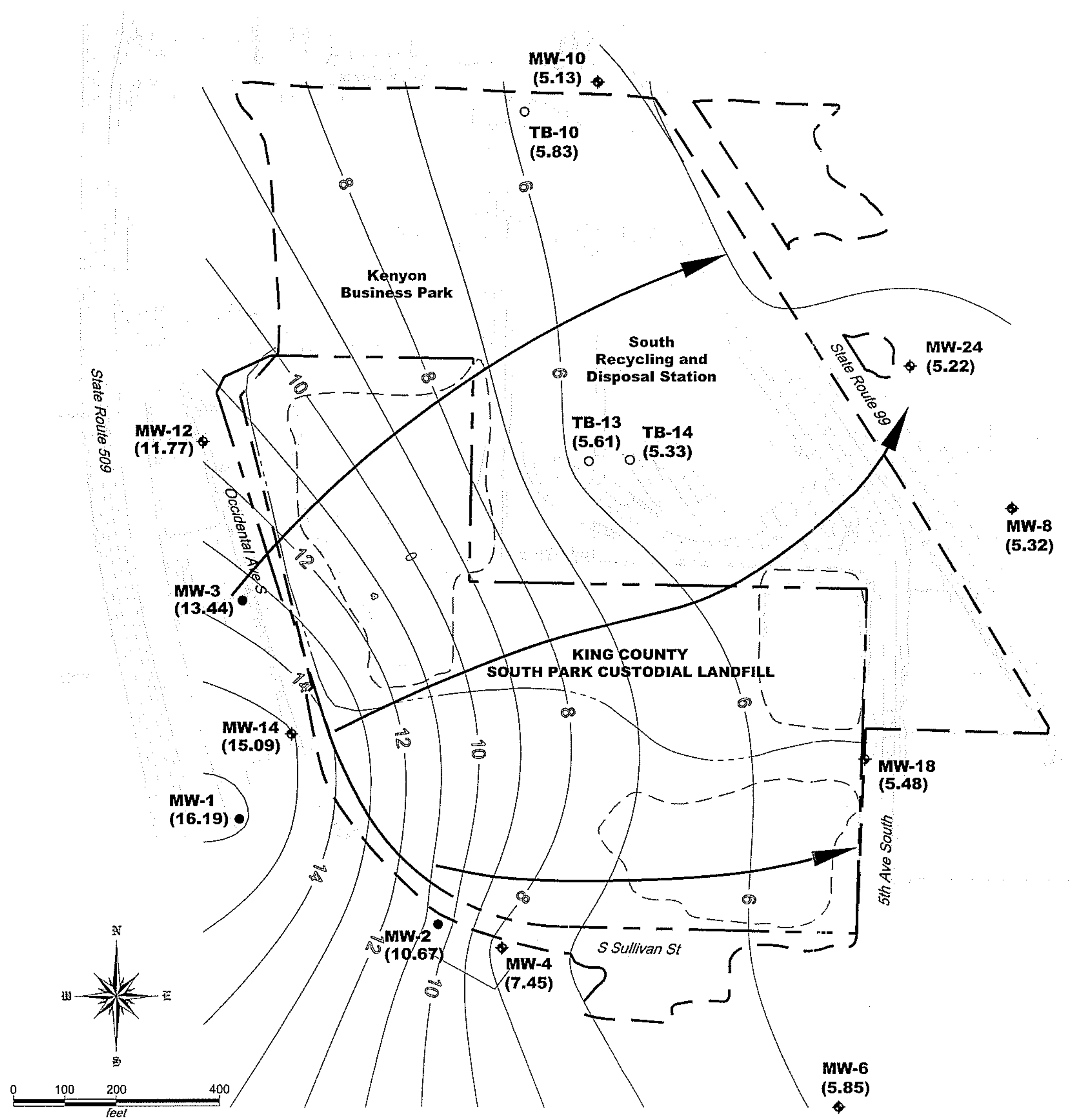
Ground Water Flow Direction Map - 4/20/99

South Park Custodial Landfill
KING COUNTY, WASHINGTON

PROJECT NO. VB9741G
FIGURE NO. 3-5
DATE: 05/07/99
DESIGNED/DRAWN: JJS/BLB

ASSOCIATED EARTH SCIENCES, INC

vb9741b-31.dwg xrefs vb97461-13d.dwg 05/07/99 1:1



LEGEND

Landfill Boundary (Approximate, based on Air photo interpretation and soil borings).

King County Property Line

Ditch (Approximate, based on basemap and air photo).

Ground Water Elevation Contours

Ground Water Flow Direction

● Monitoring Wells Installed by GeoEngineers in October 1991

○ Piezometers Installed by City of Seattle in 1989 (TB-10) and 1992 (TB-13, 14)

Monitoring Wells Installed by AESI in December 1998 & September 1999

(5.32) Ground Water Elevation (ft-NAVD88) taken on October 14, 1999

1 foot contour intervals

REFERENCE: BASE MAP AND TOPOGRAPHY DERIVED FROM A VARIETY OF SOURCES AND SHOULD BE FIELD VERIFIED.

REFERENCE: BASE MAP AND TOPOGRAPHY BY DEGROSS AERIAL MAPPING, 5/7/97

PROJECT NO. VB9741G

FIGURE NO. **3-6**

Ground Water Flow Direction Map - 10/14/99

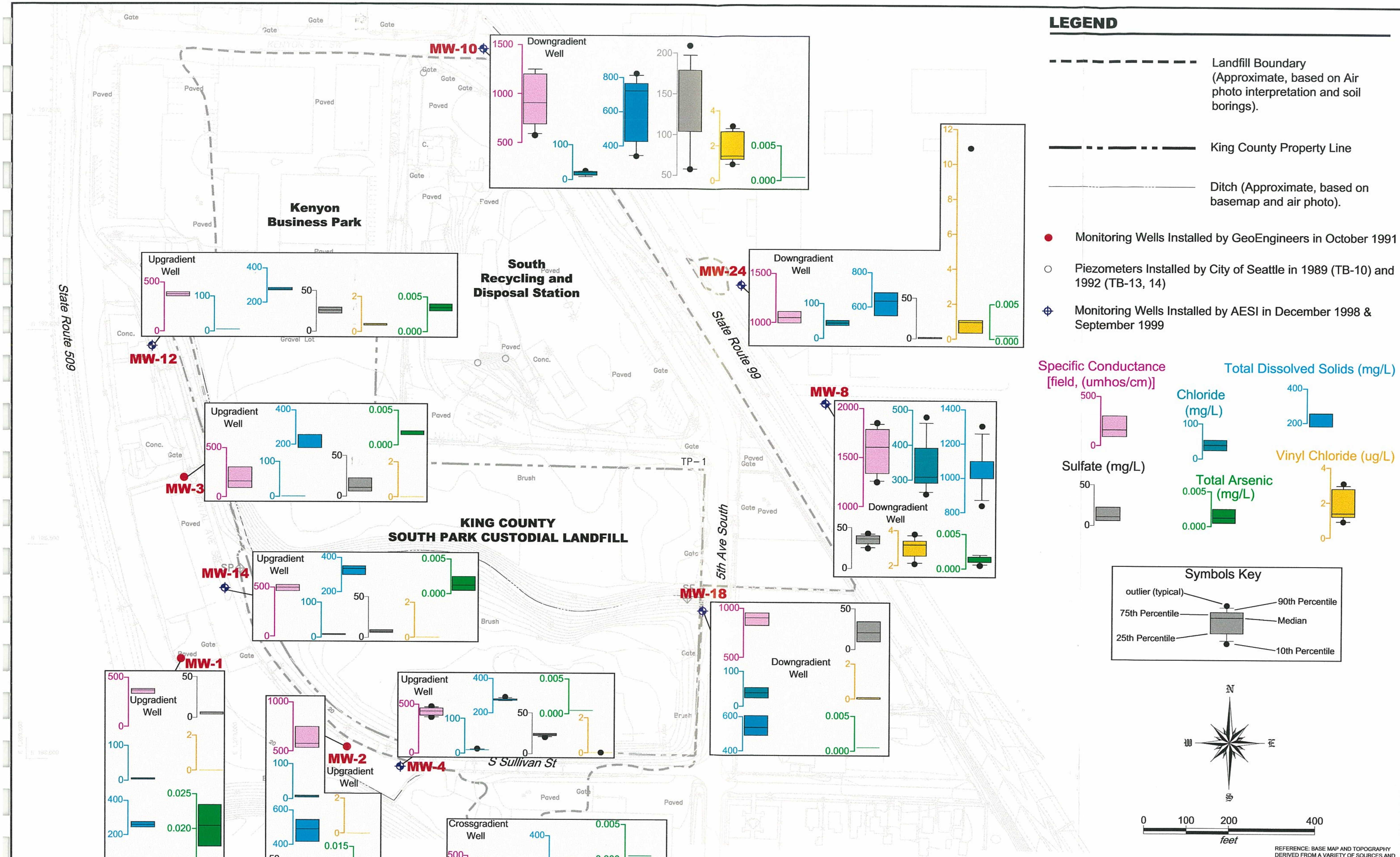
South Park Custodial Landfill
KING COUNTY, WASHINGTON

