Lower Duwamish Waterway
Early Action Area 2

Summary of Existing Information and Identification of Data Gaps

Prepared for

Toxics Cleanup Program
Northwest Regional Office
Washington State Department of Ecology
Bellevue, Washington

Prepared by

SAIC
From Science to Solutions

Science Applications International Corporation
18912 North Creek Parkway, Suite 101
Bothell, WA 98011

February 2007

Table of Contents

Page

Figures

Tables

List of Acronyms

BEHP	bis(2-ethylhexyl)phthalate
BNA	base neutral acid
BTEX	benzene, toluene, ethylbenzene, and xylenes
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CSCSL	Confirmed and Suspected Contaminated Sites List
CSL	Contaminant Screening Level
DW	dry weight
EAA	Early Action Area
ECHO	Enforcement and Compliance History Online
Ecology	Washington State Department of Ecology
EHW	Extremely Hazardous Waste
EPA	Environmental Protection Agency
FS	Feasibility Study
GIS	Geographic Information Systems
IBC	intermediate bulk container
KCIW	King County Industrial Waste
LDW	Lower Duwamish Waterway
LDWG	Lower Duwamish Waterway Group
LUST	leaking underground storage tank
MEK	methyl ethyl ketone
METRO	King County Department of Metropolitan Services
MIBK	methyl isobutyl ketone
MLLW	mean lower low water
MTCA	Model Toxics Control Act
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge and Elimination System
NRO	Northwest Regional Office
OC	organic carbon
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PSAPCA	Puget Sound Air Pollution Control Authority
PSCAA	Puget Sound Clean Air Agency
QA/QC	quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
SAIC	Science Applications International Corporation
SEIDG	Summary of Existing Information and Data Gaps
SIC	Standard Industrial Classification
SPU	Seattle Public Utilities
SQS	Sediment Quality Standard
SVOC	semivolatile organic compound
TCE	trichloroethylene

TCLP	Toxic Characteristics Leaching Procedure
TOC	total organic carbon
TPH	total petroleum hydrocarbons
TSD	treatment, storage, and disposal
UST	underground storage tank
VOC	volatile organic compound
WQC	water quality criteria

1.0 Introduction

1.1 Background and Purpose

The Lower Duwamish Waterway (LDW) in Seattle, WA, was added to the U.S. Environmental Protection Agency (EPA) National Priorities List In September 2001 due to chemical contaminants in sediment. The key parties involved in the LDW Superfund site are the Lower Duwamish Waterway Group (LDWG; comprised of the City of Seattle, King County, the Port of Seattle, and The Boeing Company), EPA, and the Washington Department of Ecology (Ecology). LDWG is conducting a Remedial Investigation/Feasibility Study (RI/FS) for the LDW Superfund site.

Data collected during the Phase I Remedial Investigation (RI) was used to identify locations that could be candidates for early cleanup action. Early cleanup action at these areas could potentially be implemented on an accelerated schedule before completion of the Feasibility Study (FS) and Record of Decision for the LDW site. Early Action Area 2 (EAA-2) was one of the areas identified by LDWG as a high priority site for sediment cleanup on the LDW (LDWG 2003).

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

As part of source control efforts for EAA-2, Ecology requested Science Applications International Corporation (SAIC) to prepare this *Summary of Existing Information and Data Gaps* (SEIDG) report. This report documents readily available information relevant to sediment recontamination at EAA-2, including identification of chemicals of concern, evaluation of potential pathways for release to EAA-2, and a description of potential adjacent and upgradient contaminant sources. In addition, this report identifies critical data gaps that will need to be addressed prior to possible remediation of EAA-2.

Data presented in this report are limited to the EAA-2 inlet, adjoining and upgradient properties, and direct discharges. Data have been compared to relevant regulatory criteria and guidelines, as appropriate.

1.2 Report Organization

Section 2 provides background information on EAA-2, including location, physical characteristics, chemicals of potential concern, and potential pathways for contaminants to reach EAA-2 sediments. Section 3 describes potential sources of contaminants, including adjacent properties (Industrial Container Services and Douglas Management Company) and upland properties. Section 4 summarizes data gaps that are critical to development of a source control action plan for the site. Section 5 provides a list of documents reviewed during preparation of this report.

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

- Ecology Northwest Regional Office (NRO) Central Records
- Washington State Archives
- U.S. Environmental Protection Agency file logs
- Seattle Public Utilities Business Inspection reports
- Ecology Underground Storage Tank (UST) and Leaking Underground Storage Tank (LUST) lists
- Ecology Facility/Site Database
- Washington Confirmed and Suspected Contaminated Sites List (CSCSL)
- EPA Enforcement and Compliance History Online (ECHO)
- EPA Envirofacts Warehouse
- King County GIS Center Parcel Viewer and Property Tax Records
- GIS shape files produced by Seattle Public Utilities

2.0 Early Action Area 2

Early Action Area 2 (EAA-2) is located approximately 2.2 miles from the south end of Harbor Island, on the west bank of the LDW, just south of the First Avenue S. bridge in King County, Washington (Figure 1). It consists of a small inlet, approximately 80 feet wide at its mouth and tapering to a narrow stream at its head. The inlet is surrounded by property owned by the Douglas Management Company to the north, and by property owned by Herman & Jacqualine Trotsky to the south (Figure 2). Boyer Towing, Inc. owns the land just east of the Trotsky property, extending from the mouth of the inlet along the LDW to the south. The inlet itself was formed when the area to the north was filled to create the triangular area that currently comprises the Douglas Management Company site.

2.1 Site Description

General background information on the LDW is provided in the Phase I Remedial Investigation Report (LDWG 2003b), 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.

The upland areas adjacent to the LDW have been industrialized for many decades; historical and current commercial and industrial operations in the vicinity of EAA-2 include cargo handling and storage, marina operations, barrel reconditioning, warehousing, and vehicle repair and maintenance. The South Park residential neighborhood is located to the south of the EAA-2 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. EAA-2 may be one of these; an aerial photograph from 1938 shows a shallow area that may have been a river bend at the current location of the triangle-shaped Douglas Management Company property (Appendix A). Dredged material was likely used to fill in the area north of EAA-2.

Groundwater in the Duwamish Valley alluvium is typically encountered within about 3 meters (10 feet) of the ground surface and under unconfined conditions (LDWG 2003b). 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).

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. The EAA-2 inlet sediments consist of 60 to 80 percent fines (dry weight [DW]) and in the range of <1 to 3 percent total organic carbon (TOC) (LDWG 2003b).

The EAA-2 inlet itself is relatively shallow. Debris is apparent along the banks of the inlet, particularly on the south side. The remains of an abandoned dock are located on the south side and across the center of the inlet. The north bank of the inlet consists of concrete for at least a portion of its length; based on an aerial photo from 1984, there appears to have been a loading or docking structure on the north side of the slip at the same location as the abandoned dock. By 2000, both structures were no longer present.

An outfall pipe is located at the head of the inlet. A City of Seattle drinking water reservoir is located upland of the head of the inlet; overflow drains through this pipe into the inlet. Another outfall, identified as the Second Avenue S. outfall, is located on the south side of the slip. This outfall drains the Second Avenue South subbasin of the South Park Drainage Basin (see Section 3.1).

Property adjacent to EAA-2 is composed of fill and natural sand deposits to 25 feet below ground surface (bgs) (Hart Crowser 1986). Several properties are directly adjacent to the inlet: Industrial Container Services (previously known as Northwest Cooperage Company, Palex, and IFCO), located on the south side of the inlet; and Alaska Marine Lines / Douglas Management Company (previously known as Swan Bay Holdings), on the north side of the inlet. The First Avenue S. Bridge and other roadway rights-of-way are located along the western side of the inlet. Boyer Towing, Inc. owns the property to the east of Industrial Container Services at the mouth of the inlet, extending along the edge of the LDW to the south.

Groundwater flow in the vicinity of EAA-2 is generally toward the slip and the Duwamish Waterway. Significant tidal influence on groundwater flow directions occurs within approximately 100 feet of the slip (Hart Crowser 1987). In the area affected by the tides, groundwater flow direction alternates from toward land (at high tide stage) to toward the LDW (at low tide stage). In situ hydraulic conductivity ranges between 2 and 113 feet per day. Assuming an average hydraulic conductivity of 15 feet per day, a horizontal hydraulic gradient of approximately 0.005 feet/foot, and a porosity of 0.3, Hart Crowser (1987) calculated a seepage velocity of 0.25 feet per day. The estimated groundwater flux beneath the site to the LDW was estimated to be less than 1 gallon per minute, assuming a saturated thickness of 10 feet above mean lower low water (MLLW), site width of 300 feet, and flow reversal effects from high tide stages.

2.2 Chemicals of Concern in Sediment

Results of sediment sampling in the EAA-2 slip are provided in Appendix B, and summarized in Table 1. Sampling locations are shown in Figure 3. Sediment samples have collected from EAA-2 during the following investigations:

<u>Ecology Site Hazard Assessment, May 1991</u> (Parametrix & SAIC 1991)

Three surface sediment samples (SS-1, SS-2, and SS-3) were collected in the slip; two additional samples were collected from the LDW near the mouth of EAA-2. Samples were analyzed for volatile organic compounds (VOCs), polynuclear aromatic hydrocarbons (PAHs), organochlorine pesticides and polychlorinated biphenyls (PCBs), cyanide, and total metals. Cadmium, chromium, copper, lead, zinc, mercury, PCBs, acetone, and 2-butanone were detected in slip sediments at concentrations significantly higher than in the nearby LDW sediment samples. In addition, a static acute trout bioassay (DOE 80-12) was conducted using sample SS-2; results indicated no significant mortality at 100 mg/L or 1,000 mg/L.

Duwamish Waterway Sediment Characterization Study Report, 1998 (NOAA 1998)

One sample (at Location 261) was collected in the slip and analyzed for PCBs. Total PCBs in this sample were 5.2 mg/kg.

Site Inspection Report, Lower Duwamish River (Weston 1999)

Three sediment samples were collected; one of these (Location 705) was located along the north side of the slip near Douglas Management Company, and the other two (Locations 704 and 723) were located in the LDW at the mouth of the slip. A variety of contaminants were detected in these samples, including metals, PCBs, PAHs, phthalates, and pesticides.

LDW Phase II RI, Round 1 Sediment Sampling (LDWG 2005)

One sediment sample was collected from EAA-2 (LDW-SS84). This sample was analyzed for semivolatile organic compounds (SVOCs), metals, PCBs as Aroclors and congeners, organochlorine pesticides, dioxins/furans, and TOC. PCBs, PAHs, phthalates, and metals were detected.

A comparison of sample results to Washington Sediment Management Standards Contaminant Screening Level (CSL) and Sediment Quality Standard (SQS) levels is also shown in Table 1. For organics, the measured dry weight concentrations were organic carbon (OC) normalized to allow comparison to the CSL/SQS. The following chemicals exceeded SQS levels:

- **PCBs –** Concentrations ranged from 0.2 to 23 mg/kg DW in sediments; seven of the eight samples analyzed for PCBs in EAA-2 exceeded the SQS of 12 mg/kg OC. Exceedance factors[1] (the measured concentration divided by the SQS) ranged from 3 to 46.
- **Total DDTs –** 4,4'-DDE and 4,4'-DDD were detected in Sample 705 at 173 ug/kg DW. DDTs were not analyzed for in the other EAA-2 sediment samples. This exceeded the SQS of 6.9 mg/kg OC by a factor of 25. During the 2005 RI Phase II sampling, DDTs were not detected, however sample quantitation limits were extremely high. Total DDTs were reported as nondetected at 800 ug/kg.
- **Mercury –** Seven sediment samples were analyzed for mercury; concentrations ranged from 0.05 to 2.5 mg/kg. The SQS of 0.41 mg/kg was exceeded in four of the samples, with exceedance factors ranging from 2 to 6.

[1] Exceedance factors do not necessarily correlate to toxicity. In other words, the toxicity of a chemical with an exceedance factor of 2 is not twice that of a chemical with an exceedance factor of 1. This is due to the nature of the derivation of numerical standards based on apparent effects thresholds (AETs). The exceedance factor is intended simply to illustrate the magnitude of contamination.

- **Bis(2-ethylhexyl)phthalate (BEHP)** – Four sediment samples were analyzed for BEHP, with concentrations ranging from 30 to 4,200 ug/kg DW. Two samples exceeded the SQS of 47 mg/kg OC, with an exceedance factor of 2.
- **Dieldrin** – At 17 ug/kg DW in Sample 705, dieldrin slightly exceeded the SQS of 2.96 mg/kg OC (exceedance factor of 2). During the 2005 RI Phase II sampling, dieldrin was reported as nondetected at 34 ug/kg DW.
- **Lead** – Two of seven samples slightly exceeded the SQS (450 mg/kg DW); concentrations ranged from 23 to 615 mg/kg DW.
- **Zinc** – Zinc slightly exceeded the SQS (410 mg/kg DW) in Sample LDW-SS84 with a concentration of 417 mg/kg DW.

In general, sediment contaminant concentrations were highest in the most recent sample, collected as part of the Phase II LDW RI. Based on the results of sediment sampling conducted between 1991 and 2005, the following chemicals are considered to be contaminants of concern at EAA-2 with regard to potential sediment recontamination:

- PCBs
- DDT
- Mercury
- BEHP
- Dieldrin
- Lead
- Zinc

2.3 Potential Pathways to Sediment

Pathways for the transport of contaminants to EAA-2 sediments include direct discharges via piped outfalls, bank erosion from adjacent properties, surface runoff (sheet flow) from adjacent properties, groundwater discharge, air deposition, and spills directly to the inlet. These pathways are described below, and are discussed in more specific detail in Section 3.

<u>Outfalls</u>: Two piped outfalls are present in the EAA-2 inlet; contaminants discharged via these outfalls could directly affect slip sediments. Piped outfalls are described in Section 3.1 below.

<u>Bank Erosion</u>: Contaminants in soils at the banks of the inlet could be released directly to the slip sediments via erosion. Little information on the structure of the banks was available. At least part of the north bank is concrete, which would limit erosion into the inlet. Debris has been observed in the soils on the south bank during recent site visits (Appendix A).

<u>Surface Runoff</u>: Current operational practices at nearby properties may contribute to the movement of contaminants to the slip via runoff. Debris has been observed under a former building on the Trotsky property near the slip; contaminants in this debris could be transported to the slip during storm events.

Groundwater Discharge: Contaminants in soil resulting from spills and releases to adjacent (and possibly upland) properties may be transported to groundwater and subsequently be released to EAA-2. Seeps have been observed along the banks of the slip.

Atmospheric Deposition: Contaminants originating from nearby properties and streets may be transported through the air and deposited at EAA-2 or in areas that drain to the inlet. The Trotsky property has a long history of violations of their air discharge permit, as described in Section 3.2.1. Although chemical deposition from air directly to the slip probably occurs, this transport mechanism is not likely to result in sediment concentrations above local background levels. This potential pathway is not evaluated further in this report.

Spills: Although spills of waste materials containing contaminants of concern directly to the slip may occur, there do not appear to be any activities occurring directly adjacent to the slip at this time that are likely to result in spills. The EAA-2 slip is very shallow, and there currently appears to be little activity in the slip itself.

3.0 Potential Sources of Sediment Recontamination

Potential sources of sediment recontamination include direct discharges via outfalls and direct and/or indirect discharges from two adjacent and multiple upland properties. These are discussed below.

3.1 Piped Outfalls

Two piped outfalls have been observed in the EAA-2 inlet: one outfall is associated with the Second Avenue S. storm drain, and the other is connected to a City of Seattle drinking water reservoir. These are described below.

3.1.1 Second Avenue S. Outfall

EAA-2 is located within the Second Avenue S. drainage area of the South Park Basin (SPU 2005). In general, the South Park Basin is served by a mixture of combined storm/sanitary sewer systems and separated storm drain systems. In some areas, particularly along the river, there are no piped drainage or sewer systems.

The South Park Basin was identified in the 1995 SPU Comprehensive Drainage Plan update as having numerous drainage problems resulting from poor roadway grading, inadequate capacity of existing storm drain systems, lack of storm drainage infrastructure in some areas, and topographic constraints such as low elevation and tidal influence (SPU 2005). Tidal influence in the LDW causes gravity storm drain systems to back up and flood low-lying areas.

The Second Avenue S. subbasin covers the area between SR99 and the LDW, from about S. Austin Street to the EAA-2 slip (Figure 5). It is served by a system of ditches and culverts, with a piped outfall to the river (known as the Second Avenue S. outfall) (SPU 2005). This outfall is located approximately 25 feet west of Well B-1 (Figure 4). The main drainage ditch leading to this outfall runs along Second Avenue S., along the eastern boundary of the Trotsky property.

According to a 1987 groundwater investigation for the Trotsky property (Hart Crowser 1987), this drainage ditch appears to be a source of recharge to groundwater at the site. The relative elevation of a concrete culvert invert in the ditch is at or higher in elevation than the groundwater levels measured in wells away from the tidal effects of the slip.

Notes compiled by Ecology on the Trotsky property reported the installation of a tide gate on the Second Avenue S. storm drain in 2000, to reduce flooding and consequent run-off along Second Ave. and streets in the general area (the storm drain is partially underground and passes through the Trotsky Property).

3.1.2 Reservoir Outfall

A second outfall, located at the head of the inlet, has been observed to discharge to EAA-2. This pipe is labeled on Seattle City Light maps as “unknown.” A City of Seattle drinking water reservoir or water tower is located upland of the head of the inlet. Overflow from the reservoir/tower reportedly drains through EAA-2 via this outfall (Personal communication, Beth Schmoyer to Dan Cargill, December 2006). Sediments in the inlet may be transported to the LDW during periods of flow. No additional information about the source of discharges from this outfall was available.

3.1.3 Inline Sediment Sampling

Inline sediment samples were collected on April 13, 2005 at two locations in a drainage ditch in the Second Avenue S. subbasin; sample locations are shown on Figure 5 (SPU 2006). Samples were analyzed for PCBs (as Aroclors), SVOCs, selected metals (arsenic, copper, lead, mercury, zinc), and petroleum hydrocarbons. Complete results are provided in Appendix B, and are summarized in Table 2.

Sample results were compared to CSL and SQS values, as well as to Model Toxics Control Act (MTCA) soil cleanup levels (Table 2). For organics, the measured dry weight concentrations were organic carbon-normalized to allow comparison to the CSL/SQS. Although no TOC data were available for these samples, an average TOC of 2.82% was assumed; this value is the average TOC for EAA-2 based on data from other studies. Several chemicals exceeded sediment screening levels in sample RCB44, which is the upstream sample located between Parcels 33, 34, and 42 (Figure 5):

- **N-nitrosodiphenylamine –** A detected concentration of 24 mg/kg DW significantly exceeded the SQS/CSL of 11 mg/kg OC (exceedance factor of 77).
- **Phthalates –** Sample RCB44 contained 37 mg/kg DW of di-n-butylphthalate, which exceeded the SQS of 220 mg/kg OC by a factor of 6. This chemical was also detected in the blank sample. In addition, it contained BEHP and butylbenzylphthalate at concentrations above the SQS (exceedance factors of 1.2 and 1.4, respectively).
- **Zinc –** The detected concentration of 444 mg/kg DW was slightly above the SQS of 410 mg/kg DW (exceedance factor of 1.1).

Sediment in the downstream sample (RCB45) located between parcels 19 and 22 (Figure 5) exceeded the SQS for BEHP (7.8 mg/kg DW; exceedance factor of 5.9). BEHP and zinc are considered chemicals of concern in EAA-2 slip sediments.

Because no TOC data were available for these samples, the comparison to sediment screening levels is approximate. For illustrative purposes, and to put the detected concentrations in context, the data were also compared to MTCA cleanup levels for residential soils (using the lower of MTCA Method A and B cleanup levels). A number of chemicals exceeded the MTCA levels in both samples. These are summarized below:

- **Arsenic –** The MTCA cleanup level of 0.67 mg/kg was exceeded in both samples (exceedance factors of 16 and 34).

- **PAHs –** Detected concentrations of benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and chrysene exceeded the MTCA cleanup level of 0.14 mg/kg in one or both samples (exceedance factors of 1.6 to 2.1). RCB44 had slightly higher concentrations.
- **Total petroleum hydrocarbons (TPH) –** Petroleum hydrocarbons (residual oil) were detected in both samples at concentrations above the MTCA cleanup level of 2,000 mg/kg (exceedance factors of 1.6 and 2.0).

Additional detected chemicals, although not present at concentrations above screening levels, include 2,4-dinitrotoluene (29 mg/kg) in RCB44, primarily used as a plasticizer in explosives, and PCBs (0.12 to 0.25 mg/kg).

3.2 Adjacent Properties

Two properties are located directly adjacent to EAA-2: Industrial Container Services, LLC (the Trotsky Property) to the south and Douglas Management Company (Alaska Marine Lines) to the north (Figure 2). These are described in detail below. Although the northern edge of Boyer Towing property extends to the mouth of EAA-2, Boyer Towing parcels are discussed in Section 3.3 (Upland Properties).

3.2.1 Industrial Container Services / Northwest Cooperage / Trotsky Property

Industrial Container Services, LLC, is the current owner/operator of a steel drum reconditioning facility located at 7152 First Avenue S. in Seattle. The facility has been operating at this site (under several names) for over 60 years. The property is owned by Herman and Jacqualine Trotsky. The Trotsky family operated the facility at this site under the name Northwest Cooperage from 1953 through 1995. The site is referred to in this report as the Trotsky property, Northwest Cooperage, or Industrial Container Services. These all refer to the same facility.

Operations at the site include storage, cleaning, and repainting of empty used drums. Drums accepted by Industrial Container Services for reconditioning may have contained hazardous wastes, resins, solvents, petroleum products, paints, adhesives, or pesticides.

The site is located near the Duwamish River in an industrial/residential area of Seattle (Figure 2). The EAA-2 inlet is located at the northern boundary of the Trotsky property, and the property line extends into this waterway to the high tide demarcation. The site is bordered to the east by Boyer Towing, to the west by First Avenue S., and to the south by other industrial properties.

The site is underlain by loose fill, sandy gravel and sandy silt, and has been paved. Groundwater, at a depth of approximately 10 feet, is tidally influenced, but generally flows towards the slip. Tidal influence may extend as far as 100 meters from the shoreline, but does not significantly affect groundwater flow direction beneath most of the site (Hart Crowser 1987). Groundwater flows toward the Duwamish River with hydraulic conductivity of 10^{-4} to 10^{-2} cm/sec (Hart Crowser 1987).

The site is made up of three parcels of land (King County parcel numbers 2924049108, 2924049030, and 2924049004); these are shown as Parcels 2 through 4 on Figure 5.

- Parcel 2 is 1 acre in size, and is zoned for commercial/industrial use.
- Parcel 3 is 5.09 acres, zoned for commercial/industrial use, and contains eight structures: a 2,520-sq.ft. light manufacturing building (built in 1916), a 2,230-sq.ft. office building (built in 1963), a 20,160-sq.ft. light manufacturing building (built in 1963), a 720-sq.ft. storage building (built in 1943), a 550-sq.ft. locker/washroom/office building (built in 1969), an 8,930-sq.ft. warehouse (built in 1970), a 1,120-sq.ft. material storage building (built in 1916), and a 1,250-sq.ft. light manufacturing building (built in 1970).
- Parcel 4 is 1.04 acres, and is zoned for commercial use. No structures are present on this parcel, and King County property tax records list it as “vacant.”

The facility’s EPA I.D. number is WAD000066084. The facility operates under a Metro wastewater discharge permit (No. 7130) and PSCAA Air Permit No. 11683. The facility does not have an NPDES permit, and according to facility personnel, stormwater flows to the sanitary sewer via a wastewater pretreatment facility. According to the 2004 King County Industrial Waste (KCIW) company fact sheet (KCIW 2004), the facility currently discharges approximately 1,542 gpd of stormwater to the sanitary sewer. The majority of rainwater from the roof drains is collected and used on site.

Roof drains that face west/northwest discharge to the Duwamish River via city storm drains. According to a City of Seattle produced map (2006), the Trotsky property is a part of the Second Avenue S. stormwater drainage basin.

In 1973, Northwest Cooperage bermed the facility with concrete, as requested by Ecology in response to a spill of oil and caustic waste (Ecology 1985). A large portion of the property was paved beginning in 1988 (Parametrix & SAIC 1991), and the property contains multiple buildings, storage areas, and above ground tanks. During a recent site visit, the concrete surface appeared to have been installed over several time periods, and portions were eroded (Appendix C). Sparse vegetative cover lines most of the property perimeter (Appendix A).

During a site visit by Ecology in May 2004, seeps were observed entering the inlet from the Industrial Container Services site, and a variety of debris including steel drum parts were observed in the south bank and in a waste pile located under a former building near the inlet (Appendix A.3). Bank soil and seeps in the area had a petroleum odor and sheen. In addition, a reconnaissance survey conducted by Windward Environmental in May 2004 identified two seeps entering EAA-2 (LDWG 2004). Although the seep locations are listed as “adjacent to Swan Bay Holdings,” reconnaissance photos of the seeps indicate locations along both the south (Trotsky) and north (Douglas Management Company) sides of the inlet (Appendix A.2).

Northwest Cooperage is listed in Ecology’s Confirmed and Suspected Contaminated Sites List (CSCSL), as a site that has been ranked and is awaiting remedial action. The site has been ranked as a 4 on a scale of 1 to 5, where a ranking of 1 indicates the greatest assessed risk to human health and the environment relative to other sites in Washington State. Affected media and status are listed as:

- Groundwater – confirmed contamination with halogenated organics, priority pollutant metals, pesticides, petroleum products, phenols, and non-halogenated organic compounds
- Surface Water – confirmed contamination with priority pollutant metals; suspected contamination with halogenated organics, non-priority pollutant metals, and non-halogenated organics
- Soil – confirmed contamination with halogenated organics, priority pollutant metals, non-priority pollutant metals, pesticides, phenols, non-halogenated organics, and PAHs
- Sediments – confirmed contamination with halogenated organics, priority pollutant metals, non-priority pollutant metals, PCBs, phenols, and non-halogenated organics.

On October 10, 2006, EPA notified Industrial Container Services and Herman and Jacqualine Trotsky of their potential liability pursuant to Section 107(a) of CERCLA for the LDW Superfund site due to the release or threatened release of hazardous substances at this site (USEPA 2006b, 2006c). EPA's letter also requested information and documents relating to the environmental conditions at, and cleanup of, the site.

3.2.1.1 Current Operations

Industrial Container Services, Inc. is a reconditioner of 55-gallon steel and plastic drums and intermediate bulk containers (KCIW 2004). Reconditioning processes (pre-flush, exterior wash, dent removal, and drum painting) conducted by Industrial Container Services are largely the same processes in place for the 60-plus years of "barrel business" operations on the property.

The operations conducted at the facility are described below. While this information is from a 1993 Pollution Prevention Plan (NW Cooperage 1993), current operations are believed to be similar.

<u>Tight Head Drum Reconditioning</u>

1. Flusher/Preflusher: Drums are sprayed internally with a solution containing 3% caustic soda.
2. Stripper: Drums are submerged in a solution containing 13% caustic soda heated to 190^{o}F to clean both the interior and exterior of the drums. The caustic is continuously drained into a tank and reused.
3. Outside Rinse: Drums are sprayed outside with water.
4. Inside Rinse: Drums are sprayed inside with water and then steam, which is blown and siphoned out in order to leave the drum dry and clean on the inside.

Open Head Drum De-Rusting

1. The open head drum is inverted over a spray nozzle where a solution containing 1% DuBois 910 (a rust-inhibiting product containing <20% sodium nitrite) and water is sprayed into the drum.
2. The drum is dried for approximately 10 minutes and then inspected.

Secondary Chemical Cleaning (Tight Head Drums)

The drum is inverted over a succession of nozzles which perform the functions described below.

1. Muriatic acid is sprayed into the drum for 45 seconds; this is repeated twice. The acid is captured and reused.
2. Plain water rinse is sprayed into the drum; this is repeated once.
3. A solution containing 1.5% sodium metasilicate, 1.5% sodium nitrite, and 1.5% caustic soda is sprayed into the drum for 45 seconds.
4. The drum interior is sprayed with steam for 30 seconds.
5. The drum is sprayed with steam and hot water rinse.
6. Drum is blown and siphoned out.
7. Clean, dry drum is inspected. The sodium metasilicate, sodium nitrite, and caustic soda remain on the metal surface and are sold with the drum.

New Drum (Metal Pre-Treatment)

This process removes the light coating of pickling oil from the steel and remains on the drum to provide a light coating of rust inhibitor.

1. The drum shell (body) is high pressure sprayed with a solution of water and 0.5% DuBois SWL, a product containing <10% phosphoric acid. The drum is rinsed with hot water.
2. Final rinse with hot water and 0.5% DuBois Secure Seal, a product containing <25% phosphoric acid.

Paint and Interior Lining

In this process, the drum exterior is painted and, if necessary, the interior is spray lined. The drum lids are also painted and spray lined. The paint used is solvent-based drum enamel. The spray lining is either solvent-based phenolic epoxy or water-based phenolic epoxy latex. Toluene and methyl ethyl ketone are used as reducing agents for solvent-based coatings.

1. Lid coating: the lid is placed on a fixture that spins it while it is being sprayed by a high pressure automatic spray gun with either paint or lining.
2. Drum coating: the drum is automatically fed into the paint booth where the exterior and interior are coated by high pressure automatic spray guns. The drum is automatically ejected from the paint booth after the coating process.

A permitted drum reclamation furnace is used to remove residues from the incoming drums. Empty open head drums are inverted onto a chain conveyor which carries them through the furnace. Drums reach a temperature of 1,500°F. Residue on the interior and exterior of the drum falls off in the form of ash and is dragged out of the furnace where it is collected and sent to a TSD facility.

The following chemicals have been used at the facility:

Solvent-based paint	DuBois Coagulite 100 (35% soluble iron salt)
Solvent-based drum lining	Van Floc 262 (non-hazardous flocculant)
Water-based drum lining	Muriatic acid
Benzene	Sodium nitrite
Toluene	Sodium metasilicate
Xylenes	DuBois 910 (rust inhibitor, <20% sodium nitrite)
Acetone	Diesel fuel
Tetrachloroethylene	Motor oil
1,1,1-Trichloroethane	Gasoline
Trichloroethylene	Bunker oil
Methyl ethyl ketone	Caustic soda
Ferric chloride	Sulfuric acid
Zinc chloride	

Wastes generated at the facility include spent wash and rinse solution, burner ash, shot blast dust, wastewater treatment sludge, oils, scrap metal and plastic drums (Ecology 1992). The facility maintains a permitted wastewater pretreatment system, which includes pH adjustment, coagulation, flocculation, settling, and oil removal (NW Cooperage 1993). Treated wastewater is discharged to Metro via Permit No. 7130, which has a discharge limit of 20,000 gallons per day (gpd) (KCIW 2004). In addition, the facility discharges up to 1,542 gpd stormwater and 420 gpd sanitary waste to the sanitary sewer. Tank solids (sludges) are collected periodically and sent to a permitted treatment, storage, and disposal (TSD) facility.

Information compiled from Puget Sound Clean Air Agency reports identifies air emissions of the following contaminants:

Particulate matter	VOCs
2-Butanone	2-Butoxyethanol
Hydrochloric acid	Isobutyl alcohol
Isopropyl alcohol	Sodium hydroxide
Toluene	Naphtha
Xylenes	

Although a current pollution prevention plan was not located for Industrial Container Services, documentation available for Northwest Cooperage is the most current source of information on potential pollutant sources on the property. The following potential industrial pollutant sources were identified (NW Cooperage 1994):

Pollutant Source	Volume (gallons)
Stripper holding tanks (2)	3,000; 3,200
Water holding tanks (2)	6,500; 2,000
Water/oil holding tank	4,000
OH test tank	550
Expander cooling water tank	500
Metro water system tanks (7)	4,000 to 10,000
Solid waste holding area	NA
Caustic tank	3,000
Hydrochloric acid tanks (2)	5,000; 500
Pre-flush tank	1,000
Flush tank	1,000
Water/oil tanks (2)	5,000; 500
Transfer tank	4,000
Emergency holding tank	3,000
Outside rinse tank	500
Inside wash tank	2,400
Truck diesel tank	2,000
Boiler diesel storage	1,000
Burner quench and venture water tanks (2)	500; 1,000
Plug washer reservoir tank	500
Burner oil tanks (3)	500 to 8,000
T-6 water tank	10,000
Gasoline storage drums	250
Motor oil drum	55
Paint and reducer drums	55

Most of these units are located on concrete surfaces, and upon failure would drain to the nearest sump (NW Cooperage 1994). Exceptions to this include the solid waste holding area, which is located outdoors and not on concrete (stormwater from this area washes toward one or more sumps which drain to the sanitary sewer); gasoline and motor oil drums (spills would flow to a flat surface where it would be mopped up); and paint and reducer drums (spills would flow to secondary containment) (NW Cooperage 1994).

During a recent site visit (summarized in Appendix C), a site representative indicated that the “closed” drainage system allows residual drum contents to be discharged anywhere without risk of it draining off site. In many areas, oil and sheens were evident on the runoff and in puddles on the site.

According to KCIW, Industrial Container Services has an excellent history of compliance with their wastewater discharge permit, achieving five years of the Industrial Waste Gold Award, and the “Commitment to Compliance” plaque in 2002 (KCIW 2004). The company was audited in 2003 in a joint agency effort of EPA, Ecology, and Seattle Public Utilities, with no significant concerns reported (KCIW 2004).

A map of EAA-2 created by City of Seattle in 2006 shows connection from most major buildings located on the Trotsky property to drainage structures which apparently discharge to the Second Avenue S. storm drain outfall, located on the EAA-2 slip. This was contradicted during a November 15, 2006 site visit, during which Industrial Container Services personnel stated that all drainage, including stormwater, spills, and process water, flow to a sump(s) and then to the wastewater pretreatment system, which subsequently discharges to the sanitary sewer.

3.2.1.2 Past Site Use

Drum refurbishing operations on the Trotsky Property reportedly date back to the early 1940s. Geo. E. Mitzel & Co. and Pacific Drum Co. were based at the site as early as 1943. Mitzel & Co. reportedly refurbished 1,500 drums per month for the U.S. government during 1943 to 1945, with storage of approximately 100,000 drums at the site. Drums were washed with a caustic solution and painted with a petroleum-based product (asphaltum).

In 1953, the Trotsky family (three brothers: Earl, Dave and Jack Trotsky) purchased the property and operated the facility under the name Northwest Cooperage Company. In the late 1950s, Jack Trotsky became primary owner, as the sole surviving brother. Herman Trotsky began working for his father at Northwest Cooperage around 1968, and became facility manager in 1970. Beginning in 1984, Herman and Jacqualine Trotsky purchased properties from other family members, including his father. Herman and Jacqualine Trotsky are the current property owners[2].

The drum reconditioning business of Northwest Cooperage Company was sold to Consolidated Drum Reconditioning Company, Inc. (also known as Container Services) in 1995. In 1996, Container Services signed a 10-year lease with the property owners (Herman and Jacqualine Trotsky). In the late 1990s, Palex (a pallet manufacturer) purchased Container Services. Container Services became Industrial Container Services in 2001, when IFCO purchased the facility from Palex. No information on renewal of the 10-year lease was available.

Site history is summarized below.

1950s:

A 1955 map indicates that Northwest Cooperage's outfall sewer is located under a pier, thus implying that the facility discharged wastes directly to the EAA-2 inlet (Washington Pollution Control Commission 1955).

1960s:

A historic aerial photograph, dated 1960, indicated the presence of stacked barrels and a junk yard for cars in the vicinity of the Trotsky Property. Early practices of Northwest Cooperage Co. were suspected of intentional spills of barrel contents directly to the ground in unpaved areas (Ecology 1985).

[2] King County Assessor Property Characteristics Report, Parcels 2924049108, 2924049030, 2924049004.

Prior to 1968, approximately 9,000 to 12,000 gallons per day of raw wastewater, containing 150 to 400 mg/L oil, was discharged to the Duwamish River (Ecology, No Date). Preflush solution, containing hot caustic, was reused until it became excessively dirty; it was then discharged to the main floor sump and pumped to the unlined lagoon on the east side of the site, which was used as a holding facility. The lagoon reportedly overflowed periodically (Schaumberg 1968).

The operations at that time were described as follows: (1) preflush with hot caustic solution to remove most of the remaining chemicals and foreign debris; the washwater was reused until it became excessively dirty, then was discharged from the preflush tank to the main floor sump; (2) wash exterior surfaces of drums with hot caustic; the washwater was also reused, and periodically drained to the floor sump; (3) rinse interior and exterior surfaces with hot, fresh water to remove residual caustic. Following cleaning, dents and rust were removed by physical means and then spray painted. All waste streams from washing and rinsing operations were collected in the floor sump and pumped to an unlined, uncovered lagoon on the south side of the site (Parametrix & SAIC 1991).

In late March 1968, the Washington Pollution Control Commission reviewed a proposal for pretreatment operations (Schaumberg 1968), including:

- steam cleaning of drums containing oils, greases or fats prior to washing; oil and condensed vapor drippings would be collected in a drain trough and the oil skimmed off for ultimate disposal;
- installation of a 5,000-gallon baffled skimming tank to contain all waste streams that are collected in the floor sump (and which previously were pumped to the lagoon) for oil flotation and sludge settling; floating oil would be skimmed from the tank for ultimate disposal, and sludge accumulations periodically removed for ultimate disposal.
- collection of oil and oily sludges and transportation to a suitable site for disposal.

The proposal also recommended a thorough clean-up of the plant site, repair of leaking tanks and conduits, and a continuing housekeeping effort to eliminate most of the oil pollution associated with overland drainage. The proposal was stamped “Approved” by the Washington Pollution Control Commission on April 18, 1968 (Schaumberg 1968).