DATE: 10/21/99

DESIGNED/DWN: JJS/HXT

ASSOCIATED EARTH SCIENCES, INC

vb9741b-34.dwg xrefs vb97461-13d.dwg 10/21/99 1:1

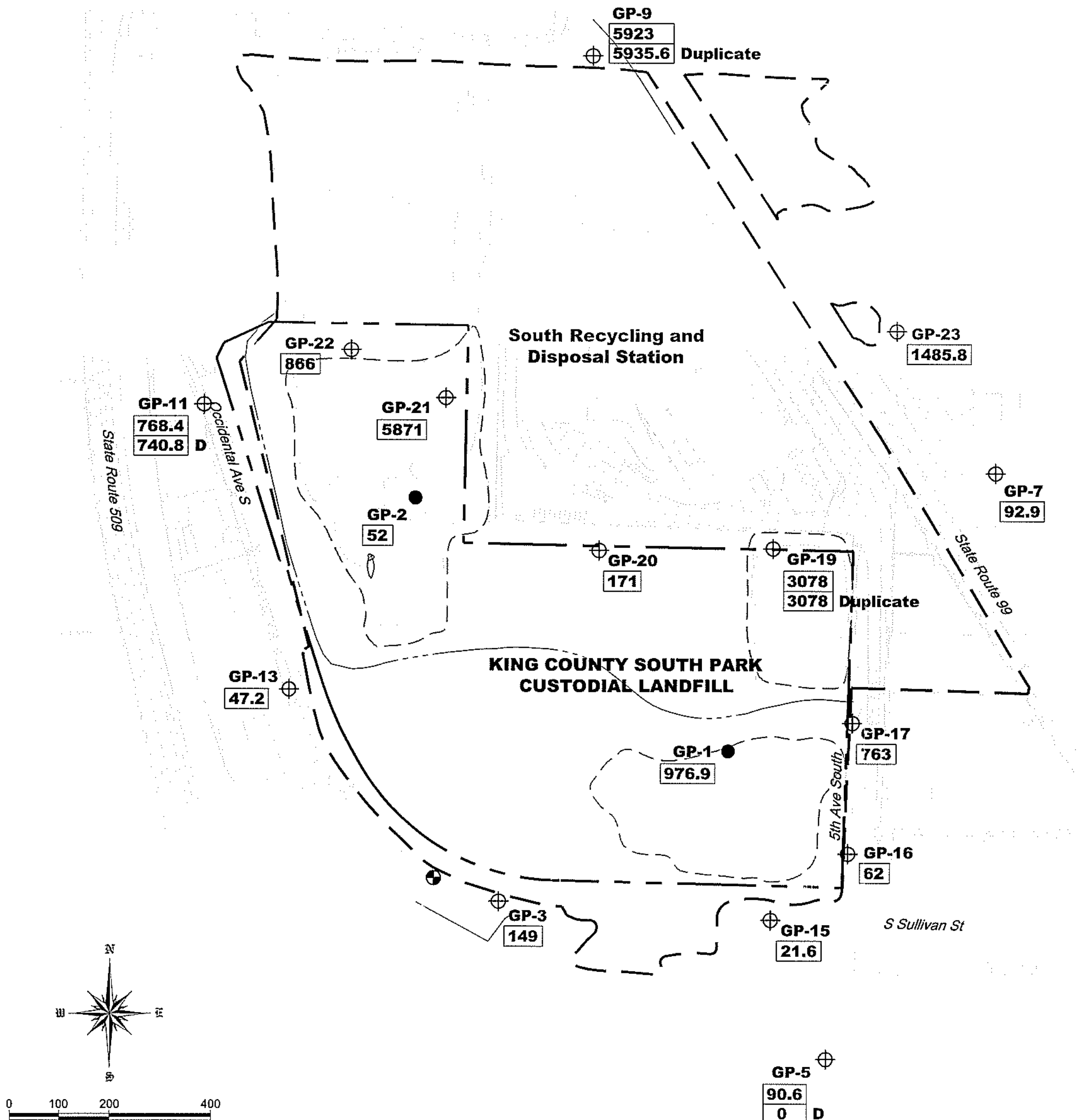


Associated Earth Sciences, Inc.
179 Madrone Lane North
Bainbridge Island, WA 98110
(206) 780-9370
FAX: (206) 780-9438

Ground Water Quality Summary

South Park Custodial Landfill

REFERENCE: BASE MAP AND TOPOGRAPHY BY DEGROSS AERIAL MAPPING, 5/7/97		PROJECT NO. BV97041
DATE: 08/15/00	SCALE: 1" = 200'	
DESIGNED BY: JJS	REVISED:	FIGURE NO.



LEGEND

Landfill Boundary (Approximate, based on air photo interpretation and soil borings).

King County Property Line

Ditch (Approximate, based on basemap and air photo).

AESI Gas Probes - 14 Locations

Udaloy Environmental Services Gas Probes - Installed April, 1997- 2 Locations

976.9 Total Volatile Organic Compounds ($\mu g/m^3$) Gas Analysis Method TO-14

D Duplicate Sample Collected in Field

Duplicate Laboratory Duplicate

PROJECT NO. VB9741G
FIGURE NO. 4-3

Summary of Gas Analysis - Total Volatile Organic Compounds

South Park Custodial Landfill
KING COUNTY, WASHINGTON

DATE: 12/02/99
DESIGNED/DWN: JJS/HXT

ASSOCIATED EARTH SCIENCES, INC

vb9741b-39.dwg xrefs vb97461-13d.dwg 12/02/99 1:1

Aspect consulting
IN-DEPTH PERSPECTIVE

March 14, 2006

Anne Holmes
King County
Department of Natural Resources
Solid Waste Division
King Street Center
201 South Jackson Street, Suite 701
Seattle, Washington 98104

Re: Shallow Groundwater Characterization – Data Report
South Park Custodial Landfill
Project No. 970041-18-23

Dear Ms. Holmes:

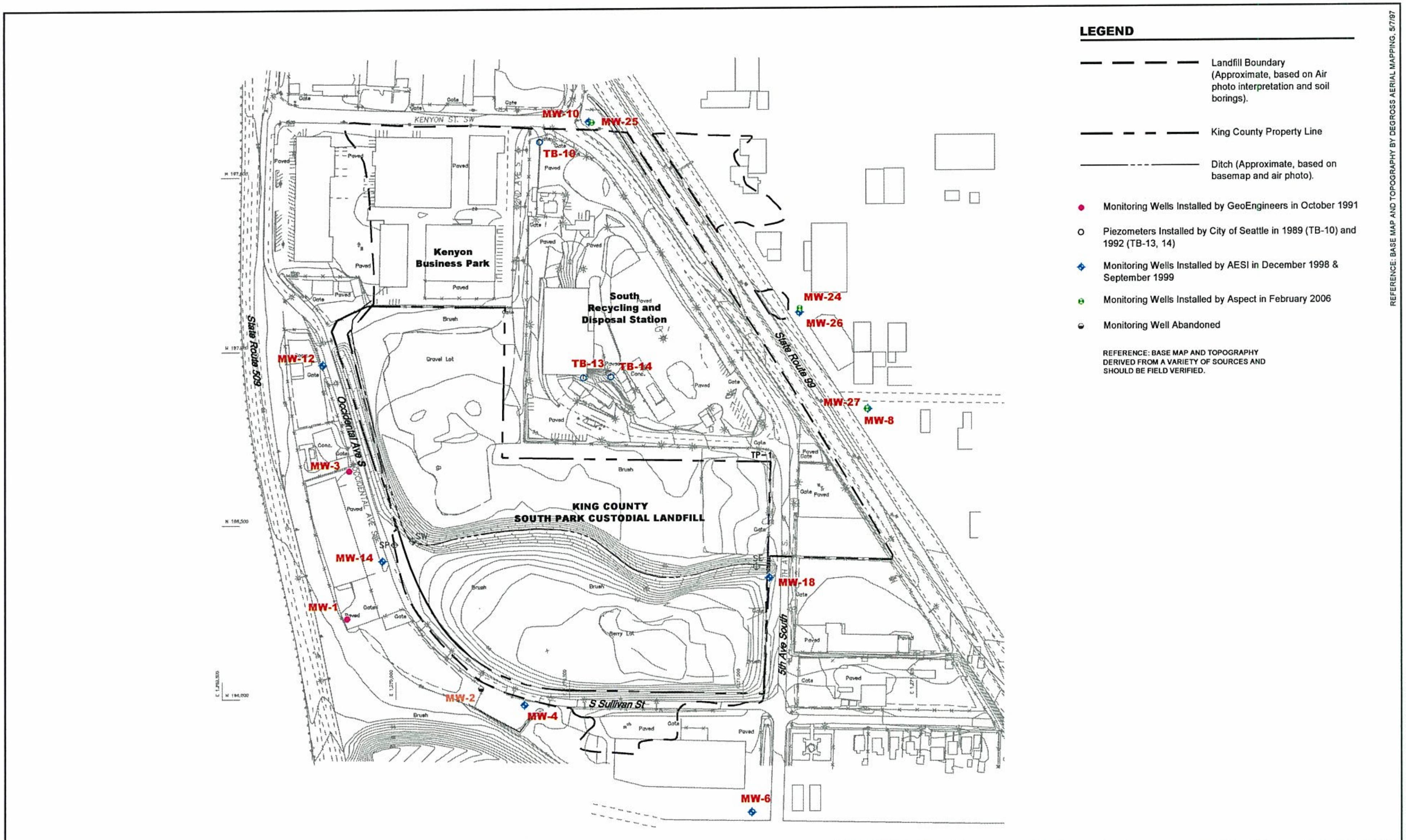
This Letter Report presents the data collected as part of the Shallow Groundwater Characterization for King County's South Park Custodial Landfill (KCSPCL) in Seattle, Washington. The data collected for this investigation will be evaluated and utilized in numeric modeling as part of due diligence under a Purchase and Sale Agreement between King County and South Park Property Development, LLC. Previously, the Washington State Department of Ecology (Ecology) has identified the need to assess the quality of the shallow groundwater and determine if a groundwater exposure pathway to the Duwamish River is of potential concern. Data collected as part of this study is intended to satisfy this data gap.

Scope of Work

The Shallow Groundwater Characterization Study scope of work consisted of advancing three borings east of the KCSPCL and completing them as shallow groundwater monitoring wells (MW-25, MW-26, and MW-27). The primary purpose of the wells was to provide a representative sample of shallow groundwater hydraulically downgradient of the landfill. The wells were located adjacent to existing deeper groundwater monitoring wells (MW-8, MW-10, and MW-24), as illustrated by Figure 1.

The shallow groundwater wells were either competed near the top of the water table, or just beneath the silt confining unit within the upper section of the alluvial aquifer. A representative sample from the screened interval was submitted to a laboratory for physical testing including effective porosity, bulk density and fractional organic carbon (foc).

Following installation, the new monitoring wells were developed, surveyed, and sampled. Three existing upgradient groundwater monitoring wells (MW-4, MW-12 & MW-14) were also sampled. Groundwater samples were submitted to an analytical laboratory for analysis of halogenated volatile organic compounds (HVOC), total and dissolved arsenic, and ethene. Groundwater levels at all accessible monitoring wells located around the KCSPCL, City of



Aspect consulting IN-DEPTH PERSPECTIVE

179 Madrone Lane North, Bainbridge Island, WA 98110 (206) 780-9370

811 First Avenue #480, Seattle, WA 98104 (206) 328-7443

Groundwater Monitoring Well and Piezometer Locations

South Park Custodial Landfill

King County, Washington

DATE	March 2006
DESIGNED BY	TDC
DRAWN BY	JRS
REVISED BY	
PROJECT NO.	970041
FIGURE NO.	1

Q:\South Park\2006-03 Exploration Location\970041-02.dwg

Table 3 - Analytical Results for Metals in Groundwater
South Park Custodial Landfill
Seattle, Washington

	Total Metal Concentration in mg/L						
Location ID	**MW-4**	**MW-12**	**MW-14**	**MW-25**	**MW-26**	**MW-26**	**MW-27**
Sample Date	*2/28/2006*	*2/27/2006*	*2/27/2006*	*2/27/2006*	*2/27/2006*	*2/27/2006*	*2/27/2006*
Antimony	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U
Arsenic	< 0.001 U	0.016	< 0.001 U	0.0015	0.0022	0.0022	0.011
Barium	0.0031	0.0024	0.012	0.045	0.017	0.017	0.024
Beryllium	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U
Cadmium	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U
Chromium	< 0.005 U	< 0.005 U	< 0.005 U	0.0064	< 0.005 U	< 0.005 U	< 0.005 U
Copper	< 0.002 U	< 0.002 U	< 0.002 U	0.005	< 0.002 U	< 0.002 U	0.0024
Lead	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U
Manganese	0.0053	0.91	0.76	2.4 E	0.36	0.35	1.2 E
Nickel	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U
Selenium	< 0.001 U	< 0.001 U	0.0014	0.0016	< 0.001 U	0.0012	0.0021
Silver	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U
Thallium	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U
Zinc	< 0.004 U	0.0091	< 0.004 U	0.0058	< 0.004 U	< 0.004 U	0.0053
Cobalt	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U
Vanadium	< 0.002 U	0.016	< 0.002 U	0.016	0.0029	0.0028	0.01

	Dissolved Metal Concentration in mg/L						
Location ID	**MW-4**	**MW-12**	**MW-14**	**MW-25**	**MW-26**	**MW-26**	**MW-27**
Sample Date	*2/28/2006*	*2/27/2006*	*2/27/2006*	*2/27/2006*	*2/27/2006*	*2/27/2006*	*2/27/2006*
Antimony	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U
Arsenic	< 0.001 U	0.005	< 0.001 U	0.0013	0.0019	0.002	0.011
Barium	0.003	0.001	0.011	0.037	0.014	0.015	0.023
Beryllium	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U
Cadmium	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U	< 0.002 U
Chromium	< 0.005 U	< 0.005 U	< 0.005 U	0.0058	< 0.005 U	< 0.005 U	< 0.005 U
Copper	< 0.002 U	< 0.002 U	< 0.002 U	0.0029	< 0.002 U	< 0.002 U	< 0.002 U
Lead	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U
Manganese	< 0.001 U	0.88	0.76	2.4	0.34	0.35	1.2 E
Nickel	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U	< 0.01 U
Selenium	< 0.001 U	< 0.001 U	0.0013	0.0017	< 0.001 U	< 0.001 U	0.002
Silver	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U
Thallium	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U	< 0.001 U
Zinc	< 0.004 U	< 0.004 U	< 0.004 U	0.0045	< 0.004 U	0.0045	< 0.004 U
Cobalt	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U	< 0.003 U
Vanadium	< 0.002 U	0.0069	< 0.002 U	0.013	< 0.002 U	< 0.002 U	0.0088

Notes:
Analysis performed by Laucks Testing Laboratories, Inc. via EPA Method 6020.
U - Not detected at indicated detection limit.
E - Exceeded calibration range.