As early as April 1968, Northwest Cooperage obtained permission from Metro Seattle to discharge wastewater into the Metro Seattle sewer system, provided Northwest Cooperage complied with Metro’s effluent quality standards (Schaumberg 1968). In order to come into compliance, the Washington Pollution Prevention Commission recommended three necessary changes:

- Removal of volatile compounds from waste water, if found in significant quantity;
- Removal of ‘free’ oil from waste water;
- Control of contaminated overland drainage (Schaumberg 1968).

Three improvement strategies were put forward to address these issues:

- Pre-treat drums prior to washing with steam cleaning to remove excess oils/waste;
- Collect and pump all generated wastewater through a skimming tank to remove additional oil and sludge, and dispose of collected product at a certified dump;
- Improve housekeeping standards to avoid overland run off (Schaumberg 1968).

1970s:

A pretreatment system was installed sometime around 1970, as described above. Wastewaters were then discharged to the sanitary sewer system under a Metro permit (No. 7130). Information on where the oil and oily sludges were disposed of was not found. Reportedly, the lagoon was filled after installation of the pretreatment system (Parametrix & SAIC 1991). It is not known whether sludges were removed from the lagoon prior to filling. As late as 1991, the former lagoon location was used for storage of incoming drums (Parametrix & SAIC 1991).

In response to an anonymous complaint, Ecology visited the facility in August 1973 and found that approximately 420 gallons of oil and caustic waste had been released to the Duwamish River due to a spill from the facility's waste oil collection tank (SAIC 1993). As a result of this spill, the facility was fined by Ecology. Subsequently, concrete berms were installed to prevent releases to the LDW.

1980s:

Reports indicate that Northwest Cooperage violated Metro discharge standards on numerous occasions between 1978 and 1985, exceeding discharge limits for oil and grease, lead, copper, zinc, chromium and muriatic acid (Ecology 1985). In 1986, Northwest Cooperage installed additional wastewater pre-treatment facilities in response to enforcement action from Metro (SAIC 1993). New pre-treatment units included equalization and mixing tanks for polymer addition and pH adjustment, as well as two gravity flow oil/water separation tanks (Parametrix & SAIC 1991b). A discharge permit violation occurred in 1988 due to exceedance of zinc limits (Ecology, No Date).

Three consecutive notifications of hazardous waste were filed by Northwest Cooperage between 1980 and 1981:

- August 15, 1980, H. Trotsky filed a notification of hazardous waste activity with EPA, which stated that Northwest Cooperage generated, and treated/stored/disposed and transported hazardous wastes (NW Cooperage 1985). The following hazardous wastes were identified (Ecology, No Date):

Benzene	Dimethylbenzene
Methylbenzene	Diamine
1,1,2,2-Tetrachloroethene	Hydrazine
Toluene	1,1,1-Trichloroethene
Trichloroethylene	Xylene
Acetic acid	Acetone
2-Butanone	n-Butyl alcohol
Carbamic acid	Ethyl acetate
Ethyl carbamate	Formic acid
Tetrahydrofuran	Isobutyl alcohol
Methanol	Methyl isobutyl ketone

- November 19, 1980, Trotsky informed EPA that under a new RCRA ruling, Northwest Cooperage was no longer considered a transporter or treator/storer/disposer of hazardous waste (NW Cooperage 1980). In addition, Trotsky stated that according to a recent EP toxicity test, Northwest Cooperage was not a current generator of hazardous waste, but noted this status could change in the future. Trotsky requested that EPA amend their notification of hazardous waste activities and remove their status as a transporter, treator/storer/disposer of hazardous waste.
- On January 8, 1981, Trotsky filed a notification of hazardous waste activity with EPA, which stated that NW Cooperage was a generator of hazardous waste, however, a list of hazardous wastes or waste characteristics was not provided (NW Cooperage 1985).

In 1984, a Puget Sound Air Pollution Control Authority (PSAPCA) inspector became ill while sampling stack emissions from the Northwest Cooperage facility (Parametrix & SAIC 1991).

On March 7, 1985, Northwest Cooperage filed a revised notification of dangerous waste activities (NW Cooperage 1985), indicating that the facility had no dangerous wastes, which amended their previous status as a hazardous waste generator. At this time, Northwest Cooperage recycled approximately 2,000 drums per day, including drums that had contained solvents and resins. Empty drums were stored in the southern portion of the site (Figure 3), at the location of the former lagoon.

A fire occurred on July 29, 1985 on the Northwest Cooperage facility (cause unknown), and it remained unknown whether drums with incompatible remains that were stored on-site were segregated (Ecology 1985).

A Potential Hazardous Waste Site Preliminary Assessment was prepared on October 1, 1985, which assigned a “high” priority to the site due to potential impacts on workers and the surrounding population from metals and organic contaminants in air emissions, the high potential for soil contamination in the process area, possible groundwater contamination, and a high potential for fire/explosion (Ecology 1985). Follow-up recommendations included sampling for soil contamination in the process area, paving of the process area to minimize future soil contamination, proper disposal of waste sludges and solids, and housekeeping improvements.

A three-phase soil and groundwater investigation was conducted by Hart Crowser for Northwest Cooperage in 1986 and 1987 (Hart Crowser 1986; Hart Crowser 1987). A variety of contaminants were detected in both soil and groundwater, including metals, VOCs, SVOCs, PCBs, and pesticides (see Section 3.2.1.3 below).

After review of the Hart Crowser reports, EPA recommended that improvements be implemented to reduce the potential for offsite surface and subsurface transport of contaminants by eliminating the contribution from precipitation, and to reduce the tidal flushing of contaminants from the soil underlying the facility (USEPA 1988).

A site inspection of Northwest Cooperage was conducted by EPA on April 6 and May 5, 1988 (USEPA 1988b), and on September 9, 1988, a Complaint and Compliance Order was issued which cited a variety of RCRA violations including: accumulating hazardous waste on-site, personnel training non-compliance, preparedness and prevention non-compliance, contingency plan non-compliance, burning hazardous waste oil in a device that was not an industrial furnace or boiler, and violation of land disposal restrictions (USEPA 1988c). Northwest Cooperage subsequently capped the entire site with concrete in an attempt to reduce the offsite migration of contaminants (SAIC 1993).

1990s:

On March 16, 1990, Northwest Cooperage filed a TSD Facility Unmanifested Dangerous Waste Report to Ecology, which reported an incident on March 2, 1990, when Northwest Cooperage accidentally released 26,300 lbs of hazardous waste to NW EnviroService, Inc.(NW EnviroService 1990). The waste was confirmed to be hazardous (containing cadmium, chromium and lead) upon arrival at EnviroService, Inc., and was held in storage until it could be remanifested to Envirosafe Services, Inc of Idaho.

Based on a 1991 Site Hazard Assessment conducted for Northwest Cooperage (see Section 3.2.1.3 below), Ecology assigned a hazard ranking of 4 on a scale of 1 to 5, where a ranking of 1 indicates the greatest assessed risk to human health and the environment relative to other sites in Washington State (Ecology 1991). The assessment noted hundreds of empty drums stored on site, and three aboveground tanks located on the north end of the site (Parametrix & SAIC 1991). The report stated that the drums were stored in an unstable manner (stacked "very high"), but that secondary containment was present in the form of a 6-inch high berm around a cement pad. The contents of the tanks were unknown. No secondary containment was present around the tanks. Various contaminants, including VOCs, PCBs, and metals were detected in site soils and in slip sediments (see Section 3.2.1.3 below).

A 1992 Owner/Operator Site Information Form on file at Ecology indicated that the facility handled the following types of wastes at this time: halogenated organic compounds, metals, PCBs, pesticides, phenolic compounds, non-chlorinated solvents, PAHs, corrosive wastes, base/neutral organics, and petroleum products. Contaminated media are listed as groundwater, surface water, soil, and sediment; air is listed as a potentially contaminated medium (Ecology

1992b). Contaminants of specific concern included vinyl chloride, benzene, naphthalene, and DDT.

A sample of blaster dust was analyzed for TCLP metals in June 1992; the material contained barium (9.7 mg/L), nickel (1.5 mg/L), and trace quantities of cadmium, chromium, and zinc (all less than 1 mg/L) (Aquatic Research 1992).

An unannounced dangerous waste compliance inspection of the Northwest Cooperage facility was conducted by Ecology on December 15, 1992 (Ecology 1992), and violations were documented in a letter written by J. Summerhays (Ecology) to Northwest Cooperage on June 13, 1993 (Ecology 1993). Northwest Cooperage was asked to use the Washington State definition of "empty" drum rather than the less stringent federal definition, report wastewater treatment volumes annually, and revise their notification of dangerous waste activity to indicate that they are a generator of hazardous waste. The company's notification had not been updated since 1985, when Northwest Cooperage identified that they did not generate hazardous waste.

At the time of a 1993 site inspection, Northwest Cooperage processed between 600 and 1,500 drums daily; approximately 30,000 to 150,000 drums were stored onsite (SAIC 1993).

On April 11, 1994, Northwest Cooperage submitted a permit application for reissuance of Discharge Permit No. 7130 (Metro 1994b). Wastewater sampling by Metro in December 1993 and March 1994 indicated that discharges from Northwest Cooperage were in compliance with the permit (Metro 1994b). The permit was reissued on September 15, 1994, effective October 2, 1994 (Metro 1994). Special conditions of the permit included: facility may not clean barrels or drums that contained pesticides, herbicides, cyanide compounds, or heavy metal-bearing materials. In addition, drums and barrels must be "empty" (Metro 1994). Raw materials used by Northwest Cooperage at this time included caustic soda, muriatic acid, sulfuric acid, sodium nitrite, and sodium metasilicate.

On May 25, 1994, EPA sent a letter to H. Trotsky which stated that recent review of EPA files warranted notification that no further inspections were anticipated under the Federal Superfund program for the Northwest Cooperage Co. facility (USEPA 1994).

A 1994 permit application indicated that the facility produced 85.2 tons of drum reconditioning residue (sludge) per year. A 1996 Dangerous Waste Annual Report filed by Northwest Cooperage (NW Cooperage 1996b) included TCLP analytical results for drum reconditioning residue samples collected in July 1996. Samples contained acetone, methylene chloride, 4-methyl-2-pentanone (MIBK), methyl ethyl ketone (2-butanone), 2,4,5-T (a herbicide), and isophorone. This waste stream was designated as an extremely hazardous waste (EHW) under RCRA cadmium, chromium, lead.

Metro Permit No. 7130 was revised in 1997 to include an increase in the discharge volume limit to 25,000 gpd, which reflected total industrial discharge including process water, boiler blowdown and stormwater (King County 1997).

In May 1997, a drum reclamation furnace accident occurred; subsequently, PSAPCA issued an Order of Approval to Construct, Install or Establish an MDH afterburner.

An internal Ecology memorandum (D. Williams, June 29, 1998) recommended that Northwest Cooperage be dropped from pollution prevention planning, based on recent analysis of TCLP metals and fish toxicity on samples of waste residue from drum furnace ash and wastewater sludge (NW Cooperage 1998; 1998b), which found the samples were non-hazardous, in addition to compliance observed during a site inspection completed in conjunction with this testing (Ecology 1998). In addition, no mortalities occurred from fish bioassay tests of either waste residue sample (NW Cooperage 1998b).

July 2, 1998, H. Sullivan (Ecology) communicated to Northwest Cooperage via letter that their facility was below planning and fee thresholds, and therefore Ecology no longer required Northwest Cooperage to prepare a pollution prevention planning document or to pay the previously billed fee for 1998 (Ecology 1998b).

2000s:

Notes compiled by EPA report that in 2000, the City of Seattle supposedly installed a tide gate on the Second Avenue S. storm drain at a partially underground location. The storm drain reportedly runs through the Trotsky property. The tide gate was installed to protect against flooding to Second Avenue and other nearby streets.

From the late 1960s to the present time, the facility has been inspected regularly by PSAPCA and Puget Sound Clean Air Agency (PSCAA), in connection with Permit No. 11683. A number of permit violations and warnings were issued by PSAPCA/PSCAA, including a General Notice of Violation on October 5, 2002, a Notice and Order of Civil Penalty on June 13, 2003, and a written warning issued on November 28, 2003 (USEPA 2006h). Community members have complained of smoke emissions and odors, and inspection report have noted a variety of compliance issues including smoke and vapor emissions, spills with consequent vapor emissions, use of unapproved equipment, failure to keep equipment in good working order, operation under a cancelled permit, odors, a burning-eye sensation from air, lung irritation, and headaches. On two occasions in 1984, a PSPCA inspector became ill while sampling at the site (Ecology 1985).

An unannounced dangerous waste compliance inspection was conducted on December 15, 2003 (Ecology 1993c). At that time, furnace ash and sludge had been placed on the ground surface. Northwest Cooperage was identified as a large quantity generator of dangerous waste.

On June 1, 2004 Metro issued a new draft of permit number 7130, with a total industrial discharge limit of 20,000 gpd (KCIW 2004). Additional monitoring parameters (previously FOG, pH, and flow) were added to the permit: metals, VOCs, and base-neutral acids (BNAs). Special conditions of the permit included a prohibition on cleaning drums and intermediate bulk container (IBC) plastic totes that have contained pesticides, herbicides, cyanide compounds, or heavy-metal bearing materials in excess of metal effluent limitations; and allowed treatment of only “empty” containers, as defined by Ecology (KCIW 2004).

3.2.1.3 Environmental Investigations and Cleanups

The following investigations have been conducted at the Trotsky Property site:

- Phase I and II Preliminary Groundwater and Soil Quality Assessment, conducted in 1986 by Hart Crowser for Northwest Cooperage (Hart Crowser 1986)
- Phase III Groundwater and Soil Quality Assessment, conducted in 1987 by Hart Crowser for Northwest Cooperage (Hart Crowser 1987)
- Site Hazard Assessment for Northwest Cooperage Company, conducted in 1991 by Parametrix and SAIC for Ecology (Parametrix & SAIC 1991)

These investigations are described below. Analytical results for sediment, soil, and groundwater samples are listed in Appendix B, and are summarized in Tables 1 through 4. No cleanup actions are known to have been conducted at the site.

Phase I and II Preliminary Groundwater and Soil Quality Assessment (Hart Crowser 1986)

In February 1986, surface soil samples were collected from six areas (Figure 4); four to five samples were composited to make up a single sample for each area. Samples were analyzed for metals, VOCs, SVOCs, pesticides, PCBs. Analysis of these samples indicated that onsite soils were contaminated with metals and numerous VOCs and pesticides, including methylene chloride, acetone, trichloroethylene (TCE), xylenes, pentachlorophenol, DDT, DDE, endrin, and PCBs. Soil sampling results are summarized in Table 3. No background samples were collected.

In May 1986, three groundwater monitoring wells were installed, including one offsite background well (Figure 4). Soil samples were collected from the monitoring wells during installation, and groundwater samples were collected following development. Soil samples were analyzed for total metals, VOCs, SVOCs, pesticides, and PCBs. Analysis of the soil samples was inconclusive due to questionable QA/QC procedures during the sampling (SAIC 1993).

Groundwater samples were analyzed for dissolved metals, VOCs, SVOCs, pesticides, and PCBs. Analysis indicated that the onsite groundwater was contaminated with metals and a variety of VOCs including vinyl chloride, toluene, ethylbenzene, xylenes, and 2,4-dimethylphenol. In addition, 2,4-dimethylphenol was detected in the background well. Groundwater sampling results are summarized in Table 4.

Phase III Groundwater and Soil Quality Assessment (Hart Crowser 1987)

In September 1986, two additional monitoring wells were installed onsite and soil borings were drilled adjacent to the two existing onsite wells. Subsurface soil samples were collected at depths up to 20.5 feet during installation of the wells and borings. Results of analyses performed on these samples was consistent with previous data, however PCB concentrations were higher than had been measured previously (Table 3). Sample results also indicated the presence of contaminants at depths over 20 feet.

A groundwater sample was collected from one of the onsite monitoring wells in March 1987; results were consistent with the May 1986 groundwater sampling, except that DDT, DDE, and DDD were not detected (Table 4). A variety of VOCs were detected in groundwater, but concentrations were not significantly higher than background concentrations (SAIC 1993).

<u>Site Hazard Assessment (Parametrix and SAIC 1991)</u>

Four surface soil samples were collected during a 1991 Site Hazard Assessment (conducted for Ecology) from unpaved areas of the facility east of the drum storage area in the southeast corner of the site (Figure 4). A sediment sample was also collected from an onsite manhole; the manhole was located about 60 feet east of the drum storage area (Figure 4). The surface soil samples, collected from a depth of 0 to 2 inches, were composited into a single sample for analysis. The sample was analyzed for PAHs, VOCs, organochlorine pesticides, PCBs, cyanide, total metals, and dioxin/dibenzofuran compounds. No VOCs were detected, except for methylene chloride in the manhole sample (6.5 ug/kg). Chromium, copper, lead, nickel, and zinc were detected in the manhole sediment and soil samples. No background soil samples were collected.

In addition, three sediment samples were collected from the slip adjacent to the Trotsky Property, and two sediment samples were collected from the LDW at points upstream and downstream of the slip. These samples were analyzed for PAHs, VOCs, organochlorine pesticides, PCBs, cyanide, and total metals. Metals, methylene chloride, xylene, and acetone were detected in the sediment samples from the LDW. With the exception of mercury, the contaminant concentrations in the upstream LDW sample were slightly higher than those in the downstream LDW sample. Acetone, PCBs, MEK, and methylene chloride were detected above their detection limits in the sediment samples from the slip (SAIC 1993). In addition, chromium, copper, lead, and zinc were detected at concentrations at least three times greater than those in the LDW sediment samples (SAIC 1993). Sediment sample locations are shown on Figure 3.

<u>Additional Groundwater Sampling (Cabuco 1991)</u>

In June 1991, Northwest Cooperage collected a groundwater sample from Well B-2 (Figure 4). The sample was analyzed for dissolved metals, VOCs, and SVOCs. Arsenic, chromium, nickel, zinc, cyanide, vinyl chloride, 1,1-dichloroethane, trans-1,2-dichloroethylene, benzene, toluene, ethylbenzene, xylenes, 2,4-dimethylphenol, and naphthalene were detected. Northwest Cooperage provided a comparison to results for the 1986 and 1987 sampling events, and concluded that groundwater quality had improved at the site.

It should be noted that groundwater samples collected at the site were analyzed for dissolved metals. Therefore, the metals results are not directly comparable to MTCA cleanup levels, which are based on total metals. Even so, arsenic (at 1.4 ug/L) exceeded the MTCA cleanup level of 0.058 ug/L (exceedance factor of 24). In addition, the concentrations of vinyl chloride (25 ug/L) and benzene (13 ug/L) exceed MTCA cleanup levels by factors of 860 and 16, respectively. In addition, the concentration of 2,4-dimethylphenol (100 ug/L) exceeds the groundwater-to-sediment screening value of 2 ug/L by a factor of 50.