Table 4 - Analytical Results of HVOCs in Groundwater
South Park Custodial Landfill
Seattle, Washington

	Concentration in ug/L						
Location ID	MW-4	MW-12	MW-14	MW-25	MW-26	MW-26	MW-27
Sample Date	*2/28/2006*	*2/27/2006*	*2/27/2006*	*2/27/2006*	*2/27/2006*	*2/27/2006*	*2/27/2006*
Acetone	< 4 U	< 4 U	< 4 U	< 4 U	< 4 U	< 4 U	< 4 U
Benzene	< 0.2 U	< 0.2 U	< 0.2 U	2.3	< 0.2 U	< 0.2 U	< 0.2 U
Bromodichloromethane	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
Bromoform	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
Bromomethane	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
2-Butanone	< 4 U	< 4 U	< 4 U	< 4 U	< 4 U	< 4 U	< 4 U
Carbon Disulfide	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
Carbon Tetrachloride	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
Chlorobenzene	< 0.2 U	< 0.2 U	< 0.2 U	29	< 0.2 U	< 0.2 U	< 0.2 U
Chloroethane	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
Chloromethane	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
Chloroform	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
Chlorodibromoethane	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
1,2-Dichlorobenzene	< 0.2 U	< 0.2 U	< 0.2 U	0.48	< 0.2 U	< 0.2 U	< 0.2 U
1,4-Dichlorobenzene	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
1,1-Dichloroethane	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	0.68	0.63	< 0.2 U
1,2-Dichloroethane	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
1,1-Dichloroethene	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
cis-1,2-Dichloroethene	< 0.2 U	28	< 0.2 U	1.2	0.59	0.51	1.1
trans-1,2-Dichoroehtene	< 0.2 U	0.26	< 0.2 U	0.55	< 0.2 U	< 0.2 U	< 0.2 U
1,2-Dichloropropane	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
cis-1,3-Dichloropropene	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
trans-1,3-Dichloropropene	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
Ethylbenzene	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
2-Hexanone	< 4 U	< 4 U	< 4 U	< 4 U	< 4 U	< 4 U	< 4 U
Methylene Chloride	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
4-Methyl-2-Pentanone	< 4 U	< 4 U	< 4 U	< 4 U	< 4 U	< 4 U	< 4 U
Styrene	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
1,1,2,2-Tetrachloroethane	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
Tetrachloroethene	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
Toluene	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
1,1,1-Trichloroethane	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	0.54	0.54	< 0.2 U
1,1,2-Trichloroethane	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
Trichloroethene	< 0.2 U	3.9	< 0.2 U	0.28	0.57	0.57	< 0.2 U
Trichlorofluoromethane	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
Vinyl Acetate	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
Vinyl Chloride	< 0.02 U	0.59	< 0.02 U	1.8	0.17	0.16	0.36
Total Xylenes	< 0.4 U	< 0.4 U	< 0.4 U	< 0.4 U	< 0.4 U	< 0.4 U	< 0.4 U
Acrylonitrile	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U	< 10 U
Bromochloromethane	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
1,2-Dibromo-3-Chloropropane	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U	< 1 U
1,2-Dibromoethane	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
Dibromomethane	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
Methyl Iodide	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
1,1,1,2-Tetrachloroethane	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
trans-1,4-Dichloror-2-butene	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
1,2,3-Trichloropropane	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U

Notes:
Analysis performed by Laucks Testing Laboratories, Inc. via EPA Method 8260B (except for vinyl chloride by EPA Method 8250 SIM)
U - Not Detected at indicated detection limit.

Table 5 - Analytical Results of Dissolved Gasses in Groundwater
South Park Custodial Landfill
Seattle, Washington

	Concentration in ug/L						
Sample Locatio	**MW-4**	**MW-12**	**MW-14**	**MW-25**	**MW-26**	**MW-26**	**MW-27**
Sample Date	*2/28/2006*	*2/27/2006*	*2/27/2006*	*2/27/2006*	*2/27/2006*	*2/27/2006*	*2/27/2006*
Ethane	< 3.5 U	< 3.5 U	3.5	35	< 3.5 U	< 3.5 U	< 3.5 U
Ethylene	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U	< 1.8 U
Methane	< 0.87 U	30	620	760	14	20	440

Notes:
Analysis performed by Laucks Testing Laboratories, Inc. via Method RSK-175.
U - Not Detected at indicated detection limit.

SIT 4.4

DRAFT—Issued for Regulatory Review

REMEDIAL INVESTIGATION/FEASIBILITY STUDY WORK PLAN

SOUTH PARK LANDFILL
SEATTLE, WASHINGTON

Submitted by:
Farallon Consulting, L.L.C.
975 5th Avenue Northwest
Issaquah, Washington 98027

Farallon PN: 408-003

For:
South Park Property Development, L.L.C.
Mr. Robert Howie
165 Northeast Juniper Street, Suite 100
Issaquah, Washington 98027

City of Seattle, Seattle Public Utilities
Ms. Sheila Strehle
PO Box 34018
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September 1, 2009

Prepared by:

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Reviewed by:

DRAFT

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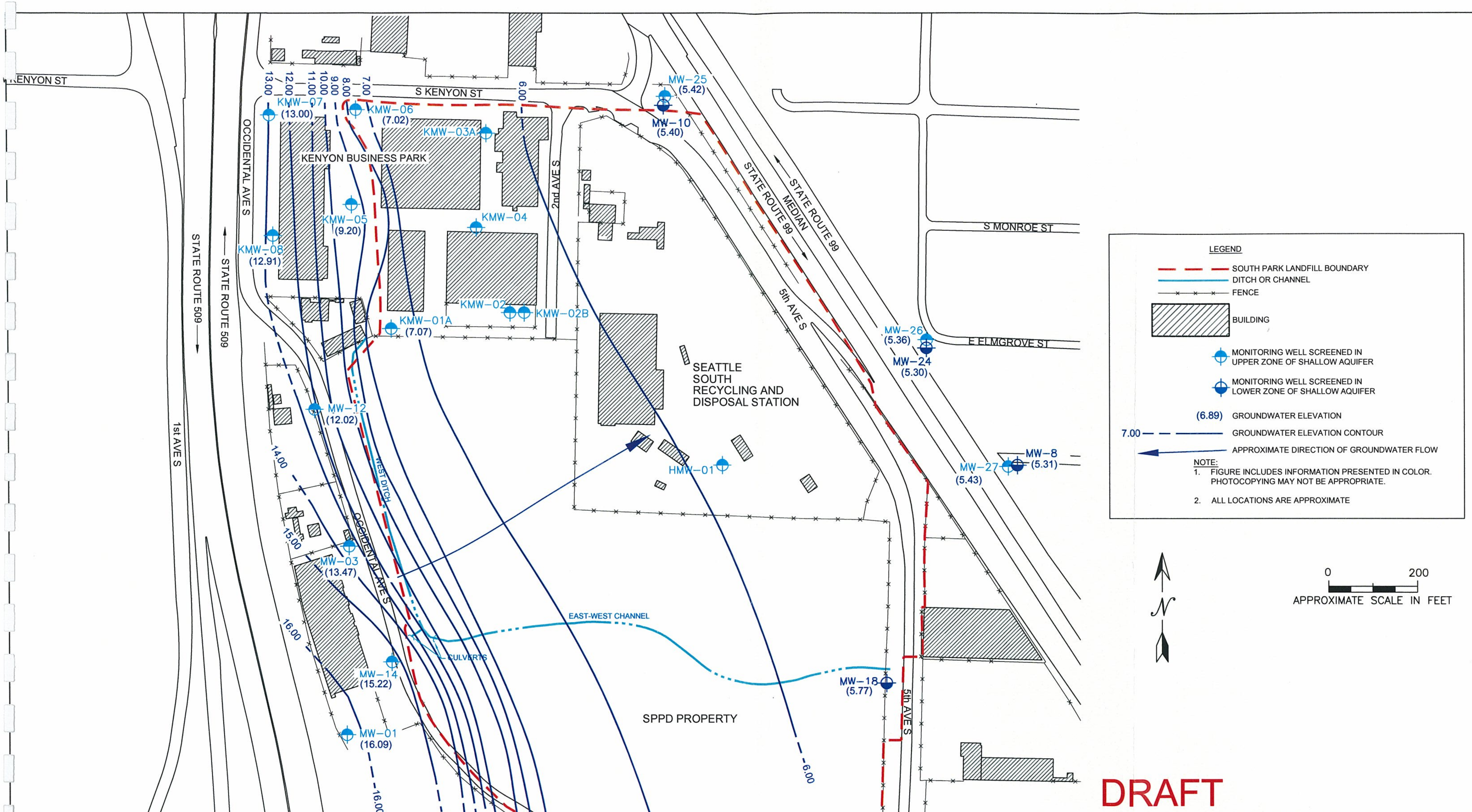
Principal