3.2.1.4 Potential Sources of Sediment Recontamination

Soil and groundwater underlying the former Northwest Cooperage facility is contaminated with VOCs and pesticides. An inlet located adjacent to the facility discharges directly to the LDW. Sediment in the slip is contaminated with metals and VOCs. PCBs, lead, mercury, zinc, BEHP, DDT, and dieldrin were identified as chemicals of concern in EAA-2 slip sediments.

Contaminant concentrations detected in soil and groundwater at the Trotsky site were compared to soil-to-sediment and groundwater-to-sediment screening levels as well as to MTCA Cleanup Levels to evaluate the potential for recontamination of EAA-2 slip sediments following cleanup. In soils, 19 chemicals that could potentially recontaminate slip sediments were identified (Table 3), including metals, VOCs, SVOCs, and PCBs. The highest exceedance factors were identified for 2,4-dimethylphenol (3 to 30), methylene chloride (1 to 17.5), tetrachloroethylene (1.4 to 17), arsenic (1.8 to 12), mercury (1 to 11), and chromium (1.1 to 10.5). Lead, mercury, and PCBs, which were all detected in soil above the screening levels, are also contaminants of concern in sediment.

In groundwater, 18 chemicals that could potentially recontaminate EAA-2 slip sediments were identified (Table 4). These include metals, VOCs, SVOCs, and pesticides. Highest exceedance factors were found for vinyl chloride (8,600 to 10,700), arsenic (172 to 293), DDD, DDE, and DDT (103 to 208), 2,4-dimethylphenol (14 to 160), 1,2-dichlorobenzene (36), and benzene (20 to 21.3). DDT, lead, and zinc, which were detected in groundwater above the screening levels, are also contaminants of concern in sediment.

Data collected at the Trotsky Property are relatively old (1986 through 1991), and may not accurately reflect current conditions at the site. However, since no remediation has been performed at the site, previously detected contaminants are likely to still be present today. Therefore the potential for sediment recontamination due to contaminants in soil and groundwater at this site is believed to be high.

3.2.2 Douglas Management Company / Alaska Marine Lines

The property owned by Douglas Management Company makes up the northern boundary of the EAA-2 slip (Figure 2), and consists of the 3.09 acre triangle-shaped Parcel 1 as shown on Figure 5. The property name, as listed in King County records, is Alaska Marine Lines. The property is bounded on the northeast by the LDW, on the south by the EAA-2 slip, and on the west by First Avenue S.

According to King County tax records, this parcel was originally purchased by Douglas Management Company on June 30, 1981 from Knik Construction Company. No information on parcel ownership between this date and 1993 is available. In December 1993, the property was sold by Alaska Marine Lines, Inc. to Douglas Management Company; it was subsequently sold to Swan Bay Holdings, Inc. in June 1995. On December 16, 2004, Swan Bay Holdings sold the property back to Douglas Management Company. It should be noted that Douglas Management Company, Swan Bay Holdings, and Alaska Marine Lines have all identified Lynden Incorporated (18000 International Blvd. #800, Seattle, WA 98188) as their registered agent.[3] Lynden Incorporated owns Alaska Marine Lines.

3.2.2.1 Current Operations

The site is currently used by Alaska Marine Lines for storage of shipping containers. In addition, a portion of the site is leased to a company that operates an automobile loading rack. The site is completely paved with concrete or asphalt. The facility has a moorage along the LDW, which is

[3] http://www.secstate.wa.gov/corps

actively used. During a site visit by SAIC on November 15, 2006, a barge was tied up to the moorage, and cargo trucks are visible in the 2006 aerial photo (Appendix A.1).

This parcel is not within the Second Avenue S. drainage basin. According to Alaska Marine Lines personnel, there are no private drains from the property into the Duwamish River. Storm drainage is piped away from the LDW and connects to the City of Seattle drainage system (Personal Communication, Mark Gaska, Alaska Marine Lines, 1/19/07).

Information was available for Alaska Marine Lines at 7100 Second Ave. SW, approximately 400 feet west of Parcel 1. Alaska Marine Lines is a marine freight carrier of varied cargo (primary customers: grocery stores and specialty freight for timber, lumber and mining operations) departing from Seattle twice weekly to Southeast Alaska. Alaska Marine Lines main operations are currently located at their Seattle-based container and receiving dock at 5600 W. Marginal Way SW, several miles to the north of EAA-2. This location holds a stormwater discharge permit (SO3-002471) under the name of Swan Bay Holdings Dock.

On October 10, 2006, EPA notified Swan Bay Holdings (at the Lynden Incorporated mailing address) of their potential liability pursuant to Section 107(a) of CERCLA for the LDW Superfund site due to the release or threatened release of hazardous substances at this site [78]. EPA's letter also requested information and documents relating to the environmental conditions at, and cleanup of, the site.

3.2.2.2 Past Site Use

Little information on previous use of this site was available. Prior to filling, this area was the location of Pacific Metal and Salvage Company and Seabell Shipbuilding Company, both of which were present at the time of a 1945 survey of pollution sources in the Duwamish-Green River drainage area (Foster 1945).

Pacific Metal and Salvage Company specialized in dismantling, wrecking, and salvaging old boats. Broken pieces of the ships being wrecked often fell into the water. On one occasion, a ship under destruction reportedly sank, releasing a considerable quantity of oil into the water (Foster 1945).

Seabell Shipbuiding Company engaged in construction of large wooden vessels. Their principal waste material was wood scraps, which were burned. Local sewage was discharged to the waterway at this location (Foster 1945). The wooden timbers still present across the EAA-2 inlet were likely associated with this operation.

Aerial photos of the site from 1938 to 2006 are provided in Appendix A.1. The current Douglas Management Company site was filled in sometime between 1960 and 1969. No information on the fill history of this site was available from the U.S. Army Corps of Engineers. Prior to that time, the photos show the presence of several large log booms in this area. The 1969 photo shows the triangular piece of land; it was undeveloped at that time. By 1974, a large rectangular building is present in the center of the site and a barge dock is located on the Duwamish Waterway. A structure that may be a storage tank is located near the point of the triangle. The 1984 photo indicates that the site was mostly paved by that time; additional buildings were present in the center of the site and adjacent to the inlet. The site appeared to be used for storage of containers and other materials through the 1990s and early 2000s. By 2006, the buildings in the center of the site were no longer present, however the barge dock was still in use. Sparse vegetation lines most of the property perimeter.

Ecology's UST List identifies two underground storage tanks for Alaska Marine Lines at the 7100 Second Avenue SW address. These tanks were installed on December 31, 1964 and have been removed (date not indicated). One tank contained leaded gasoline; no contents were identified for the other tank. It appears that the two parcels are related.

A spill along the Duwamish River was reported to King County's Environmental Tracking Database (incident ID 508633) on January 6, 2000 for this location; no information on the material or quantity spilled was available (LDWG 2003b).

3.2.2.3 Environmental Investigations and Cleanups

A leaking underground storage tank (LUST) was identified for the 7100 Second Avenue SW Alaska Marine Lines location. Ecology was first notified of the leak on December 14, 1992; the tank was subsequently remediated. Cleanup was completed by March 1999. The leak (most likely leaded gasoline) and consequent cleanup affected soil and groundwater. It is unclear whether this tank and associated investigation/cleanup are related to the Douglas Management Company site.

As part of the Phase 2 RI for the LDW, Windward Environmental conducted a survey of LDW seeps and collected water samples from a subset of these seeps for chemical analysis. Two seeps were identified in the EAA-2 inlet: LDW-SP-53 (Seep 53) and LDW-SP-54 (Seep 54). The location of these seeps was listed as "adjacent to Swan Bay Holdings," however it is unclear whether they were actually observed along the south (Trotsky) side of the inlet. Seep 53 was observed at a location reportedly adjacent to the current Douglas Management Company property, where black ooze and a petroleum odor were observed during a reconnaissance survey (LDWG 2004). Seep 54 was also reportedly located adjacent to current Douglas Management Company property at a location where grey foamy seep water and construction/metal debris were observed along the bank during a reconnaissance survey (LDWG 2004). At the time of sampling, Seep 53 was not sampled because it was either dry or submerged in flow from a nearby outfall. Black liquid was not observed at the time of sampling, however a petroleum odor was associated with sediment in the general area (LDWG 2004). Filtered and unfiltered water samples collected on June 30, 2004 from Seep 54 were analyzed for metals, SVOCs, VOCs, PCBs, pesticides, petroleum hydrocarbons, and TOC. Results are summarized in Table 5. The approximate water level at the time of sampling was 2.7 feet below MLLW.

Data were compared to chronic and acute marine water quality criteria (WQC) and to groundwater-to-sediment screening levels (SAIC 2006). Copper, mercury and PCBs were detected at concentrations above WQC, with exceedance factors of 1.5, 2.3, and 297. In addition, two VOCs (carbon disulfide and chlorobenzene) and three SVOCs (1,2-dichlorobenzene, 1,3-dichlorobenzene, and 1,4-dichlorobenzene) were detected. No WQC are available for these compounds. Although pesticides were not detected, the sample quantitation limits were significantly higher than the marine chronic WQS (exceedance factors of 2 to 500), therefore the presence of pesticides at concentrations of concern cannot be discounted. Petroleum hydrocarbons (as gasoline, diesel, and motor oil) were also detected in Seep 54.

Mercury, lead, zinc, and PCBs were detected in the seep sample at concentrations above the groundwater-to-sediment screening level (SAIC 2006). Exceedance factors for these chemicals were 78.6, 22.8, 4.2, and 5.9, respectively. All four of these chemicals are considered contaminants of concern in EAA-2 sediments.

3.2.2.4 Potential for Sediment Recontamination

Potential contaminant pathways to sediments include bank erosion and groundwater discharge to the EAA-2 inlet. Contaminants in soil may also be transported to groundwater and subsequently discharged to the slip. No information was available regarding the source of the fill material used to create this parcel of land; contaminants present in the fill material may represent a potential source of contaminants to the inlet.

While little is known about the Douglas Management Company property, recent (2004) seep samples adjacent to this site detected PCBs and mercury at levels above marine WQC, as well as petroleum hydrocarbons, VOCs, and SVOCs. Therefore, while few details are known about operations at the site, the potential for sediment recontamination due to contaminants potentially present in groundwater is believed to be high.

3.3 Upland Properties

A number of upland properties are located within the EAA-2 drainage basin. Historical and current operations, environmental investigations and remediation, and the potential for contaminants to reach EAA-2 sediments are discussed below. Parcel numbers used in the following descriptions are those shown on Figure 5. In many cases, very little information about current or historical operations was available. Appendix D presents a summary of parcel information.

3.3.1 Parcels 7 through 13 and 16: Boyer Towing, Inc.

Boyer Towing, Inc. owns parcels 7 through 13 and 16, described in this section. The company also owns Parcel 14 (Wells Truck/Trailer Repair), Parcel 15 (Boyer Logistics/Boyer Alaska Barge Lines), Parcel 24 (WHECO), Parcel 29 (Alki Construction Co.), and Parcel 31 (Alaska Washington Company), which are discussed in subsequent sections.

Boyer Towing owns/operates 28 tugboats and barges on the Pacific/British Columbia/Alaska coasts. The company does contract towing and barging year-round, with seasonal work to Northwest Alaska. The company also owns major barge/freight terminals, docks, and ancillary structures at Seattle, Ketchikan, Thorne Bay and Ward Cove, with secondary docks/moorings at other locations in Washington and Southeast Alaska. The Seattle terminal is operated by Boyer Logistics (Parcel 15) and provides contract stevedoring and freight operations for the company's and outside customers' barges and cargo (http://www.boyertowing.com/).

None of the following parcels have NPDES permits, RCRA ID numbers, waste discharge permits, or underground storage tanks, except as noted. On October 10, 2006, EPA notified Boyer Halvorsen, Kirsten Halvorsen, Maia Halvorsen, and Mary Catherine Halvorsen of their potential liability pursuant to Section 107(a) of CERCLA for the LDW Superfund site due to the release or threatened release of hazardous substances associated with these parcels (USEPA 2006d, e, f, g). EPA's letters also requested information and documents related to the environmental conditions at, and cleanup of, the site.

The individual parcels are described further below, based on King County tax records and other documents.

3.3.1.1 Parcel 7: Vacant

Property Owner: Boyer Towing, Inc.	
King County Parcel 6871200045	RCRA ID#: None
Address: None listed	USTs: None
Parcel Size: 0.13 acres	Stormwater Permit: None
Current Use: Vacant	Waste Discharge Permit: None

This parcel is zoned commercial. The site is vacant with no structures. The parcel was purchased from Edwin and Helene Beck on January 25, 1982.

3.3.1.2 Parcel 8: Storage Yard

Property Owner: Boyer Towing, Inc.	
King County Parcel 6871200811	RCRA ID#: None
Address: None listed	USTs: None
Parcel Size: 0.27 acres	Stormwater Permit: None
Current Use: Storage Yard	Waste Discharge Permit: None

This parcel is zoned commercial/industrial. It is currently vacant with no structures. The parcel was purchased from Kelly-Ryan Inc. on October 10, 2001.

3.3.1.3 Parcel 9: Boyer Towing

Property Owner: Boyer Towing, Inc.	
King County Parcel 6871200620	RCRA ID#: None
Address: 7201 Second Ave. S.	USTs: None
Parcel Size: 0.79 acres	Stormwater Permit: None
Current Use: Terminal	Waste Discharge Permit: None

This parcel is zoned commercial. Its present use is listed as terminal (marine/commercial fishing) and it has no structures. The parcel was purchased from Edwin and Helene Beck on January 25, 1982.

3.3.1.4 Parcels 10 and 11: B&J Auto Wrecking/BJ Truck Wrecking

Property Owner: Boyer Towing, Inc.	
King County Parcel 6871200651 and 6871200660	RCRA ID#: WA0000230342
Address: 7225 Second Ave. S.	USTs: None
Parcel Size: 0.09 and 0.17 acres	Stormwater Permit: None
Current Use: Automotive Repair and Maintenance	Waste Discharge Permit: None

This parcel is zoned industrial; there appear to be several small structures, as well as tires and other debris, on the property. Activities at the site include automotive repair and maintenance. The parcels were purchased by Boyer Towing from Judith Campbell on June 9, 1999.

3.3.1.5 Parcel 12: Storage Yard

Property Owner: Boyer Towing, Inc.	
King County Parcel 6871200675 and 6871200670	RCRA ID#: None
Address: 7235 Second Ave. S.	USTs: None
Parcel Size: 0.30 and 0.33 acres	Stormwater Permit: None
Current Use: Vacant	Waste Discharge Permit: None

No structures are listed for the property; present use is listed as “vacant.” The two parcels were purchased from Kelly-Ryan Inc. on October 10, 2001 and March 8, 2002, respectively. Kelly-Ryan Inc. had operated at this site under RCRA ID WA0000981746.

3.3.1.6 Parcel 13: Boyer Towing

Property Owner: Boyer Towing, Inc.	
King County Parcel 6871200695	RCRA ID#: None
Address: 7245 Second Ave. S.	USTs: None
Parcel Size: 0.35 acres	Stormwater Permit: None
Current Use: Terminal	Waste Discharge Permit: None

This parcel is zoned commercial. Present use is identified as Terminal (Marine/commercial fishing); it has no structures.

3.3.1.7 Parcel 16: Boyer Towing

Property Owner: Boyer Halvorsen Jr. & Kirsten Halvorsen	
King County Parcel 6871200100	RCRA ID#: None
Address: None Listed	USTs: None
Parcel Size: 0.59 acres	Stormwater Permit: None
Current Use: Terminal	Waste Discharge Permit: None

This parcel is zoned commercial. It is used as a terminal (marine/commercial fishing) and has no structures. The parcel was purchased by Boyer Halvorsen Jr. and other family members on September 23, 1991 from Bank of America.

3.3.2 Parcels 5 and 6: DaVinci Gourmet

Property Owner: Lyle & Stephanie Waterman	
King County Parcels 2924049004 and 2924049064	RCRA ID#: None
Address: 7224 West Marginal Way S.	USTs: None
Parcel Size: 1.28 and 1.64 acres	Stormwater Permit: None
Current Use: Warehouse	Waste Discharge Permit: 7759

Parcels 5 and 6 are located to the south of the Trotsky property. Both are zoned for commercial use. There is a large structure on the site (approximately 64,000 square feet). DaVinci Gourmet has manufactured flavored syrups and gourmet sauces since 1989. The property was purchased from Murray Pacific Corporation in March 1996. No additional information on past site use was available for this facility.

According to a City of Seattle drainage map, storm drainage from this facility discharges to the Second Avenue S. storm drain.

3.3.3 Parcel 14: Wells Trucking & Leasing

Property Owner: Boyer Towing Inc.	
King County Parcel 6871200750	RCRA ID#: None
Address: 7265 Second Ave. S.	USTs: None
Parcel Size: 0.62 acres	Stormwater Permit: None
Current Use: Truck Maintenance	Waste Discharge Permit: None

This parcel was purchased by CCK Partnership from Diorio Construction Company on January 27, 1993; it was subsequently purchased by Boyer Towing on October 25, 1993.

One 4000-sq.ft. shop building is located on the site. Wells owns and operates a fleet of 20 semi-tractors (SIC Code 4212). The company stores and maintains the tractors onsite but trailers are not stored onsite. Wells primarily transports shipping containers. Pollution-generating activities include vehicle washing; storage of liquids in aboveground tanks; vehicle and equipment maintenance repair; and parking or storage of vehicles and equipment.
The facility was inspected by Seattle Public Utilities on September 30, 2002 (SPU 2002e). Three catch basins are located along the western boundary of this site, however at the time of the inspection they were covered with shipping containers. Stained soil and rocks were observed in the vehicle parking area. Wash water from vehicle washing drains to the catch basins or to the street, and then to the storm drain system and ultimately the Second Avenue S. storm drain.

Recommendations included: removing shipping containers that covered the three catch basins; cleaning the catch basins; cleaning parking lots; refraining from washing vehicles in areas where water is discharged to storm drains; completing a spill prevention and cleanup plan; labeling spill kits; and educating staff (SPU 2002f).

At the time of a follow-up site visit by SPU on December 13, Wells Trucking was in the process of cleaning out the catch basins. Approximately 35 gallons of a black sludgy material with a strong petroleum odor and sheen had been removed, and additional material remained to be removed. According to the SPU inspector, there appeared to be a tidal influence on the catch basins; water entered the southern catch basin at high tide (SPU 2002e).

The site was re-inspected on December 18, 2002; catch basin cleaning had been completed. A total of 110 gallons of oily sludge was removed and placed in 55-gallon drums. The drums were to be disposed of offsite. The parking had been cleaned and all other recommendations addressed. Wells Trucking personnel indicated that vehicles would no longer be washed onsite. No additional actions were identified (SPU 2002e, 2002g).

In conjunction with oil/water separator sampling at Parcel 15 (see below), samples were collected on February 11, 2003 from two 55-gallon drums of sediment removed from the three catch basins (SPU 2003d). Results are shown in Appendix B and are summarized in Table 5. Samples were analyzed for phthalates, PCBs, and selected metals. Phthalates, cadmium, copper, and zinc were detected at concentrations above SQS sediment screening levels. BEHP (150 mg/kg), butylbenzylphthalate (5.3 mg/kg), and di-n-octylphthalate (4.2 mg/kg) were detected, with exceedance factors of 113, 38, and 2.6, respectively. Zinc (2,570 mg/kg) exceeded the sediment screening level by a factor of 6.3; cadmium and copper slightly exceeded the screening levels. In addition, arsenic (30 mg/kg) and lead (421 mg/kg) exceeded MTCA soil cleanup levels, with exceedance factors of 45 and 1.7, respectively. BEHP, zinc, and lead were identified as chemicals of concern in EAA-2 sediments (Section 2.1).

3.3.4 Parcel 15: Boyer Alaska Barge Lines / Boyer Logistics

Property Owner: Boyer Towing, Inc.	
King County Parcel 6871200210	RCRA ID#: WAD045684990
Address: 7318 Fourth Ave. S.	USTs: None
Parcel Size: 4.45 acres	Stormwater Permit: SO3005598
Current Use: Terminal	Waste Discharge Permit: None

This parcel contains two buildings: a 1600-sq.ft. office building and a 8,820-sq.ft. prefabricated steel cargo terminal building.

Boyer Alaska Barge Lines engages in deep sea domestic transport of freight (SIC Code 4424). Until November 2002, the company transported general freight in shipping containers. Since that time, the new business activity has been shipping and temporary storage of untreated cut lumber from Alaska. The company may continue with general freight shipping as well. Boyer owns six tugboats and one lumber barge.

It has onsite fueling operations; vehicle and equipment washing; truck or rail loading or unloading; liquid storage in aboveground tanks; outside portable container storage; and outside storage of non-containerized materials.

The facility has nine catch basins on site. The facility is covered under an active General Storm Water Discharge Permit (SO3005598). Three oil/water separators drain to the Duwamish River. There is no stormwater detention system onsite.

Seattle Public Utilities inspected the site on January 30, 2003 (SPU 2003). Based on this site visit, extensive corrective actions were required including implementing a spill prevention and cleanup plan to accommodate the seven high-risk pollution generating activities identified during the inspection (SPU 2003b). Other corrective actions included: cover and label all drums and buckets and check them daily for leaks and spills; properly dispose of waste products; and proper storage/disposal of batteries. (Note: A page was missing from the letter identifying corrective actions; presumably, it identified additional corrective actions.)

The inspector noted that materials/wastes that pose erosion, leaching, or spilling concerns appear to have been stored for a long time without management. SPU requested that most of these materials be removed. Runoff at the site appeared to flow mainly to the catch basins, although a potential for direct flow to the LDW was noted. Materials include degreasers (caustics), dirt, petroleum products, and battery acid. A spill from a leaking hydraulic jack was also observed. A site drawing shows the “bone yard area” located in the northern corner of the parcel, and two aboveground storage tanks in the southwest corner of the property.

Storm drainage along the western and southern edges of the property flows toward the Second Avenue S. storm drainage ditches.

Sampling of sediments from the forebay of the southern-most oil/water separator on Parcel 15 was conducted on February 11, 2003 (SPU 2003d). Results are provided in Appendix B and are summarized on Table 5. The sample was analyzed for phthalates, PCBs, and selected metals. Several phthalates were identified in the sample at concentrations above SQS sediment screening values: butylbenzylphthalate (10 mg/kg), BEHP (53 mg/kg), di-n-octylphthalate (6.1 mg/kg), diethylphthalate (4.6 mg/kg), and dimethylphthalate (2.8 mg/kg) with exceedance factors of 72, 40, 3.7, 2.7, and 1.9, respectively. In addition, cadmium (6.3 mg/kg) and zinc (1,120 mg/kg) were detected at concentrations above sediment screening values (exceedance factors of 1.2 and 2.7, respectively). Sample results were also compared to MTCA soil cleanup levels; arsenic, cadmium and lead were detected at concentrations above MTCA cleanup levels. BEHP, lead, and zinc were identified as chemicals of concern in EAA-2 sediments (Section 2.1).

A certificate from Marine Vacuum Service, Inc., dated February 24, 2003, indicates that all catch basins, sumps, and oil/water separators at this site were pumped of all liquid and solid materials, washed with a high-pressure washer, inspected, and were certified clean (SPU 2003d).

Another stormwater pollution prevention inspection was conducted on April 17, 2003 and no further action was required (SPU 2003c).

3.3.5 Parcel 17: Vacant

Property Owner: Seattle Department of Transportation	
King County Parcel 2924049069	RCRA ID#: None
Address: None Listed	USTs: None
Parcel Size: 4.25 acres	Stormwater Permit: None
Current Use: Right-of-Way	Waste Discharge Permit: None

This parcel is a utility road/right-of-way. It is zoned for commercial use. Based on aerial photos, this property is currently being used as a detention basin/wetland.

3.3.6 Parcel 18: Northwest Center for the Retarded

Property Owner: Northwest Center for the Retarded	
King County Parcel 2924049109	RCRA ID#: None
Address: 7275 West Marginal Way S.	USTs: None
Parcel Size: 3.5 acres	Stormwater Permit: None
Current Use: Light Industrial	Waste Discharge Authorization (Minor): 738

This parcel is zoned commercial/light industrial. There is one structure on the site – a 98,000-sq.ft. warehouse. The property was sold by Elmer and Nikoline White to Wallace Enterprises on July 1, 1988. It was subsequently sold to Northwest Center for the Retarded on April 29, 2004.

Northwest Center is a nonprofit organization that provides adult vocational and life skills instruction at this location. The site includes a commercial laundry and a machine shop.

According to a City of Seattle drainage basin map, this property appears to discharge to the Second Avenue S. storm drain.

3.3.7 Parcel 19: Pioneer Human Services

Property Owner: Pioneer Human Services	
King County Parcel 2924049101	RCRA ID#: WAD988482352
Address: 7440 West Marginal Way S.	USTs: None
Parcel Size: 2.16 acres	Stormwater Permit: None
Current Use: General Industrial	Waste Discharge Permit: 7723

This parcel is zoned commercial/industrial/general purpose. There is one structure on the site, a 55,450-sq.ft. warehouse/light manufacturing building. The parcel was purchased from Douglas D. Adkins on June 11, 1997. According to King County tax records, it was purchased by the City of Seattle on October 2, 2000, however Pioneer Human Services is still identified as the taxpayer on this property. Pioneer Services provides skills training and employment to adults “on the margins of society”; this property houses the company’s headquarters.

According to a City of Seattle drainage basin map, this property appears to discharge to the Second Avenue S. storm drain.

3.3.8 Parcels 20 and 21: Pacific Plumbing Supply

Property Owner: Elliott Bay Holding Co. LLC	
King County Parcels 2924049094 and 2924049093	RCRA ID#: None
Address: 7500 West Marginal Way S.	USTs: None
Parcel Size: 0.74 and 0.26 acres	Stormwater Permit: None
Current Use: Warehouse	Waste Discharge Permit: None

There is one 16,700-sq.ft. warehouse building on these parcels, which appears to be attached to the Pioneer Human Services building (Parcel 19). The parcels were sold to Elliott Bay Holding Company, LLC by S&S Partners, LLC (Pacific Plumbing Supply) on July 17, 2006. According to a City of Seattle drainage basin map, this property appears to discharge to the Second Avenue S. storm drain. The current use of this site is unknown.

3.3.9 Parcels 22, 33, 34, and 35: Pacific American Commercial (PACO)

These parcels are all identified as PACO-related facilities.

3.3.9.1 Parcel 22: PACO

Property Owner: Pacific American Commercial (PACO)	
King County Parcel 7327906260	RCRA ID#: WAD009279050
Address: 7400 Second Ave. S.	USTs: None
Parcel Size: 1.97 acres	Stormwater Permit: None
Current Use: Equipment Maintenance	Waste Discharge Permit: None

Pacific American Commercial is a heavy equipment sales and rental company (SIC Code 5084). The company rents and sells equipment ranging from hand-held compactors to 22-ton cranes. The company also maintains, lubricates, paints, and washes equipment. The facility engages in mobile fueling operations; equipment washing; truck loading and unloading; and outdoor storage of waste materials.

There are five buildings on the site: a 15,120-sq.ft. light manufacturing building, a 4,780-sq.ft. office building, two storage warehouses (3,600 sq.ft. and 9,000 sq.ft.), and a 966-sq.ft. service/repair garage.

The facility was inspected by Seattle Public Utilities on September 5, 2002 (SPU 2002). A note on the bottom margin of the inspection report indicates that it includes information for three properties currently operated by PACO; these may to refer to Parcels 22, 33, and 34 as designated in the current report.

The facility has three oil/water separators, one on each of the three parcels, and a washwater collection and treatment system. Stormwater and wash water flows to drainage culverts/ditches. According to the inspection report (SPU 2002), Lot 1 (Parcel 22) stormwater flows to S.

Fontanelle St.; Lot 2 (possibly Parcel 33) stormwater flows to S. Webster St.; and Lot 3 (possible Parcel 34) stormwater flows to a ditch along Second Avenue S.

The washpad area was not covered, and at the time of the September 2002 inspection, was heavily stained with oils and other petroleum products. A heavy equipment storage area also drains to the stormwater system; some drains pass through the oil/water separator prior to discharge, while others do not. A hydraulic fluid leak was observed during the inspection, and oil/petroleum staining was evident on asphalt/concrete and soil/gravel areas of the site (SPU 2002). Loading and outdoor storage areas on all three properties drain to the stormwater system via the oil/water separators.

Issues to be addressed were developing a spill plan; acquiring an additional spill kit; educating employees; cleaning a catch basin; and eliminating an illicit connection of wash pad discharge to the public storm drain system (SPU 2002b). The connection to the storm drain was permanently eliminated on December 4, 2002; a trench was installed around the wash area, and flow was directed to the oil/water separator and then to the sanitary sewer (SPU 2002).

The facility was re-inspected on December 4 and December 18, 2002 (SPU 2002c, SPU 2002d). During the December 18 inspection, King County personnel indicated that they would issue a Discharge Authorization letter (SPU 2002). After the final re-inspection, no further actions were required.

The date PACO purchased this property is unknown.

3.3.9.2 Parcel 33: PACO

Property Owner: John Debruyn	
King County Parcel 7327906260	RCRA ID#: None
Address: 7601 Second Ave. S.	USTs: None
Parcel Size: 1.44 acres	Stormwater Permit: None
Current Use: Vacant (Industrial)	Waste Discharge Permit: None

This parcel is zoned commercial/industrial. Although the property name is Pacific American Commercial, according to King County tax records, the parcel owner is listed as Rose Street Associates, Inc., and the taxpayer of record is John Debruyn. The land is currently listed as vacant. Based on the parcel name, it can be assumed that this property was previously owned or operated by PACO.

3.3.9.3 Parcel 34: PACO Yard 2

Property Owner: South Park Equipment LLC	
King County Parcel 7327906045	RCRA ID#: WAD980725014 (Inactive)
Address: 7500 Second Ave. S.	USTs: Removed (2 tanks)
Parcel Size: 0.78 acres	Stormwater Permit: None
Current Use: Warehouse	Waste Discharge Permit: None

This parcel is zoned commercial. According to King County tax records, the parcel name is PACO Yard 2. It has one structure – a 3,420-sq.ft.warehouse. The property was purchased by South Park Equipment LLC from Fred Schoen on April 25, 1996; Schoen had purchased it from Marie and Charles McKellar on December 29, 1995. Based on the parcel name, it can be assumed that this property was at one time owned or operated by PACO. South Park Equipment also owns Parcel 35, just to the east.

Liquid Air Corp. of North America, a wholesaler of industrial gases, previously operated at this site under RCRA ID# WAD980725014; two underground tanks (< 1,100 gallons) containing hazardous substances are listed in Ecology's UST database as "removed."

3.3.9.4 Parcel 35: Storage Yard

Property Owner: South Park Equipment LLC	
King County Parcel 7327906015	RCRA ID#: None
Address: None Listed	USTs: None
Parcel Size: 0.29 acres	Stormwater Permit: None
Current Use: Storage Yard	Waste Discharge Permit: None

This parcel is zoned commercial. It is currently listed in King County property tax records as vacant. There is no record of any underground storage tanks at this site.

South Park Equipment also owns Parcel 34 (see Pacific American Commercial above). This parcel was purchased from Fred Schoen on April 15, 1996; it was previously owned by Marie and Charles McKellar.

A site drawing prepared during an inspection of Twilley Industrial Tool (Parcel 36) indicates that this property is used as a PACO storage yard.

3.3.10 Parcel 23: PCT Construction

Property Owner: Ritchie Drive LLC	
King County Parcel 7327906375	RCRA ID#: WAD-28473175 (Inactive)
Address: 7400 Third Ave. S.	USTs: Removed (1 tank)
Parcel Size: 0.31 acres	Stormwater Permit: None
Current Use: Warehouse	Waste Discharge Permit: None

PCT Construction is a general contractor for building of roads and bridges (SIC Code 1771). The site has an office and small warehouse for storage of construction materials, including paint. The facility does not engage in pollution-generating activities.

A Seattle Public Utilities inspection was conducted on September 19, 2002 (SPU 2002n). There is one catch basin at the site, located in the south parking lot on the corner between this site and Cunningham Manufacturing (Parcel 25). At the time of the inspection, it was full of sediment and needed to be cleaned (SPU 2002o).

The site was re-inspected on November 27. The catch basin had been cleaned and an insert had been placed in it. No further action was required (SPU 2002p).

The property was purchased by Ritchie Drive LLC on February 21, 2006 from TMR Northwest LLC. Previously, it was owned by Professional Service Industries, a testing laboratory (until September 4, 1997), which operated the site under EPA ID WAD027463165 (currently inactive).

The site was identified as having an underground storage tank (ID 53), under the name Pittsburgh Testing Laboratory. The unleaded gasoline tank is listed with an original installation date of 1964; it has been removed (no date provided).

3.3.11 Parcel 24: WHECO

Property Owner: Boyer Towing, Inc.	
King County Parcel 7327906465	RCRA ID#: WAD988503066 (Inactive)
Address: 7417 Fourth Ave. S.	USTs: None
Parcel Size: 0.57 acres	Stormwater Permit: None
Current Use: Crane Repair	Waste Discharge Permit: None

WHECO, a company that repairs and maintains cranes, including welding and painting, has leased this property from Boyer Towing since Fall of 2001. They repair structural, mechanical, hydraulic, and electrical components of damaged cranes. The parcel contains one 23,400-sq.ft. light manufacturing building. Welding and painting activities are conducted inside the building.

A Seattle Public Utilities inspection was conducted on October 4, 2002; no further action was required (SPU 2002h, 2002i). One catch basin was identified on the site; the lid was sealed with concrete and could not be removed. At the time of the inspection, water was flowing out of the drain (north) onto Fontanelle St. The drain appeared to be connected to roof drains at the site (SPU 2002h). Inside the building, three floor drains were observed. Two were capped; the northernmost drain was slotted, and therefore could collect material such as metal shavings.

During a visit to a nearby facility on October 7, 2002, inspectors checked a vault in the WHECO parking lot. Tests were conducted on October 7 and October 16 to determine if the flow of water from the building floor drains into the sanitary system (SPU 2002h). Water flow and dye confirmed that water flowed from the building drains to a vault in the warehouse adjoining the WHECO facility, to a vault in the south parking lot, and then into the 8-inch sanitary sewer line running along Fourth Avenue S. (SPU 2002i).

Ecology and EPA databases list this site as the Seattle Sludge Interim Project, a nonhazardous waste treatment and disposal facility (RCRA ID WAD988503066; inactive). No other information was available.

3.3.12 Parcel 25: Cunningham Manufacturing

Property Owner: Webster Street LLC	
King County Parcel 7327906426	RCRA ID#: WAD009271578 (Inactive)
Address: 318 S. Webster St.	USTs: None
Parcel Size: 0.78 acres	Stormwater Permit: None
Current Use: Metal Fabrication	Waste Discharge Permit: None

This parcel is used by Cunningham Manufacturing for metal machining (SIC Code 3494), specifically fabricating of air and hydraulic cylinders using sheet aluminum and bronze. The site has three buildings: a 6200-sq.ft. shop/office; a 9500-sq.ft. light manufacturing building; and a 7500-sq.ft. warehouse. The property was purchased by Webster Street LLC on June 18, 1999 from DJR Enterprises.

During a Seattle Public Utilities inspection on September 17, 2002 (SPU 2002ad), several pollution-generating activities were identified, including loading and unloading of liquid and metals, and outside storage of non-containerized materials (scrap metal, metal chips). Two catch basins are located onsite, one on the property line boundary with PCT Construction (Parcel 23). Both were very full at the time of the inspection. The catch basins drain to the Second Ave. S. storm drain. Pollutants that may be discharged to the storm sewer include cutting oil, solvents, coolant, hydraulic oil, primer, and reducer.

Recommendations resulting from the inspection included: cleaning the catch basin in the southwest parking lot; regular sweeping of parking lots; preparation of a written spill prevention and cleanup plan; and education of employees about the spill prevention and cleanup plan (SPU 2002ae). A re-inspection on November 27, 2002 found that the catch basins had been cleaned and all recommendations addressed. No further action was required (SPU 2002af).

The facility’s RCRA ID (WAD009271578) has been inactive since December 31, 2003.

3.3.13 Parcels 26 and 27: United Iron Works

Property Owner: United Iron Works, Inc.	
King County Parcels 7327906525 and 7327906515	RCRA ID#: WAH000008482
Address: 7421 Fifth Ave. S.	USTs: Removed (1 tank)
Parcel Size: 0.11 and 1.03 acres	Stormwater Permit: SO3002137
Current Use: Steel Fabrication	Waste Discharge Permit: None

Parcel 27 is zoned commercial/industrial; Parcel 26 has one structure, a 27,500-sq.ft. light manufacturing building. Parcel 26 was purchased from Hugh and Jane Ferguson (see Parcels 28 and 40 below) on December 31, 1984. No property sales records were available for Parcel 27.

United Iron Works is a steel fabricator; they manufacture structural buildings including painting of steel (SIC Code 3441). Pollution-generating activities at the site include loading and unloading of steel, storage of liquids in aboveground tanks, outside storage of non-containerized materials, parking or storage of vehicles and equipment, and painting or finishing of vehicles or equipment. The ground surface is mostly gravel, with some asphalt.

The facility is a conditionally-exempt small quantity generator (RCRA ID# WAH000008482) and had one UST (ID 1019), an approximately 1,000-gallon leaded gasoline tank which has been removed (date not known). There are no oil/water separators on site. Storm drainage flows to the Second Avenue S. outfall. Pollutants that might be discharged to the storm sewer include solvents, petroleum products, cutting dust, and volatiles (paint).

The facility operated under an active general stormwater discharge permit (SO3002137), which expired on November 18, 2005 (Ecology 2000). Presumably, this permit has since been renewed, however no evidence of a renewed permit was found in the files. On request from Ecology, United Iron Works submitted a Stormwater Pollution Prevention Plan (SWPPP) on September 19, 2001 (Ecology 2001, United Iron Works 2001).