FARALLON CONSULTING
975 5th Avenue Northwest
Issaquah, WA 98027

FIGURE 5

GROUNDWATER CONTOUR MAP
OCTOBER 22, 2008
SOUTH PARK LANDFILL SITE
SEATTLE, WASHINGTON

FARALLON PN: 408-003

Drawn By: DEW	Checked By: CS	Date: 8/27/09	Disk Reference: BASEMAP

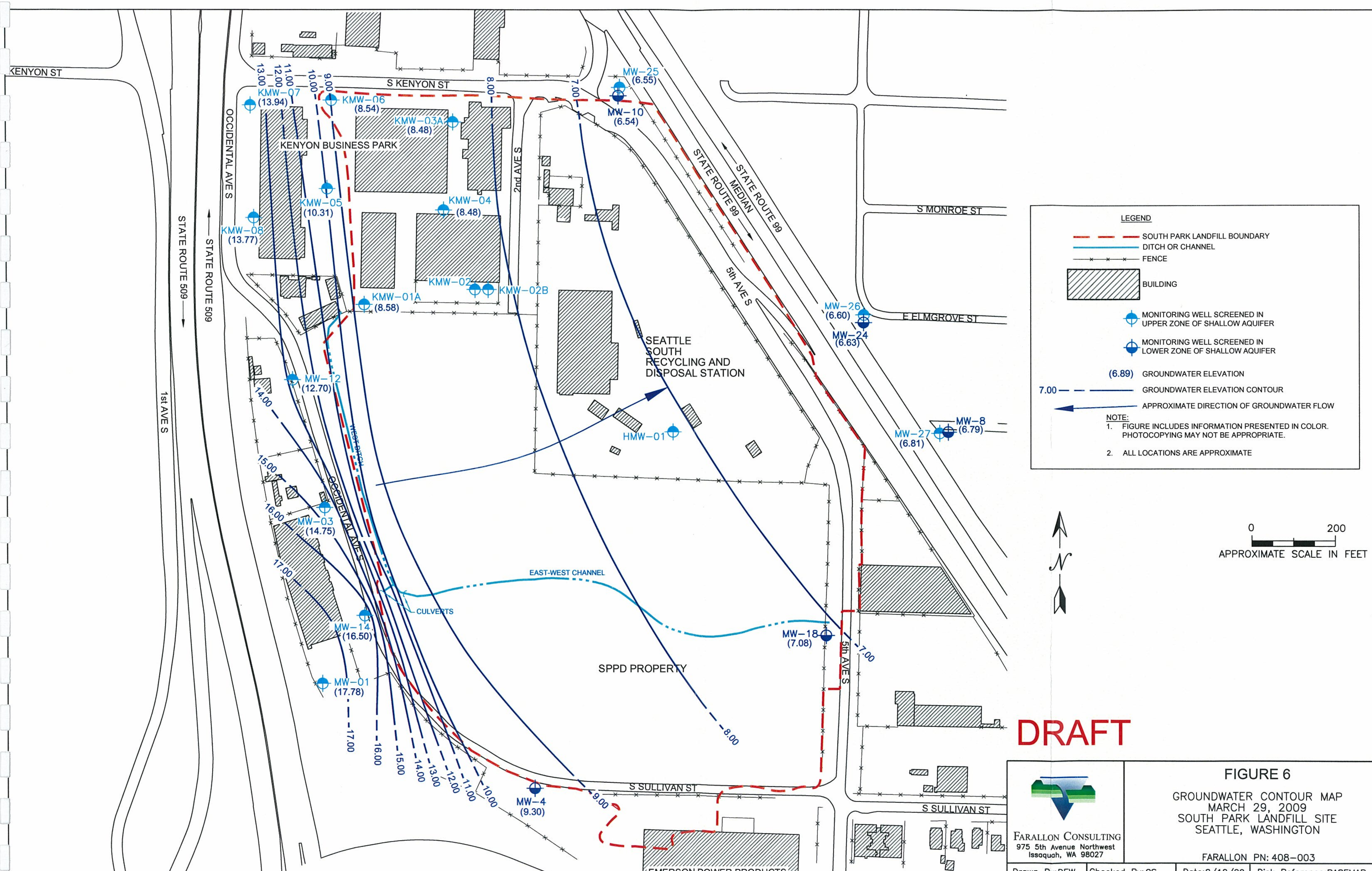


FIGURE 6
GROUNDWATER CONTOUR MAP
MARCH 29, 2009
SOUTH PARK LANDFILL SITE
SEATTLE, WASHINGTON

Table 2
Summary of Prior Investigations
South Park Landfill Site
Seattle, Washington
Farallon PN: 408-002

Reference	Explorations	Media Assessed					Other
		Soil	Groundwater	Surface Water	Sediment	Indoor Air and LFG	
Seattle-King County Public Health Dept (1984)	11 Landfill Gas Probes			X		X	
Seattle-King County Public Health Dept (1986) and Environmental Toxicology International, Inc. (1986)	4 Surface Water Locations 7 Surface Soil Locations 19 Landfill Gas Probes	X		X		X	
Ecology and Environment, Inc. (1988)	7 Borings 6 Surface Water Locations	X		X			
Unknown (1989)	4 Borings	X					
Golder Associates, Inc. (1989)	4 Borings 3 Monitoring Wells 9 Landfill Gas Probes	X	X			X	Assessed 4 buildings for landfill gas
RZA Agra, Inc. (1992a)	6 Borings	X					
RZA Agra, Inc. (1992b)	10 Borings 8 Monitoring Wells	X	X				Aquifer test at well MW-8
Diagnostic Engineering, Inc. (1992)	8 Borings 5 Monitoring Wells	X	X			X	
Professional Service Industries, Inc. (1993)						X	Sampled 27 locations
Blasland, Bouck & Lee, Inc. (1995)	6 Hydropunch Borings	X	X			X	Sampled soil vapor and indoor air
Joseph D. Wendlick (1997)						X	Sampled numerous locations for indoor air
Udaloy Environmental Services (1997)	14 Test Pits 3 Borings	X					
Seattle Public Utilities Materials Laboratory (1998)	20 Borings						No analytical data was documented
Associated Earth Sciences, Inc. (1998)							Compiled existing information and identified data gaps
R. W. Beck, Inc. (1999)							Evaluated stormwater issues related to development
Herrera Environmental Consultants, Inc. (1999)	16 Borings 1 Monitoring Well	X	X				Also sampled excavation sidewalls
Associated Earth Sciences, Inc. (1999a)	43 Test Pits	X					Also presented results for 24 test pits sampled previously
Associated Earth Sciences, Inc. (1999b)							Addressed geotechnical issues for redevelopment
Associated Earth Sciences, Inc. (2000)	8 Monitoring Wells 14 Landfill Gas Probes		X			X	
Associated Earth Sciences, Inc. and Aspect Consulting LLC (1999 to 2004)			X	X		X	Conducted periodic groundwater, surface Gas monitoring events (no report)
Aspect Consulting LLC (2006)	3 Monitoring Wells		X				

Table 2
Summary of Prior Investigations
South Park Landfill Site
Seattle, Washington
Farallon PN: 408-002

Reference	Explorations	Media Assessed					Other
		Soil	Groundwater	Surface Water	Sediment	Indoor Air and LFG	
Farallon Consulting, L.L.C. (2007)	25 Test Pits	X					
Farallon Consulting, L.L.C. (2007 and 2008)			X				Semiannual groundwater monitoring (no report)
URS Corporation (2007 to 2008)			X			X	No report. Results summarized in tables.

NOTES:

Full references cited above are listed in Section 7 and described in more detail in Appendix A.