A Seattle Public Utilities inspection was conducted on August 29, 2002 (SPU 2002q). Recommendations were made regarding the spill plan and spill kit locations. No other problems were found, and no further action was required (SPU 2002r).

3.3.14 Parcels 28 and 40: Ferguson Construction

Property Owner: Gene J. Colin	
King County Parcels 7327906585 and 7327905940	RCRA ID#: None
Address: 7433 Fifth Ave. S. and 7501 Fifth Ave. S.	USTs: Removed (1 tank)
Parcel Size: 0.51 and 0.11 acres	Stormwater Permit: None
Current Use: Warehouse	Waste Discharge Authorization (Minor): 725

Gene J. Colin purchased both parcels on October 13, 1993 from Patrick and Jeannette Kinnear. The Kinnears purchased Parcel 28 from Hugh and Jane Ferguson on December 31, 1984.

Ferguson is a construction company (SIC code 1521) with office and material storage activities onsite. The site has two structures: an office and a warehouse. The office is 14,710 sq ft., and the warehouse (storage shed) is 1,296 sq ft.

Parcels 28 and 40 are both zoned for commercial and industrial use. The site is located approximately 300 feet southwest of the Duwamish Waterway. The site is surfaced with asphaltic concrete. Ferguson conducted an independent remedial action for a LUST (ID 2146) at this location, as described below.

A 2,000-gallon underground storage tank (UST) and a pump dispenser were removed by O'Sullivan Construction in November 1990 (GeoEngineers 1994). The tank was used for storing unleaded gasoline. O'Sullivan obtained three soil samples from the excavation completed for removal of the UST from a depth of approximately 10 feet and submitted them for analyses of total petroleum hydrocarbons (TPH). TPH was detected in the three samples at concentrations exceeding Ecology MTCA Method A soil cleanup levels (GeoEngineers 1994).

GeoEngineers explored subsurface conditions in the vicinity of the former UST by drilling and installing one monitoring well (MW-1) on November 3, 1993 (GeoEngineers 1993). Groundwater was encountered at approximately 7 feet bgs. Two soil samples were collected from the boring at depths of 3.5 and 8.5 feet; fuel hydrocarbons and BTEX were not detected. A groundwater sample was collected on November 5, 1993; benzene and xylenes were present at concentrations above the MTCA Method A cleanup levels. GeoEngineers recommended that soil in the vicinity of the former UST excavation be removed.

Two exploratory borings were drilled in December 1993 (B-1 and B-2). Two samples were collected from each boring at depths of 8.5 and 11 feet, based on field screening results. The results of chemical analyses obtained from the exploratory borings found gasoline-range hydrocarbons at concentrations exceeding the MTCA Method A soil cleanup level of 100 mg/kg in one soil sample from boring B-1 and both samples from boring B-2. Benzene was detected at a concentration exceeding the MTCA Method A cleanup level in a soil sample from B-2.

GeoEngineers monitored remedial excavation activities performed by Joe Hall Construction between March 8 and 10, 1994 in the vicinity of the former UST (GeoEngineers 1994). Soil was excavated until chemical analytical results for soil samples obtained from the excavation limits indicated that concentrations of benzene, toluene, ethylbenzene, and xylenes (BTEX) and gasoline-range hydrocarbons in soil at the excavation limits were less than respective MTCA Method A soil cleanup levels, with two exceptions:

- A soil sample was obtained from a depth of 9 feet at the northeast wall of the excavation. Gasoline-range hydrocarbons were detected in the sample at a concentration of 140 mg/kg, slightly above the MTCA Method A cleanup level of 100 mg/kg. BTEX constituents were detected at concentrations below cleanup levels. It was necessary to cease excavation of soil at this location to avoid undermining the canopy footing.
- A soil sample was obtained from a depth of 10 feet near the center of the excavation base. Gasoline-range hydrocarbons were detected in the sample at a concentration of 140 mg/kg, slightly above the MTCA Method A cleanup level of 100 mg/kg. BTEX constituents were detected at concentrations below cleanup levels. Because of the large quantity of ground water in the excavation, additional soil could not be removed from the excavation base.

Approximately 600 cubic yards of petroleum-contaminated soil were removed from the site and disposed. The excavation was backfilled with 2-inch minus quarry rock.

GeoEngineers also completed post-remedial excavation subsurface explorations, which included drilling and installing three wells on March 23, 1994 and two hand auger borings on May 5, 1994 (GeoEngineers 1994). Soil samples were obtained from a depth of approximately 8 feet in the two hand borings and no gasoline-range hydrocarbons or BTEX were detected in either sample.

GeoEngineers conducted ground water monitoring and sampling at the site between November 1993 and December 1995. Ground water monitoring data indicate a trend of decreasing contamination concentrations over time. Data for the last four quarters of monitoring (March 1995 through December 1995) indicate that BTEX and gasoline-range hydrocarbons were less than MTCA Method A cleanup levels with two exceptions:

- The concentration of benzene in the December 4, 1995 ground water sample from MW-1 (7.3 µg/l) was greater than the MTCA Method A cleanup level of 5 µg/l, but less than the marine surface water discharge criterion of 71 µg/l.
- The concentration of benzene in the September 1995 groundwater sample from MW-3 (34 µg/l) was greater than the MTCA Method A cleanup level of 5 µg/l, but less than the marine surface water discharge criterion of 71 µg/l.

Based on a review of the GeoEngineers reports, Ecology determined that the release of total petroleum hydrocarbons as gasoline into soil and groundwater at the site no longer poses a threat to human health or the environment, and therefore no further action is necessary regarding this TPH release (Ecology 1996).

During a Seattle Public Utilities inspection at the 7433 Fifth Avenue S. property on August 29, 2002, no major pollution-generating activities were identified. Approximately five vehicles are parked and washed onsite. According to the business inspection form, this facility drains to the Second Avenue S. storm drain, however a handwritten note on the form indicated that drainage may be to the Seventh Avenue S. storm drain (SPU 2002s). No further action was required (SPU 2002t).

3.3.15 Parcel 29: Alki Construction Company

Property Owner: Boyer Towing, Inc.	
King County Parcel 7327906685	RCRA ID#: None
Address: 7410 Fifth Ave. S.	USTs: None
Parcel Size: 0.41 acres	Stormwater Permit: None
Current Use: Machine Shop/Warehouse	Waste Discharge Permit: None

The parcel is zoned commercial/industrial and contains two buildings: a 2,400-sq.ft. machine shop and a 2,640-sq.ft. warehouse/machine shop. The parcel was purchased by Boyer Towing Inc. from University Mortgage & Investment LLC on November 4, 2004. It was previously sold by Merle and Viola Steinman on July 1, 2001. No other information on this property was available.

3.3.16 Parcel 30: Hurlen Construction

Property Owner: Cascade Barge & Equipment LLC	
King County Parcel 7327906645	RCRA ID#: None at this location
Address: 523 S. Riverside Drive	USTs: None
Parcel Size: 0.57 acres	Stormwater Permit: None
Current Use: Vacant (Industrial)	Waste Discharge Permit: None

This parcel is zoned commercial. According to King County records, the site is currently vacant.

Hurlen Construction provides specialty marine and upland construction services, including steel pile driving and auger cast piles. In June 2002, Hurlen Construction was acquired by American Civil Constructors. They also work as a cleanup contractor for contaminated sediment remediation. Thomas Hurlen sold this parcel to Cascade Barge & Equipment LLC on April 24, 2006; Hurlen Construction is now operating from a nearby location at 700 S. Riverside Dr. (WAD988518239).

3.3.17 Parcel 31: Alaska Washington Company

Property Owner: Boyer Towing, Inc.	
King County Parcel 7327906750	RCRA ID#: None
Address: 7410 Fifth Ave. S.	USTs: None
Parcel Size: 0.07 acre	Stormwater Permit: None
Current Use: Unknown	Waste Discharge Permit: None

This parcel is zoned commercial/industrial. The property was purchased by University Mortgage & Investment LLC on July 1, 2001, from Merle and Viola Steinman. The registered agent for University Mortgage & Investment LLC is Ronald Steinman, who purchased the property from Ellen Bruya on January 8, 2001. The current taxpayer of record is Boyer Towing. No other information on this property was available.

3.3.18 Parcel 32: Fox Plumbing & Heating

Property Owner: S.P. Steinberg	
King County Parcel 2924049103	RCRA ID#: None
Address: 7501 Second Ave. S.	USTs: None
Parcel Size: 0.69 acre	Stormwater Permit: None
Current Use: Warehouse	Waste Discharge Permit: None

The parcel owner is listed as Dorris Adkins, however S.B. Steinberg is the current taxpayer of record. Fox Plumbing & Heating stores plumbing supplies in a 10,800-sq.ft. warehouse, and the site includes parking for passenger and fleet vehicles (SIC Code 1711).

A Seattle Public Utilities inspection on October 18, 2002 found two minor issues (SPU 2002y). There are two catch basins onsite: one in the south parking lot and one in the east parking lot; at the time of the inspection, sediment had accumulated in the south lot catch basin. Catch basins drain to the Second Avenue S. storm drain. Fleet vehicles were washed in the south parking lot, which drained to the catch basin; potential pollutants include oil, antifreeze, and waste oil. Recommendations included cleaning of catch basins, regular sweeping of the parking lot, and eliminate discharge of wash water to storm drains or surface flow (SPU 2002z).

During a site re-inspection on December 18, 2002, the catch basin had been cleaned. No further action was required (SPU 2002aa).

3.3.19 Parcel 36: Pacific NW Fasteners / Twilley Industrial Tool

Property Owner: Benton M. Bangs Jr.	
King County Parcel 7327906110	RCRA ID#: None
Address: 222 S. Austin St.	USTs: None
Parcel Size: 0.17 acre	Stormwater Permit: None
Current Use: Light Manufacturing	Waste Discharge Permit: None

The parcel zoned industrial and contains one building, a 5,392-sq.ft. light manufacturing building. According to King County property tax records, the facility name is Pacific NW Fasteners. However, a facility inspection by Seattle Public Utilities at this address reports the occupant as Twilley Industrial Tool. Twilley Industrial Tool Supply is an industrial wholesaler (SIC Code 5013). It does not engage in any pollution-generating activities. The facility was inspected on September 20, 2002, with no issues identified and no further action required (SPU 2002l, SPU 2002m). There are no catch basins onsite. The SPU inspector concluded that there is very minimal change of any pollutants leaving this facility and entering the storm drain system.

3.3.20 Parcel 37: W.G. Wright & Associates

Property Owner: Expanded Metal International	
King County Parcel 7327906011	RCRA ID#: None
Address: 301 S. Webster St.	USTs: None
Parcel Size: 0.17 acre	Stormwater Permit: None
Current Use: Warehouse	Waste Discharge Permit: None

The property was purchased by Expanded Metal International on September 23, 1985 from Lukas Machine Profit Sharing. The site is used by a manufacturer’s representative for Industrial Construction Supply (SIC 5039). On the site is a store and 7,500-sq.ft. warehouse for electrical parts, rotohammer bits, concrete anchors, screws, bolts, extension cords, lights, and cutting fluid.

Seattle Public Utilities inspected the facility on September 30, 2002 (SPU 2002ab). Pollution-generating activities include occasional vehicle washing and liquid storage in drums (lubricating oil). There are no catch basins onsite; site drainage is to the Second Avenue S. storm drain. Corrective actions included discontinuing washing of the one vehicle onsite and removing a five-gallon bucket of lube oil identified outside on the site (SPU 2002ac). A subsequent re-inspection (December 13, 2002) found the oil had been removed. No further corrective action was required (SPU 2002ab).

3.3.21 Parcel 38: Tucker-Weitzel & Associates, Inc.

Property Owner: TWA Real Estate	
King County Parcel 7327906120	RCRA ID#: None
Address: 230 S. Austin St.	USTs: None
Parcel Size: 0.17 acre	Stormwater Permit: None
Current Use: Warehouse	Waste Discharge Permit: None

This parcel is zoned commercial. There is one structure on the property – a 5,700-sq.ft. warehouse/industrial garage. The parcel was purchased by TWA Real Estate from David Weitzel et al. on May 14, 1996. It had been previously purchased from Dorothy Widmer on March 30, 1995. No other information on this property was available.

3.3.22 Parcel 39: ATC Distribution Group, Inc. / Automatic Transmission Parts

Property Owner: DMW/MCW&JAW/BEW Partners	
King County Parcel 7327905955	RCRA ID#: WAD988466710 (Inactive)
Address: 401 S. Webster St.	USTs: Removed (2 tanks)
Parcel Size: 1.26 acres	Stormwater Permit: None
Current Use: Warehouse/Vehicle Maintenance	Waste Discharge Permit: None

The property was purchased by DWW/MCW & JAW/BEW Partners Ltd. from White & White Properties on November 21, 1995.

ATC is a distribution facility for automotive parts (SIC code 5063) and an automotive transmission repair shop (SIC code 7537). The facility is a small quantity generator of used transmission fluid (WAD988466710; inactive since 1997). The property has two structures – one is a prefabricated steel one-story building of 19,556 sq.ft. The other is a 2,925 sq.ft. wooden shed.

The company receives automatic transmissions, drains fluid into 55-gallon drums, and sends them to California for rebuilding. About 800 gallons of transmission fluid are drained per year. The facility also warehouses motor vehicle parts for wholesale distribution.

During an inspection by the Seattle Public Utilities on November 18, 2002, no pollution-generating activities were identified (SPU 2002ag). The site has several sumps and an on-site oil/water separator that drains to the sanitary sewer.

At the time of the SPU business inspection, two sumps in the parking lot were completely full of "muck," and the parking lot contained debris. According to the facility operator, the sumps are not connected to the storm drain system. Pumps installed in the sumps pump stormwater to an oil/water separator on the southeast corner of the site, and then to the sanitary sewer.

The following corrective actions were required: clean the two sumps located in the south parking lot; determine if the sumps have pipes entering or exiting them and which direction they are facing; if the pipes are connected to the city storm drain system, then the structures are defined as catch basins and must be maintained; clear the sumps in the back of the property of sediment and leaves; sweep the parking lot regularly; and move and properly dispose of a 55-gallon drum of toluene stored in the back parking lot (SPU 2002ah).

A re-inspection on February 24, 2003 found the facility in compliance (SPU 2003e).

Previously, this site (under the name RPM Merit, or RPM) had two underground unleaded gasoline storage tanks. They consisted of a 1,000-gallon unleaded gasoline tank and a 2,000-

gallon diesel tank. Both were reportedly last used in 1991. A 30-day notice of closure for both tanks was submitted to Ecology on June 7, 1994 (RPM 1994). One of these tanks was listed on the Ecology's LUST list (ID 2703); original notification of the leak occurred on August 19, 1994 and cleanup of soil and groundwater was started on June 1, 1995. No additional information on this cleanup action was available. Both tanks are listed as "removed."

3.3.23 Parcel 41: Cascade Mattress Factory

Property Owner: Donn E. Carlson	
King County Parcel 7327905910	RCRA ID#: None
Address: 7509 Fifth Ave. S.	USTs: None
Parcel Size: 0.46 acre	Stormwater Permit: None
Current Use: Manufacturing	Waste Discharge Permit: None

This parcel is zoned commercial/industrial. It has three manufacturing buildings on the site, all 4,000 to 4,000 sq.ft. in size. No other information on this property was available.

3.3.24 Parcel 42: J&M Stamp & Form / M&M Roofing

Property Owner: Jon Van Dyke	
King County Parcel 7327904920	RCRA ID#: None
Address: 7620 Second Ave. S.	USTs: None
Parcel Size: 0.63 acre	Stormwater Permit: None
Current Use: Industrial/Metal Working	Waste Discharge Permit: None

The parcel is zoned commercial/industrial. It has two structures – one structural steel, 3-sided storage facility (4,800 sq.ft.) and one prefab steel warehouse (5,760 sq.ft.).

The property currently has two occupants: J&M Stamp & Form (7622 Second Avenue S.) and M&M Roofing of Washington, Inc. (7620 Second Avenue S.). According to the inspection reports described below, both occupants drain to the Second Avenue S. storm drain.

J&M Stamp & Form leases space on the property for steel/aluminum metal working (SIC Code 7692), including shearing, notching, bending, welding, and grinding of steel and aluminum, and steel die cutting. No liquids are used. A Seattle Public Utilities inspection was conducted on September 17, 2002 and no pollution-generating activities were identified (SPU 2002u). The site was identified as a "very clean facility." No further action was required (SPU 2002v).

M&M Roofing is a roofing contractor (SIC Code 1761); the site has an office building and storage for flat bed trucks and some roofing materials. A Seattle Public Utilities inspection was conducted on September 30, 2002; the only pollution-generating activities identified were parking or storage of vehicles and equipment (SPU 2002w) and no significant compliance issues were identified. Evidence of oil leaking from a fork lift was observed, and temporary storage of roofing materials was located in the southwest corner of the parking lot. There are no catch basins onsite, although it is possible that runoff may reach a catch basin located on this parcel just south of M&M Roofing. No further action was required (SPU 2002x).

Maps prepared by Sweet Edwards in 1985 showing historic waste disposal sites (LDWG 2003b, Appendix F, Figure F-2) identify this parcel as the former location of Liquid Air Company. Wastewater from acetylene production was disposed of in ponds at this location until 1979. The ponds were excavated and filled by 1984. See also Parcel 34.

3.3.25 Parcel 43: Industrial Battery Systems

Property Owner: Edmund Stainski	
King County Parcel 7327904895	RCRA ID#: None
Address: 211 S. Austin St.	USTs: None
Parcel Size: 0.23 acre	Stormwater Permit: None
Current Use: Warehouse	Waste Discharge Permit: None

This parcel is zoned for commercial use. The site contains one 4,080-sq.ft. warehouse building. Industrial Battery Systems provides batteries and related products to electric vehicles including forklifts, pallet jacks, and plant vehicles. No other information on this parcel was available. According to a City of Seattle drainage basin map, this property appears to discharge to the Seventh Ave. S. storm drain and therefore there is no pathway to EAA-2 sediments from this site.

3.3.26 Parcel 44: Northwest Building Tech, Inc.

Property Owner: Mary C. Pennacchi	
King County Parcel 7327904875	RCRA ID#: None
Address: 216 S. Austin St.	USTs: None
Parcel Size: 0.29 acre	Stormwater Permit: None
Current Use: Light Manufacturing	Waste Discharge Permit: None

This parcel is zoned for commercial use. It is currently occupied by Northwest Building Tech, a company that is engaged in light manufacturing (SIC Code 1522) including assembly, painting, and manufacturing of retail store fixtures (tables/desks). The fixtures are primarily wood but include some steel/aluminum. Metal work is subcontracted.

A Seattle Public Utilities inspection was conducted on September 20, 2002 and no compliance issues were identified (SPU 2002k). The property has two catch basins (SPU 2002j). According to a City of Seattle drainage basin map, this property appears to discharge to the Seventh Ave. S. storm drain and therefore there is no pathway to EAA-2 sediments from this site.