LFG = landfill gas

Table 7
Constituents of Potential Concern
South Park Landfill Site
Remedial Investigation/Feeasibility Study Work Plan
Seattle, Washington
Farallon PN: 408-003

Matrix	Constituent Type	Exceedance Factor[1]	Constituent	Number of Analyses	Number of Detections	Detection Frequency[2]	Number of Exceedances	Exceedance Frequency[3]	Maximum Detected Result	Number of Non-detected Results	Minimum Reporting Limit	Maximum Reporting Limit	Unit of Measure	PSC Value	PSC
Groundwater	Metals	220	**ARSENIC (D)**	370	162	44%	62	17%	1,100	208	1	5	ug/L	5	State Method A
		19	**LEAD (D)**	370	21	6%	1	0.3%	290	349	1	3	ug/L	15	State Method A , Fed MCL, State MCL
		11.0	**ARSENIC (T)**	282	121	43%	51	18%	55	161	1	3.9	ug/L	5	State Method A
		2.6	**CHROMIUM (D)**	370	13	4%	1	0.3%	130	357	5	10	ug/L	50	State Method A
		1.8	**CADMIUM (D)**	370	21	6%	4	1%	9	349	2	20	ug/L	5	State Method A , Fed MCL, State MCL
		1.8	**CADMIUM (T)**	282	7	2%	5	2%	9	275	2	4.4	ug/L	5	State Method A , Fed MCL, State MCL
		1.8	**MANGANESE (T)**	220	213	97%	1	0%	8,900	7	1	1	ug/L	4,900	State Method C Non Car
		1.3	**MERCURY (D)**	363	8	2%	2	1%	0.4	355	0.1	0.5	ug/L	0.3	State Method B Non Car VI
		1.1	**CHROMIUM (T)**	282	7	2%	1	0.4%	53	275	5	25	ug/L	50	State Method A
		-	COPPER (D)	295	68	23%	0	0%	31	227	2	2	ug/L	590	State Method B Non Car
		-	COPPER (T)	220	54	25%	0	0%	120	166	2	2	ug/L	590	State Method B Non Car
		-	LEAD (T)	282	30	11%	0	0%	13	252	1	1.1	ug/L	15	State Method A , Fed MCL, State MCL
		-	MANGANESE (D)	291	280	96%	0	0%	3,500	11	1	1	ug/L	4,900	State Method C Non Car
		-	MERCURY (T)	275	4	1%	0	0%	0.1	271	0.1	0.5	ug/L	0.3	State Method B Non Car VI
		-	NICKEL (D)	295	11	4%	0	0%	12	284	10	10	ug/L	100	State MCL
		-	NICKEL (T)	220	4	2%	0	0%	54	216	10	50	ug/L	100	State MCL
		-	ZINC (D)	295	94	32%	0	0%	200	201	4	4	ug/L	4,800	State Method B Non Car
		-	ZINC (T)	220	60	27%	0	0%	170	160	4	4	ug/L	4,800	State Method B Non Car
			ALUMINUM (D)	203	56	28%		0%	290	147	20	20	ug/L		
			ALUMINUM (T)	213	137	64%		0%	71,000	76	20	100	ug/L		
			ANTIMONY (D)	295	33	11%		0%	14	262	1	1	ug/L		
			ANTIMONY (T)	220	21	10%		0%	21	199	1	1	ug/L		
			BARIUM (D)	370	302	82%		0%	6,000	68	1	25	ug/L		
			BARIUM (T)	282	220	78%		0%	240	62	1	28	ug/L		
			COBALT (D)	295	29	10%		0%	15	266	3	3	ug/L		
			COBALT (T)	220	17	8%		0%	67	203	3	15	ug/L		
			IRON (D)	288	287	100%		0%	63,000	1	5	5	ug/L		
			IRON (T)	213	213	100%		0%	96,000	0	5	100	ug/L		
			MAGNESIUM (D)	288	287	100%		0%	84,000	1	15	15	ug/L		
			MAGNESIUM (T)	213	213	100%		0%	84,000	0	15	75	ug/L		
			SELENIUM (D)	370	238	64%		0%	55	132	1	40	ug/L		
			SELENIUM (T)	282	185	66%		0%	62	97	1	5.6	ug/L		
			SILVER (D)	370	4	1%		0%	0.106	366	3	30	ug/L		
			THALLIUM (D)	295	2	1%		0%	2	293	1	2	ug/L		
			THALLIUM (T)	220	1	0%		0%	1	219	1	1	ug/L		
			VANADIUM (D)	295	154	52%		0%	59	141	2	2	ug/L		
			VANADIUM (T)	220	112	51%		0%	230	108	2	10	ug/L		
	Pesticides, Herbicides, PCBs		AROCLOR 1260	202	1	0.5%		0%	0.07	201	0.009	0.02	ug/L		
	Petroleum Hydrocarbons	16	**PHC AS LUBE OIL**	54	2	4%	2	4%	7,800	52	250	440	ug/L	500	State Method A
		10	**DIESEL-RANGE ORGANICS**	1	1	100%	1	100%	1,300	0	100	1,300	ug/L	500	State Method A
		7.2	**PHC AS OIL**	270	5	2%	3	1%	3,600	265	200	1,000	ug/L	500	State Method A
		3.8	**PHC AS GASOLINE**	278	25	9%	1	0.4%	3,000	253	25	250	ug/L	800	State Method A if Benz
		1.9	**PHC AS DIESEL FUEL**	296	97	33%	33	11%	970	199	95	1,300	ug/L	500	State Method A
	Semi-volatile Organic Compounds	2.4	**NAPHTHALENE**	212	1	0%	1	0.5%	170	211	2	3.2	ug/l	70	State Method B Non Car VI
		-	ACENAPHTHENE	199	1	1%	0	0%	5.2	198	2.5	2.9	ug/l	960	State Method B Non Car
		-	CARBAZOLE	199	1	1%	0	0%	1	198	0.9	1.1	ug/l	4.4	State Method B Car
		-	FLUORENE	199	1	1%	0	0%	3.1	198	1.8	2.1	ug/l	640	State Method B Non Car
			PHENANTHRENE	199	3	2%		0%	3.9	196	1.6	1.8	ug/l		
	Volatile Organic Compounds	58	**TRICHLOROETHENE**	370	44	12%	44	12%	14	326	0.2	10	ug/l	0.24	State Method B Car VI
		55	**VINYL CHLORIDE**	370	142	38%	102 (Est.)	28% (Est.)	11	228	0.02	1	ug/l	0.2	State Method A
		8.7	**STYRENE**	308	1	0%	1	0.3%	13	307	0.2	2	ug/L	1.5	State Method B Car
		2.2	**METHYLENE CHLORIDE**	370	9	2%	TBD	TBD	11	361	0.2	25	ug/l	5	Fed MCL, State MCL, State Method A
		1.6	**BENZENE**	324	34	10%	5	1.5%	2.3	290	0.2	10	ug/L	1.4	State Method B Car VI
		-	1,1,1-TRICHLOROETHANE	370	8	2%	0	0%	0.9	362	0.2	10	ug/l	200	State Method A , Fed MCL, State MCL
		-	1,1-DICHLOROETHANE	370	41	11%	0	0%	1.1	329	0.2	10	ug/l	1,391	State Method B Non Car VI
		-	1,1-DICHLOROETHENE	370	8	2%	0	0%	0.37	362	0.2	10	ug/l	85	State Method B Non Car VI
		-	1,2-DICHLOROBENZENE	370	11	3%	0	0%	0.68	359	0.2	10	ug/l	600	State MCL , Fed MCL
		-	1,2-DICHLOROETHANE	370	1	0%	0	0%	0.2	369	0.2	10	ug/l	0.48	State Method B Car
		-	1,2-DICHLOROPROPANE	370	9	2%	0	0%	0.32	361	0.2	10	ug/L	0.64	State Method B Car
		-	ACETONE	308	2	1%	0	0%	140	306	4	125	ug/l	800	State Method B Non Car
		-	BROMOMETHANE	370	1	0%	0	0%	0.66	369	0.2	10	ug/l	11	State Method B Non Car
		-	CARBON DISULFIDE	295	2	1%	0	0%	0.66	293	0.2	2	ug/l	267	State Method B Non Car VI
		-	CHLOROBENZENE	370	87	24%	0	0%	46	283	0.2	10	ug/l	53	State Method B Non Car VI
		-	CHLOROETHANE	370	2	1%	0	0%	0.28	368	0.2	10	ug/L	8	State Method B Car VI
		-	CHLOROMETHANE	363	3	1%	0	0%	0.46	360	0.2	10	ug/l	3.4	State Method B Car
		-	CIS-1,2-DICHLOROETHENE	370	117	32%	0	0%	44	253	0.2	10	ug/l	94	State Method B Non Car VI

Table 7
Constituents of Potential Concern
South Park Landfill Site
Remedial Investigation/Feeasibility Study Work Plan
Seattle, Washington
Farallon PN: 408-003

Matrix	Constituent Type	Exceedance Factor[1]	Constituent	Number of Analyses	Number of Detections	Detection Frequency[2]	Number of Exceedances	Exceedance Frequency[3]	Maximum Detected Result	Number of Non-detected Results	Minimum Reporting Limit	Maximum Reporting Limit	Unit of Measure	PSC Value	PSC
		-	TOLUENE	324	3	1%	0	0%	10	321	0.2	2	ug/l	640	State Method B Non Car
		-	TRANS-1,2-DICHLOROETHENE	370	55	15%	0	0%	0.91	315	0.2	10	ug/l	83	State Method B Non Car VI
Soil	Metals	27	**LEAD (T)**	73	70	96%	23	32%	6,800	3	9.8	11	mg/kg	250	State Method A
		17	**CADMIUM (T)**	73	30	41%	16	22%	34	43	0.84	1.3	mg/kg	2	State Method A, State Method A Ind
		9.0	**ARSENIC (T)**	73	73	100%	15	21%	180	0	0.42	2.2	mg/kg	20	State Method B Car
		2.6	**MERCURY (T)**	73	31	42%	2	3%	5.1	42	0.1	0.1	mg/kg	2	State Method A, State Method A Ind
		1.4	**COPPER (T)**	73	73	100%	3	4%	4,300	0	0.84	1.3	mg/kg	3,000	State Method B Non Car
		-	BERYLLIUM (T)	73	3	4%	0	0%	0.58	70	0.42	0.66	mg/kg	160	State Method B Non Car
		-	NICKEL (T)	73	73	100%	0	0%	770	0	1.7	2.6	mg/kg	1,600	State Method B Non Car
		-	ZINC (T)	73	73	100%	0	0%	7,900	0	0.84	1.3	mg/kg	24,000	State Method B Non Car
			ANTIMONY (T)	73	18	25%		0%	110	55	5	7.9	mg/kg		
			CHROMIUM (T)	73	73	100%		0%	260	0	0.84	1.3	mg/kg		
			SILVER (T)	73	12	16%		0%	80	61	0.84	1.3	mg/kg		
	Pesticides, Herbicides, PCBs	7.9	**DIELDRIN**	71	9	13%	1	1%	0.5	62	0.0034	0.17	mg/kg	0.063	State Method B Car
		2.7	**AROCLOR 1254**	71	13	18%	2	3%	4.3	58	0.034	1.7	mg/kg	1.6	State Method B Non Car
		-	4,4'DDD	71	8	11%	0	0%	2.6	63	0.0034	0.17	mg/kg	4.2	State Method B Car
		-	4,4'DDE	71	4	6%	0	0%	0.051	67	0.0034	0.17	mg/kg	2.9	State Method B Car
		-	4,4'DDT	71	7	10%	0	0%	0.078	64	0.0034	0.17	mg/kg	2.9	State Method B Car
		-	AROCLOR 1016	71	1	1%	0	0%	0.27	70	0.034	1.7	mg/kg	5.6	State Method B Non Car
		-	CHLORDANE	71	3	4%	0	0%	0.032	68	0.0034	0.17	mg/kg	2.9	State Method B Car
		-	HEPTACHLOR EPOXIDE	71	2	3%	0	0%	0.013	69	0.0018	0.089	mg/kg	0.11	State Method B Car
		-	METHOXYCHLOR	71	1	1%	0	0%	0.086	70	0.018	0.89	mg/kg	400	State Method B Non Car
			ALPHA CHLORDANE	71	3	4%		0%	0.072	68	0.0034	0.17	mg/kg		
			AROCLOR 1248	71	1	1%		0%	1.1	70	0.034	1.7	mg/kg		
			AROCLOR 1260	71	17	24%		0%	18	54	0.034	1.5	mg/kg		
	Petroleum Hydrocarbons	3.0	**PHC AS LUBE OIL**	75	37	49%	3	4%	5,940	38	100	100	mg/kg	2,000	State Method A, State Method A Ind
		2.3	**EXTRACTABLE HYDROCARBONS**	6	6	100%	3	50%	4,670	0	NA	NA	mg/kg	2,000	State Method A, State Method A Ind
		1.3	**PHC AS DIESEL FUEL**	77	9	12%	1	1%	2,580	68	10	50	mg/kg	2,000	State Method A, State Method A Ind
		-	PETROLEUM HYDROCARBONS	2	2	100%	0	0%	1,000	0	0.24	0.28	mg/kg	2,000	State Method A, State Method A Ind
			C10-C12 ALIPHATICS	6	3	50%		0%	86.6	3	10	10	mg/kg		
			C12-C16 ALIPHATICS	6	5	83%		0%	1,230	1	10	10	mg/kg		
			C12-C16 AROMATICS	6	3	50%		0%	110	3	10	10	mg/kg		
			C16-C21 ALIPHATICS	6	6	100%		0%	1,980	0	10	10	mg/kg		
			C16-C21 AROMATICS	6	4	67%		0%	398	2	10	10	mg/kg		
			C21-C34 ALIPHATICS	6	6	100%		0%	2,930	0	10	10	mg/kg		
			C21-C34 AROMATICS	6	6	100%		0%	934	0	10	10	mg/kg		
			C8-C10 ALIPHATICS	6	1	17%		0%	25.6	5	5	10	mg/kg		
	Semi-volatile Organic Compounds	22	**BENZO(A)PYRENE**	78	9	12%	8	10%	2.2	69	0.069	2	mg/kg	0.1	State Method A
		1.7	**PENTACHLOROPHENOL**	78	1	1%	1	1%	14	77	0.069	20	mg/kg	8.3	State Method B Car
		-	ACENAPHTHENE	78	6	8%	0	0%	1.4	72	0.034	2	mg/kg	4,800	State Method B Non Car
		-	ANTHRACENE	78	2	3%	0	0%	1.2	76	0.069	2	mg/kg	24,000	State Method B Non Car
		-	BIS(2-ETHYLHEXYL)PHTHALATE	78	27	35%	0	0%	27	51	0.069	0.34	mg/kg	71	State Method B Car
		-	BUTYLBENZYLPHTHALATE	78	3	4%	0	0%	1.5	75	0.069	0.45	mg/kg	16,000	State Method B Non Car
		-	CARBAZOLE	78	2	3%	0	0%	0.21	76	0.069	2	mg/kg	50	State Method B Car
		-	DIBENZOFURAN	78	3	4%	0	0%	0.63	75	0.034	2	mg/kg	160	State Method B Non Car
		-	DI-N-OCTYL PHTHALATE	78	4	5%	0	0%	0.71	74	0.069	2	mg/kg	1,600	State Method B Non Car
		-	FLUORANTHENE	78	31	40%	0	0%	3.4	47	0.034	2	mg/kg	3,200	State Method B Non Car
		-	FLUORENE	78	5	6%	0	0%	1	73	0.034	2	mg/kg	3,200	State Method B Non Car
		-	NAPHTHALENE	78	6	8%	0	0%	2.1	72	0.034	0.39	mg/kg	5	State Method A, State Method A Ind
		-	PYRENE	78	24	31%	0	0%	3.2	54	0.069	2	mg/kg	2,400	State Method B Non Car
			2-CHLORONAPHTHALENE	78	1	1%		0%	1.4	77	0.069	0.45	mg/kg		
			2-METHYLNAPHTHALENE	78	5	6%		0%	1.1	73	0.069	2	mg/kg		
			4-METHYLPHENOL	78	1	1%		0%	0.26	77	0.069	2	mg/kg		
			BENZO(A)ANTHRACENE	78	14	18%		0%	2.9	64	0.069	2	mg/kg		
			BENZO(B)FLUORANTHENE	78	14	18%		0%	2.8	64	0.069	2	mg/kg		
			BENZO(G,H,I)PERYLENE	78	4	5%		0%	0.75	74	0.069	2	mg/kg		
			BENZO[J]FLUORANTHENE	78	5	6%		0%	1.8	73	0.069	2	mg/kg		
			CHRYSENE	78	28	36%		0%	3.2	50	0.034	2	mg/kg		
			DIBENZO(A,H)ANTHRACENE	78	1	1%		0%	0.51	77	0.069	2	mg/kg		
			DI-N-BUTYLPHTHALATE	78	2	3%		0%	0.23	76	0.069	2	mg/kg		
			INDENO(1,2,3-C,D)PYRENE	78	4	5%		0%	0.83	74	0.069	2	mg/kg		
			PHENANTHRENE	78	16	21%		0%	3.5	62	0.069	2	mg/kg		
	Volatile Organic Compounds	2.7	**METHYLENE CHLORIDE**	71	45	63%	36	51%	0.053	26	0.015	0.019	mg/kg	0.02	State Method A, State Method A Ind
		-	ACETONE	71	8	11%	0	0%	0.27	63	0.026	0.034	mg/kg	8,000	State Method B Non Car
		-	CARBON DISULFIDE	71	1	1%	0	0%	0.022	70	0.015	0.02	mg/kg	8,000	State Method B Non Car