4.0 Summary of Data Gaps

Based on the evaluation of existing information described in Section 1 through 3 of this report, a number of data gaps have been identified. These data are necessary for the preparation of a Source Control Action Plan for EAA-2. Data gaps are summarized below.

4.1 Piped Outfalls

Second Avenue S. Storm Drain

According to Seattle Public Utilities maps, the area to the south of EAA-2 is within the Second Avenue S. drainage area and discharges to the inlet via the Second Avenue S. storm drain. The storm drain reportedly consists of ditches, culverts, and pipes. A tide gate was reportedly installed along the Second Avenue ditch to reduce flooding. Additional information about storm drainage is needed, including which facilities currently discharge to the storm drains/ditches, an improved description of the drainage structures, and an estimate of the quantity of flow that is discharged to better understand the potential for contaminants to be transported to the inlet via this storm drain.

It is not clear whether stormwater from the Trotsky property flows in the Second Avenue S. storm drain. Reportedly, roof drains on the north and west sides of the property drain to the inlet. This should be clarified.

Very little analytical data were available for inline sediments or drainage structures. Two inline sediment samples were collected (Figure 5), and several contaminants of potential concern were identified in the samples, including arsenic, BEHP and other phthalates, PAHs, zinc, TPH, and N-nitrosodiphenylamine. Additional in-line sediment samples should be collected to permit assessment of the potential for sediment recontamination via this pathway.

Piped Outfall at Head of Inlet

Additional information should be collected to confirm the function of and source of flow to the concrete piped outfall at the head of the slip.

4.2 Industrial Container Services / Trotsky Property

Groundwater Discharge

Chemicals of concern may be transported to slip sediments by contaminated groundwater at the Industrial Container Services site. A variety of chemicals have been detected in soil and groundwater at the site, including several that exceed the soil-to-sediment and groundwater-to-sediment screening values, as shown in Tables 3 and 4. These include 1,2-dichlorobenzene, 2,4-dimethylphenol, DDD, DDE, DDT, acenaphthene, antimony, arsenic, benzene, cadmium, lead, methylene chloride, naphthalene, silver, trans-1,2-DCE, vinyl chloride, and zinc. Of these, DDT, lead, and zinc were identified as contaminants of concern in EAA-2 sediments. Available groundwater data, however, are quite old (May 1986 through March 1987), and may not reflect current groundwater conditions at the site.

Additional groundwater sampling is required to determine whether there is a significant potential for sediment recontamination via this pathway. Five groundwater samples (four onsite and one background well) were installed by Hart Crowser in 1986/1987. During a site visit by SAIC on November 15, 2006, the four onsite wells were located and examined (Appendix C). The offsite well (B-3) reportedly was destroyed during construction of the current First Avenue S. bridge. Two of the wells (B-1 and B-2) appear to be suitable for groundwater quality monitoring. Additional monitoring wells should be installed along the Trotsky property boundary adjacent to the EAA-2 inlet in order to assess the potential for sediment recontamination via the groundwater pathway.

Confirmation of the groundwater flow direction and discharge rate to the inlet would allow more detailed evaluation of this pathway.

Characterization of Former Lagoon

Three surface soil composite samples were collected from an area near the former wastewater lagoon in 1986. Arsenic, mercury, and methylene chloride were detected in these samples at concentrations above groundwater-to-sediment screening levels (Table 3). If contaminants are detected at levels of potential concern in groundwater, additional soil and groundwater characterization of the former lagoon area may be needed to determine whether it is a potential source of contaminants to the EAA-2 inlet.

Bank Erosion

Soil samples were collected near the banks of the inlet by Hart Crowser in February 1986 (Hart Crowser 1986). Samples indicated the presence of arsenic, chromium, lead, methylene chloride, tetrachloroethylene, and trichloroethylene above MTCA cleanup levels. In addition, 2,4-dimethylphenol, 2-methylnaphthalene, 2-methylphenol, BEHP, lead, mercury, N-nitrosodiphenylamine, PCBs, and pentachlorophenol were detected at concentrations exceeding soil-to-sediment screening levels in these areas.

These soil data are quite old, however, and it is not clear whether they reflect current concentrations of contaminants in the banks of the inlet. During recent site visits, debris was visible in the bank soils. Samples of these soils should be collected to assess the potential for sediment recontamination via bank erosion.

Surface Runoff

During a recent site visit, debris was observed underneath a former building located near the inlet. During storm events, contaminants present in the debris pile could be mobilized and transported to the inlet via surface runoff. Samples of the debris pile should be collected to assess the potential for sediment recontamination via this pathway.

4.3 Douglas Management Company / Alaska Marine Lines

Groundwater Discharge

Chemicals of concern may be transported to slip sediments by contaminated groundwater at the Douglas Management Company site. No soil or groundwater samples have been collected at the site, however a seep sample from the north bank of the EAA-2 inlet contained metals, PCBs, VOCs, and SVOCs. Mercury, lead, zinc, and PCBs were detected in the seep water sample at concentrations above their respective groundwater-to-sediment screening level. These were identified as contaminants of concern in EAA-2 sediments.

Groundwater sampling should be conducted along the southern property boundary adjacent to the EAA-2 inlet in order to assess the potential for sediment recontamination via the groundwater pathway.

Bank Erosion

No bank soil samples have been collected from the north side of EAA-2. During recent site visits, unusual deposits of material were observed in the inlet bottom near the northern bank. Samples of these soils should be collected to assess the potential for sediment recontamination via bank erosion.

Surface Runoff

No information on operational practices at this site was available. Additional information should be obtained to determine whether contaminants on the ground surface could flow via surface runoff to the inlet.

Fill Material

Information on the fill history of the site should be obtained, if possible, to allow an evaluation of the potential presence of contaminants in the fill material.

4.4 Upland Sites

Several of the upland sites were inspected by Seattle Public Utilities in 2002. Additional inspections should be conducted as needed to determine the potential for contaminants to be transported to EAA-2 sediments via the storm drainage system.

4.5 Other Data Gaps

Additional information that would be helpful in assessing the potential for sediment recontamination includes:

- Additional information on air contaminants and releases to evaluate the potential for deposition of chemicals of concern to EAA-2 sediments.

- Additional information on tidal influences on contaminant transport between the EAA-2 inlet and adjacent properties.

5.0 Documents Reviewed

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Cabuco, R. 1991. Letter From Rick Cabuco, Northwest Cooperage Co., Inc., to Mike Gallagher, Toxics Cleanup Program, Northwest Regional Office, Washington Department of Ecology, Re: Results of Recent Groundwater Sampling. October 1, 1991.

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Figures

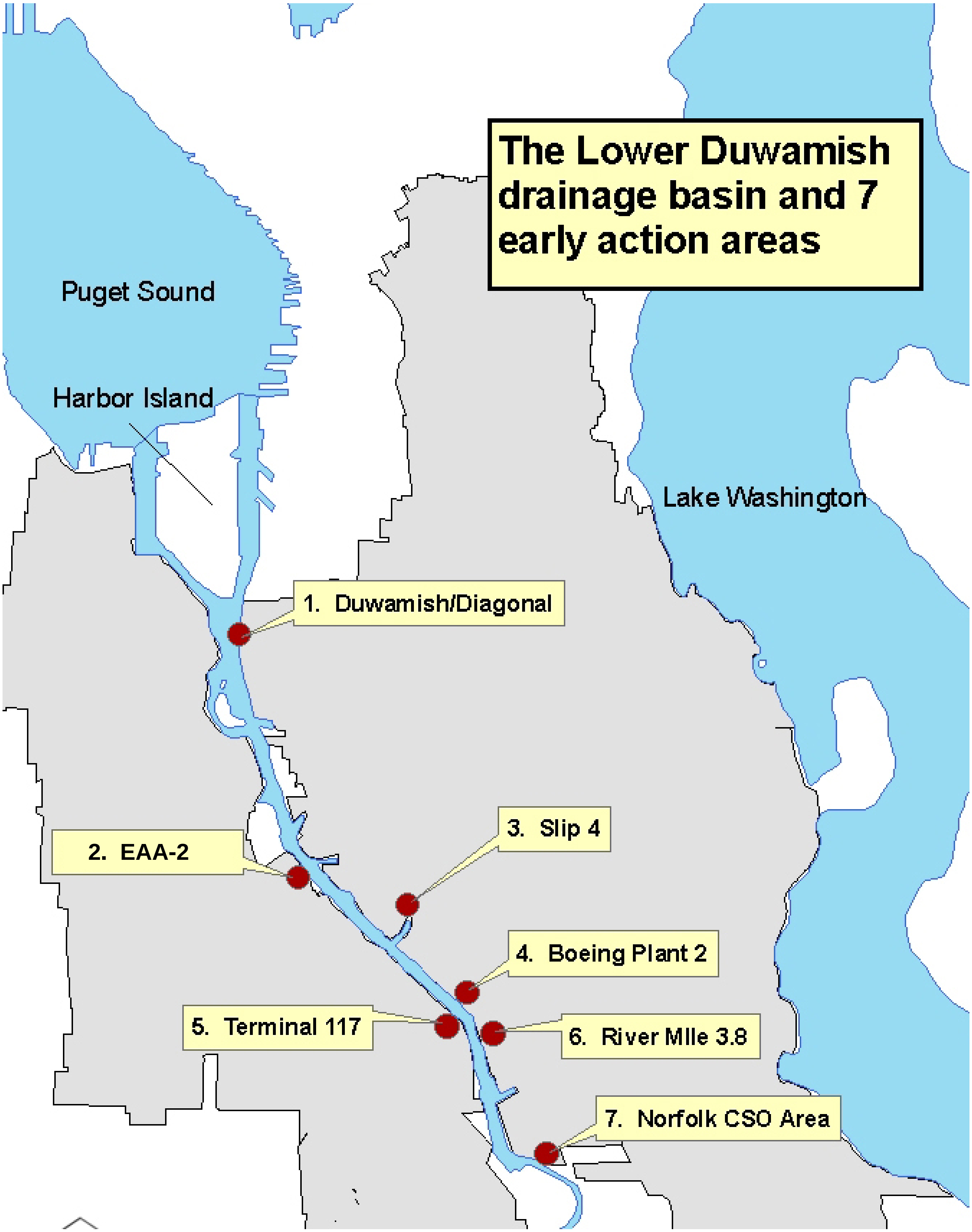


Figure 1. Lower Duwamish Waterway Early Action Areas

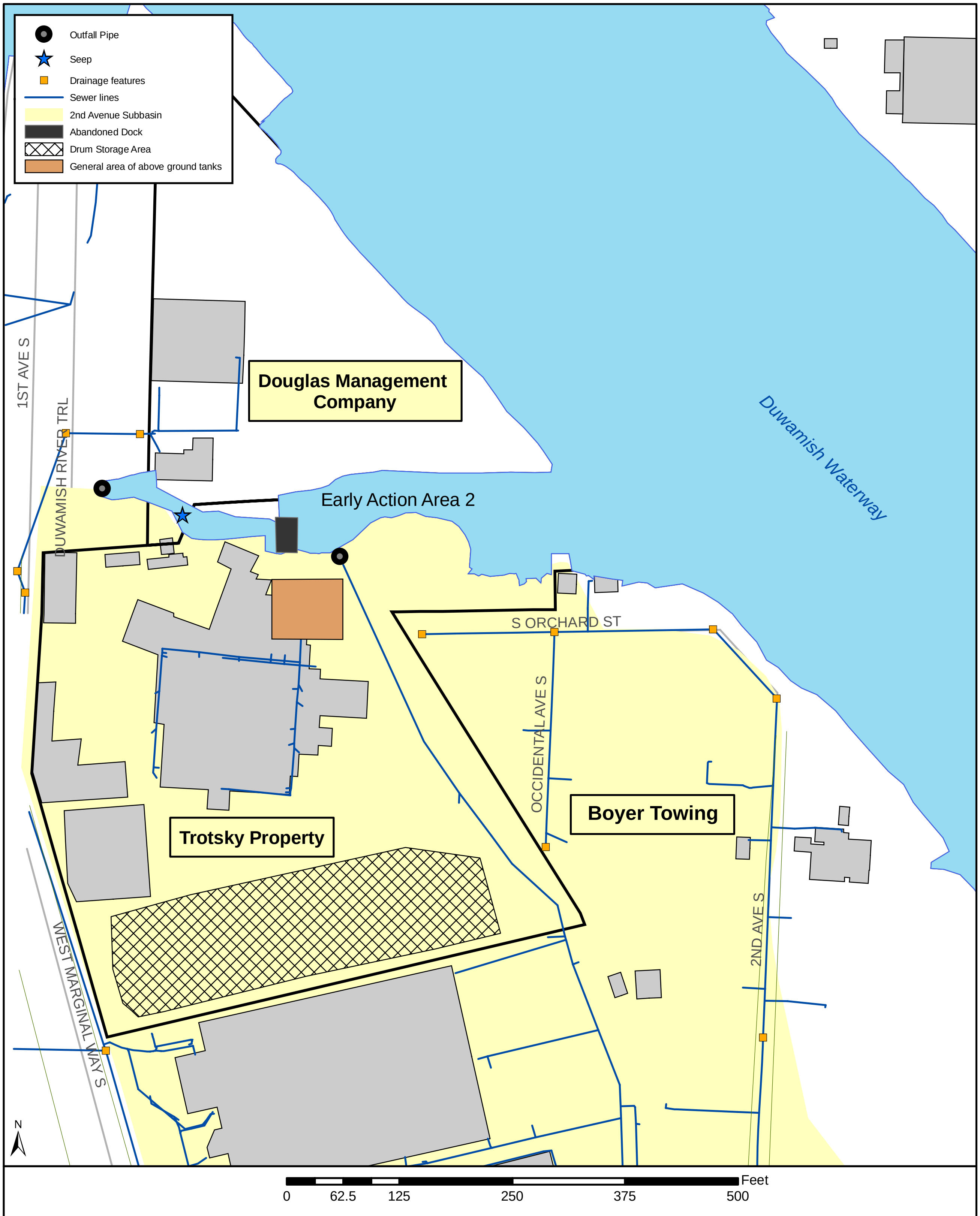


Figure 2. Adjacent Properties — Early Action Area 2

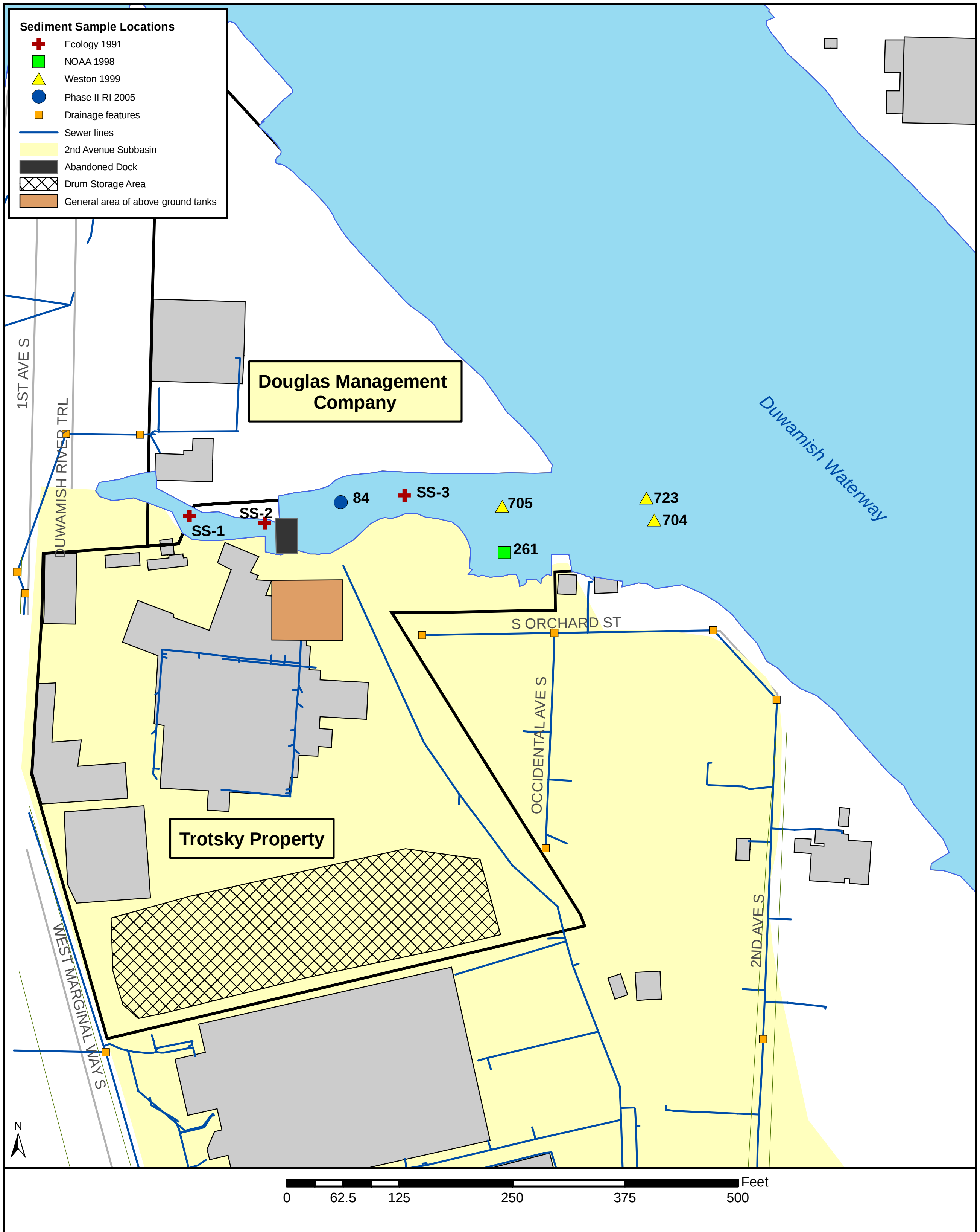


Figure 3. Sediment Sampling Locations — Early Action Area 2

Figure 4. Sampling Locations — Trotsky Property

Facility Name	
1	Alaska Marine Lines
2	Industrial Container Services
3	Industrial Container Services
4	Vacant Land (formerly NW Cooperage)
5	DaVinci Gourmet
6	DaVinci Gourmet
7	Vacant Land
8	Storage Yard
9	Boyer Towing
10	B&J Auto Wrecking
11	B&J Auto Wrecking
12	Boyer Towing
13	Boyer Towing
14	Wells Trucking & Leasing
15	Boyer Alaska Barge Line, Inc.
16	Boyer Towing
17	Vacant Land
18	Northwest Center for the Retarded
19	Pioneer Human Services
20	Pacific Plumbing Supply
21	Vacant Land
22	Pacific American Commercial (PACO)
23	PCT Construction, Inc.
24	WHECO
25	Cunningham Manufacturing Co., Inc.
26	Vacant Land
27	United Iron Works
28	Ferguson Construction
29	Alki Construction Co.
30	Hurlen Construction
31	Alaska Washington Co.
32	Fox Plumbing & Heating
33	Pacific American Commercial (PACO)
34	PACO Yard 2
35	South Park Equipment Storage Yard
36	Twilley Industrial Tool
37	W.G. Wright & Associates
38	Tucker-Weitzel & Assoc., Inc.
39	ATC Distribution Group, Inc.
40	Ferguson Construction
41	Cascade Mattress Factory
42	J&M Stamp & Form
43	Industrial Battery Systems
44	NW Building Tec