Table 7
Constituents of Potential Concern
South Park Landfill Site
Remedial Investigation/Feeasibility Study Work Plan
Seattle, Washington
Farallon PN: 408-003

Matrix	Constituent Type	Exceedance Factor[1]	Constituent	Number of Analyses	Number of Detections	Detection Frequency[2]	Number of Exceedances	Exceedance Frequency[3]	Maximum Detected Result	Number of Non-detected Results	Minimum Reporting Limit	Maximum Reporting Limit	Unit of Measure	PSC Value	PSC
		-	TETRACHLOROETHENE	71	1	1%	0	0%	0.02	70	0.015	0.02	mg/kg	0.05	State Method A, State Method A Ind
		-	TOTAL XYLENES	71	2	3%	0	0%	0.029	69	0.015	0.02	mg/kg	9	State Method A
			2-BUTANONE	71	1	1%		0%	0.071	70	0.026	0.034	mg/kg		
Surface Water	Metals	4,828	**ALUMINUM (T)**	50	48	96%	36	72%	420,000	2	20	20	ug/L	87	Fed ALFC CWA
		1,667	**ARSENIC (T)**	50	47	94%	47	94%	30	3	1	1	ug/L	0.018	Fed HHFW NTR, Fed HHFW CWA
		217	**IRON (T)**	50	50	100%	50	100%	65,000	0	5	25	ug/L	300	Fed HHFW CWA
		126	**LEAD (T)**	50	40	80%	40	80%	68	10	1	1	ug/L	0.54	State ALFC
		50	**MERCURY (T)**	50	4	8%	4	8%	0.6	46	0.1	0.1	ug/L	0.012	Fed ALFC NTR, State ALFC
		28	**MANGANESE (T)**	50	50	100%	50	100%	1,400	0	1	5	ug/L	50	Fed HHFW CWA
		27	**COPPER (T)**	50	39	78%	38	76%	64	11	2	2	ug/L	2.4	Fed ALMC NTR
		22	**ZINC (T)**	50	50	100%	27	54%	710	0	4	4	ug/L	32	State ALFC
		12	**CADMIUM (T)**	50	4	8%	4	8%	3	46	2	2	ug/L	0.25	Fed ALFC CWA
		3	**NICKEL (T)**	50	2	4%	2	4%	27	48	10	50	ug/L	8.2	Fed ALMC NTR, Fed ALMC CWA, State ALMC
			ANTIMONY (T)	50	8	16%		0%	3	42	1	1	ug/L		
			BARIUM (T)	50	50	100%		0%	630	0	1	1	ug/L		
			CHROMIUM (T)	50	12	24%		0%	47	38	5	25	ug/L		
			COBALT (T)	50	2	4%		0%	7	48	3	15	ug/L		
			MAGNESIUM (T)	50	50	100%		0%	47,000	0	15	1,500	ug/L		
			SELENIUM (T)	50	40	80%		0%	14	10	1	1	ug/L		
			VANADIUM (T)	50	43	86%		0%	45	7	2	10	ug/L		
	Pesticides, Herbicides, PCBs	4.4	**AROCLOR 1260**	47	1	2%	1	2%	0.061	46	0.009	0.4	ug/l	0.014	Fed ALFC NTR

NOTES:

Bold = Exceedance factor greater than 1

Shaded = Preliminary screening criterion exists.

[1]Exceedance Factor = Maximum detect/preliminary screening criterion.

[2]Detection Frequency = Number of detects/number of analyses.

[3]Exceedance Frequency = Number of detect exceedances/number of analyses.

D = dissolved

Est. = Estimated at time of draft report production; to be confirmed prior to final

mg/kg = milligrams per kilogram

NA = not available

pCi/L = picocurries per liter

PHC = petroleum hydrocarbons

PSC = preliminary screening criteria

T = total

TBD = To be determined prior to final

µg/l = micrograms per liter

PRELIMINARY SCREENING CRITERIA

Groundwater

Fed MCL = Ground Water ARAR - Federal Primary Maximum Contaminant Level (MCL) (ug/L)

State MCL = Ground Water ARAR - State Primary Maximum Contaminant Level (MCL) (ug/L)

State Method A = Ground Water, Method A, Table Value (µg/L)

State Method B Car = Ground Water, Method B, Carcinogen, Standard Formula Value (µg/L)

State Method B Car VI = Ground Water, Method B, Carcinogen, Protective of Vapor Intrusion Pathway (µg/L).

State Method B Non Car = Ground Water, Method B, Non-carcinogen, Standard Formula Value (µg/L)

State Method B Non Car VI = Ground Water, Method B, Non-carcinogen, Protective of Vapor Intrusion Pathway (µg/L).

State Method C Car = Ground Water, Method C, Carcinogen, Standard Formula Value (µg/L)

State Method C Car VI = Ground Water, Method C, Carcinogen, Protective of Vapor Intrusion Pathway (µg/L).

State Method C Non Car = Ground Water, Method C, Non-carcinogen, Standard Formula Value (µg/L)

State Method C Non Car VI = Ground Water, Method C, Non-carcinogen, Protective of Vapor Intrusion Pathway (µg/L).

Soil

State Method A = Soil, Method A, Unrestricted Land Use, Table Value (mg/kg)

State Method A Ind = Soil, Method A, Industrial Land Use, Table Value (mg/kg)

State Method B Car = Soil, Method B, Carcinogen, Standard Formula Value, Direct Contact (ingestion only), unrestricted land use (mg/kg)

State Method B Non Car = Soil, Method B, Non-carcinogen, Standard Formula Value, Direct Contact (ingestion only), unrestricted land use (mg/kg)

State Method C Car Ind = Soil, Method C, Carcinogen, Standard Formula Value, Direct Contact (ingestion only), industrial land use (mg/kg)

State Method C Non Car Ind = Soil, Method C, Non-carcinogen, Standard Formula Value, Direct Contact (ingestion only), industrial land use (mg/kg)

Surface Water

Fed ALFA CWA = Surface Water - Aquatic Life - Fresh/Acute - Clean Water Act §304 (µg/L)

Fed ALFA NTR = Surface Water - Aquatic Life - Fresh/Acute - National Toxics Rule - 40 CFR 131 (µg/L)

Fed ALFC CWA= Surface Water - Aquatic Life - Fresh/Chronic - Clean Water Act §304 (µg/L)

Fed ALFC NTR = Surface Water - Aquatic Life - Fresh/Chronic - National Toxics Rule, 40 CFR 131 (µg/L)

Fed ALMA CWA = Surface Water - Aquatic Life - Marine/Acute - Clean Water Act §304 (µg/L)

Fed ALMA NTR = Surface Water - Aquatic Life - Marine/Acute - National Toxics Rule, 40 CFR 131 (µg/L)

Fed ALMC CWA = Surface Water - Aquatic Life - Marine/Chronic - Clean Water Act §304 (µg/L)

Fed ALMC NTR = Surface Water - Aquatic Life - Marine/Chronic - National Toxics Rule, 40 CFR 131 (µg/L)

Fed HHFW CWA = Surface Water - Human Health - Fresh Water – Clean Water Act §304 (µg/L)

Fed HHFW NTR = Surface Water - Human Health – Fresh Water – National Toxics Rule, 40 CFR 131 (µg/L)

Fed HHM CWA = Surface Water - Human Health – Marine – Clean Water Act §304 (µg/L)

Fed HHM NTR = Surface Water - Human Health – Marine – National Toxics Rule, 40 CFR 131 (µg/L)

State ALFA = Surface Water - Aquatic Life - Fresh/Acute - Ch. 173-201A WAC (µg/L)

State ALFC = Surface Water - Aquatic Life - Fresh/Chronic - Ch. 173-201A WAC (µg/L)

State ALMA = Surface Water - Aquatic Life - Marine/Acute - Ch. 173-201A WAC (µg/L)

State ALMC = Surface Water - Aquatic Life - Marine/Chronic - Ch. 173-201A WAC (µg/L)

State Method B Car = Surface Water, Method B, Carcinogen, Standard Formula Value (µg/L)

State Method B Non Car = Surface Water, Method B, Non-Carcinogen, Standard Formula Value (µg/L)

State Method C Car = Surface Water, Method C, Carcinogen, Standard Formula Value (µg/L)