Figure 5. Early Action Area 2 Drainage Basin

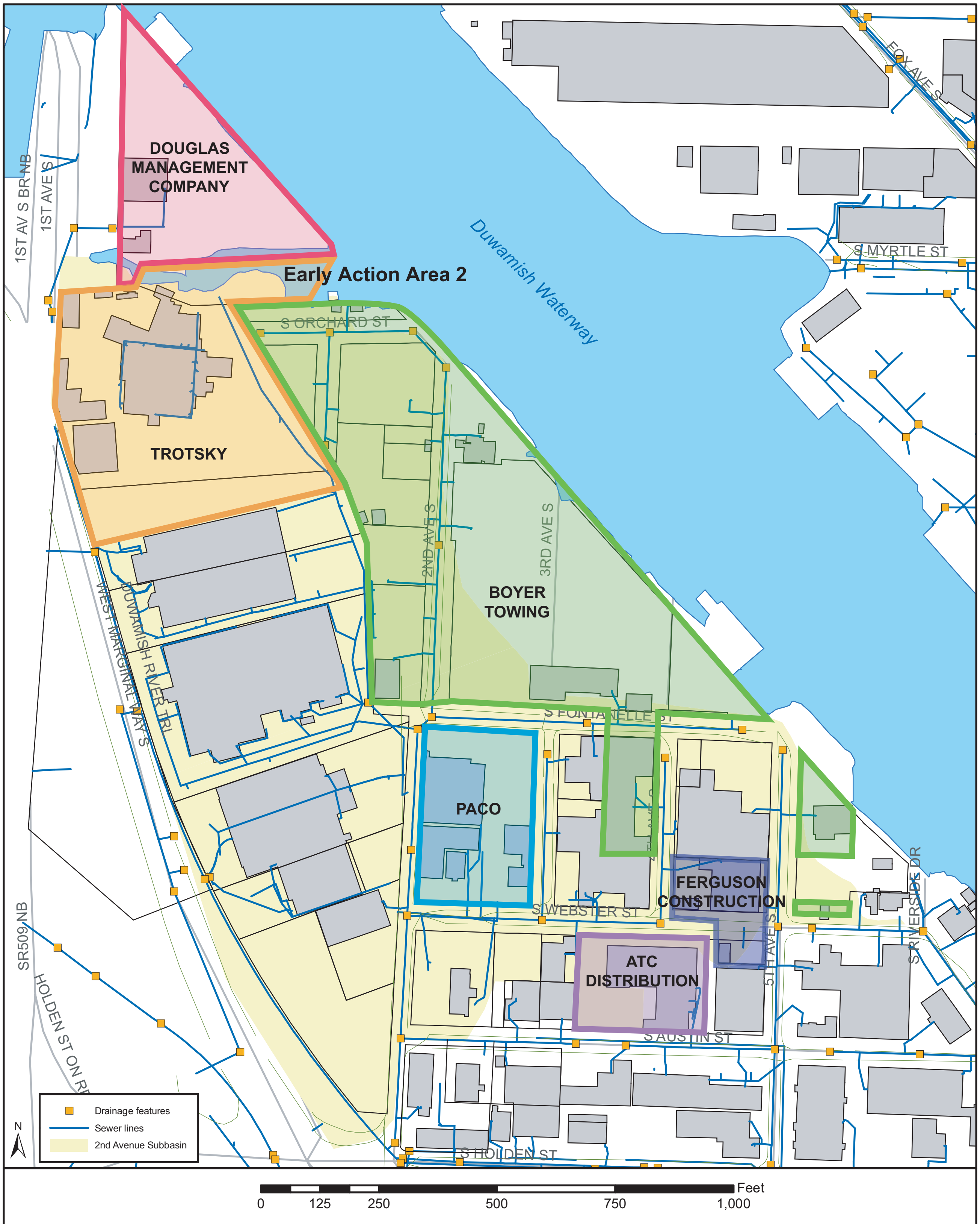


Figure 6. Early Action Area 2 Property Ownership

Tables

Table 1
Chemicals Above Screening Levels in Sediment
Early Action Area 2

Source	Sample Location	Chemical	Conc'n (mg/kg DW)		% TOC (DW)	SQS	CSL	Units	SQS Exceedance Factor[a]	CSL Exceedance Factor[a]
LDWG 2005	LDW-SS84	Bis(2-ethylhexyl)phthalate	4.2		4.12	47	78	mg/kg OC	2.2	1.3
Weston 1999	705	Bis(2-ethylhexyl)phthalate	2.5		2.96	47	78	mg/kg OC	1.8	1.1
Weston 1999	**705**	**DDTs (total-calc'd)**	**0.173**		**2.96**	**6.9**	**69**	**ug/kg DW**	**25.1**	2.5
Weston 1999	705	Dieldrin	0.017	J	2.96	10		ug/kg DW	1.7	
LDWG 2005	LDW-SS84	Lead	615		4.12	450	530	mg/kg DW	1.4	1.2
Parametrix & SAIC 1991	SS-2	Lead	529		NA	450	530	mg/kg DW	1.2	1.0
LDWG 2005	LDW-SS84	Mercury	2.46		4.12	0.41	0.59	mg/kg DW	6.0	4.2
Parametrix & SAIC 1991	SS-3	Mercury	1.8		NA	0.41	0.59	mg/kg DW	4.4	3.1
Weston 1999	723	Mercury	1.6		5.47	0.41	0.59	mg/kg DW	3.9	2.7
Weston 1999		Mercury	0.82		2.96	0.41	0.59	mg/kg DW	2.0	1.4
LDWG 2005	**LDW-SS84**	**PCBs (total-calc'd)**	**23**		**4.12**	**12**	**65**	**mg/kg OC**	**46.5**	8.6
NOAA 1998	**261**	**PCBs (total-calc'd)**	**5.2**		**1.09**	**12**	**65**	**mg/kg OC**	**39.8**	7.3
Weston 1999	723	PCBs (total-calc'd)	4.707		5.47	12	65	mg/kg OC	7.2	1.3
Parametrix & SAIC 1991	**SS-2**	**PCBs (total-calc'd)**	**4.2**		**NA**	**12**	**65**	**mg/kg OC**	**12.4**	2.3
Weston 1999	705	PCBs (total-calc'd)	2.84		2.96	12	65	mg/kg OC	8.0	1.5
Parametrix & SAIC 1991	SS-3	PCBs (total-calc'd)	0.94		NA	12	65	mg/kg OC	2.8	
Weston 1999	704	PCBs (total-calc'd)	0.187		0.47	12	65	mg/kg OC	3.3	
LDWG 2005	LDW-SS84	Zinc	417		4.12	410	960	mg/kg DW	1.0	

a -No TOC data were available for Parametrix & SAIC 1991; to determine whether concentrations of organics exceed CSL or SQS values, an average TOC for the EAA-2 slip of 2.82% was calculated based on available data from other studies.

OC - Organic carbon normalized
DW - Dry weight

Exceedance factors are the ratio of the detected concentration to the CSL or SQS; exceedance factors are shown only if they are greater than or equal to 1.
Chemicals with exceedance factors greater than 10 are shown in **Bold**

Table 2
Chemicals Above Screening Levels in In-Line Sediment Samples
Early Action Area 2: 2nd Ave. S. Drainage Basin

Source	Date Sampled	Sample Location	Chemical	Conc'n (mg/kg DW)		SQS	CSL	Units	SQS Exceedance Factora	CSL Exceedance Factora	MTCA Cleanup Level (mg/kg)	MTCA Exceedance Factor
SPU 2006	**4/13/2005**	**RCB45**	**Arsenic**	**23**		57	93	mg/kg DW			**0.67**	**34.3**
SPU 2006	**4/13/2005**	**RCB44**	**Arsenic**	**11**		57	93	mg/kg DW			**0.67**	**16.4**
SPU 2006	4/13/2005	RCB44	Benzo(a)pyrene	0.27		99	210	mg/kg OC			0.14	1.9
SPU 2006	4/13/2005	RCB44	Benzo(b)fluoranthene	0.3		NA	NA				0.14	2.1
SPU 2006	4/13/2005	RCB45	Benzo(b)fluoranthene	0.23		NA	NA				0.14	1.6
SPU 2006	4/13/2005	RCB44	Benzo(k)fluoranthene	0.23		NA	NA				0.14	1.6
SPU 2006	4/13/2005	RCB45	Bis(2-ethylhexyl)phthalate	7.8		47	78	mg/kg OC	5.9	3.5	71	
SPU 2006	4/13/2005	RCB44	Bis(2-ethylhexyl)phthalate	1.6		47	78	mg/kg OC	1.2		71	
SPU 2006	4/13/2005	RCB44	Butylbenzylphthalate	0.2		4.9	64	mg/kg OC	1.4		16,000	
SPU 2006	4/13/2005	RCB44	Chrysene	0.22		110	460	mg/kg OC			0.14	1.6
SPU 2006	4/13/2005	RCB45	Chrysene	0.22		110	460	mg/kg OC			0.14	1.6
SPU 2006	4/13/2005	RCB44	Di-n-butylphthalate	37	B	220	1,700	mg/kg OC	6.0		8,000	
SPU 2006	**4/13/2005**	**RCB44**	**N-nitrosodiphenylamine**	**24**		**11**	**11**	**mg/kg OC**	**77.4**	**77.4**	200	
SPU 2006	4/13/2005	RCB45	TPH-oil	3,900		NA	NA				2,000	2.0
SPU 2006	4/13/2005	RCB44	TPH-oil	3,100		NA	NA				2,000	1.6
SPU 2006	4/13/2005	RCB44	Zinc	444		410	960	mg/kg DW	1.1		24,000	

Note: No TOC data were available for these samples; to estimate whether concentrations of organics exceed CSL or SQS values, an average TOC for the EAA-2 slip of 2.82% was calculated based on available data from other studies.

OC - Organic carbon normalized
DW - Dry weight

Exceedance factors are the ratio of the detected concentration to the CSL or SQS; exceedance factors are shown only if they are greater than or equal to 1.
Chemicals with exceedance factors greater than 10 are shown in **Bold**

Note: Data have not undergone quality assurance review, and are therefore considered preliminary.

Table 3
Chemicals Above Screening Levels in Soil
Trotsky Property

Source	Sample Date	Sample Location	Sample Depth (ft)	Chemical	Soil Conc'n (mg/kg DW)		MTCA Cleanup Level[e] (mg/kg)	Soil-to-Sediment Screening Level (Based on CSL)[f] (mg/kg)	Exceedance Factor
HartCrowser 1987	Sep-86	B-2A	5 - 10	1,2,4-Trichlorobenzene	0.15	J	800	0.046	3.3
HartCrowser 1987	Sep-86	B-1A	10 - 15	1,2,4-Trichlorobenzene	0.078	J	800	0.046	1.7
HartCrowser 1987	**Sep-86**	**B-2A**	**10 - 15**	**2,4-Dimethylphenol**	**1.1**	**J**	1600	**0.037**	**29.7**
HartCrowser 1987	**Sep-86**	**B-2A**	**5 - 10**	**2,4-Dimethylphenol**	**1**	**J**	1600	**0.037**	**27.0**
HartCrowser 1986	**May-86**	**B-2**	**3 - 10**	**2,4-Dimethylphenol**	**0.93**		1600	**0.037**	**25.1**
HartCrowser 1987	Sep-86	B-2A	16 - 20	2,4-Dimethylphenol	0.11	J	1600	0.037	3.0
HartCrowser 1987	Sep-86	B-2A	5 - 10	2-Methylnaphthalene	2		NA	1.4	1.4
HartCrowser 1986	May-86	B-2	3 - 10	2-Methylnaphthalene	1.5		NA	1.4	1.1
HartCrowser 1987	Sep-86	B-1A	10 - 15	2-Methylphenol	0.51	J	NA	0.091	5.6
HartCrowser 1987	Sep-86	B-2A	5 - 10	Aroclor-1248	12.4		NA	1.3	9.5
HartCrowser 1987	Sep-86	B-1A	5 - 10	Aroclor-1248	4.37		NA	1.3	3.4
HartCrowser 1987	Sep-86	B-2A	10 - 15	Aroclor-1248	4.22		NA	1.3	3.2
HartCrowser 1987	Sep-86	B-1A	10 - 15	Aroclor-1248	3.48		NA	1.3	2.7
HartCrowser 1987	Sep-86	B-1A	17 - 20	Aroclor-1248	3.42		NA	1.3	2.6
HartCrowser 1987	Sep-86	B-2A	16 - 20	Aroclor-1248	2.31		NA	1.3	1.8
HartCrowser 1987	Sep-86	B-1A	20	Aroclor-1248	1.93		NA	1.3	1.5
HartCrowser 1986	May-86	B-1	3 - 12	Aroclor-1248	1.8		NA	1.3	1.4
HartCrowser 1986	May-86	B-2	3 - 10	Aroclor-1248	1.7		NA	1.3	1.3
HartCrowser 1987	Sep-86	B-2A	5 - 10	Aroclor-1260	2.9		NA	1.3	2.2
HartCrowser 1987	Sep-86	B-1A	5 - 10	Aroclor-1260	2.21		NA	1.3	1.7
HartCrowser 1987	Sep-86	B-1A	10 - 15	Aroclor-1260	2.04		NA	1.3	1.6
HartCrowser 1987	Sep-86	B-2A	10 - 15	Aroclor-1260	1.67		NA	1.3	1.3
HartCrowser 1987	Sep-86	B-1A	17 - 20	Aroclor-1260	1.65		NA	1.3	1.3
HartCrowser 1987	**Sep-86**	**B-1A**	**20**	**Arsenic**	**7.8**		**0.67**	12000	**11.6**
HartCrowser 1986	**Feb-86**	**Area 6**	**0 - 2**	**Arsenic**	**7.8**		**0.67**	12000	**11.6**
HartCrowser 1987	**Sep-86**	**B-1A**	**17 - 20**	**Arsenic**	**7.6**		**0.67**	12000	**11.3**
HartCrowser 1987	Sep-86	B-2A	10 - 15	Arsenic	6.4		0.67	12000	9.6
HartCrowser 1986	May-86	B-2	3 - 10	Arsenic	6.2		0.67	12000	9.3
HartCrowser 1986	Feb-86	Area 2	0 - 2	Arsenic	5.5		0.67	12000	8.2
HartCrowser 1986	May-86	B-1	3 - 12	Arsenic	5.1		0.67	12000	7.6
HartCrowser 1986	Feb-86	Area 4	0 - 2	Arsenic	5		0.67	12000	7.5
HartCrowser 1986	Feb-86	Area 1	0 - 2	Arsenic	5		0.67	12000	7.5
HartCrowser 1987	Sep-86	B-5	13	Arsenic	4.8		0.67	12000	7.2
HartCrowser 1986	Feb-86	Area 3	0 - 2	Arsenic	4.5		0.67	12000	6.7
HartCrowser 1987	Sep-86	B-4	7 - 13	Arsenic	4.1		0.67	12000	6.1
HartCrowser 1987	Sep-86	B-5	7 - 13	Arsenic	3.9		0.67	12000	5.8
HartCrowser 1987	Sep-86	B-1A	10 - 15	Arsenic	3.4		0.67	12000	5.1
HartCrowser 1987	Sep-86	B-2A	5 - 10	Arsenic	3.3		0.67	12000	4.9
HartCrowser 1987	Sep-86	B-5	15	Arsenic	3		0.67	12000	4.5
HartCrowser 1987	Sep-86	B-1A	5 - 10	Arsenic	2.9		0.67	12000	4.3
HartCrowser 1987	Sep-86	B-5	2 - 6	Arsenic	2.4		0.67	12000	3.6
HartCrowser 1987	Sep-86	B-4	14 - 18	Arsenic	2.1		0.67	12000	3.1
HartCrowser 1987	Sep-86	B-4	2 - 6	Arsenic	1.9		0.67	12000	2.8
HartCrowser 1987	Sep-86	B-5	15 - 18	Arsenic	1.6		0.67	12000	2.4
HartCrowser 1987	Sep-86	B-2A	16 - 20	Arsenic	1.3		0.67	12000	1.9
HartCrowser 1987	Sep-86	B-2A	20	Arsenic	1.2		0.67	12000	1.8
HartCrowser 1987	Sep-86	B-2A	10 - 15	Benzo(a)anthracene	1.1	J	0.14	5.4	7.9
HartCrowser 1987	Sep-86	B-1A	17 - 20	Benzo(a)anthracene	0.41	J	0.14	5.4	2.9
HartCrowser 1987	Sep-86	B-2A	10 - 15	Benzo(a)pyrene	1	J	0.14	4.2	7.1
HartCrowser 1986	Feb-86	Area 2	0 - 2	Bis(2-ethylhexyl)phthalate	6.9		71	1.6	4.3
HartCrowser 1986	Feb-86	Area 1	0 - 2	Bis(2-ethylhexyl)phthalate	5.8		71	1.6	3.6
HartCrowser 1987	Sep-86	B-1A	10 - 15	Bis(2-ethylhexyl)phthalate	5.4	B	71	1.6	3.4
HartCrowser 1986	Feb-86	Area 6	0 - 2	Bis(2-ethylhexyl)phthalate	4.8		71	1.6	3.0
HartCrowser 1986	May-86	B-1	3 - 12	Bis(2-ethylhexyl)phthalate	2.63		71	1.6	1.6
HartCrowser 1986	May-86	B-2	3 - 10	Bis(2-ethylhexyl)phthalate	1.8		71	1.6	1.1
HartCrowser 1987	Sep-86	B-2A	5 - 10	Bis(2-ethylhexyl)phthalate	1.6	B	71	1.6	1.0
HartCrowser 1986	Feb-86	Area 6	0 - 2	Cadmium	3.5		2	34	1.8
HartCrowser 1986	**Feb-86**	**Area 6**	**0 - 2**	**Chromium**	**200**		**19[c]**	5400	**10.5**

Table 3
Chemicals Above Screening Levels in Soil
Trotsky Property

Source	Sample Date	Sample Location	Sample Depth (ft)	Chemical	Soil Conc'n (mg/kg DW)		MTCA Cleanup Level[e] (mg/kg)	Soil-to-Sediment Screening Level (Based on CSL)[f] (mg/kg)	Exceedance Factor
HartCrowser 1986	**Feb-86**	**Area 2**	**0 - 2**	**Chromium**	**200**		**19[c]**	5400	**10.5**
HartCrowser 1986	May-86	B-2	3 - 10	Chromium	120		19[c]	5400	6.3
HartCrowser 1987	Sep-86	B-1A	10 - 15	Chromium	55.1		19[c]	5400	2.9
HartCrowser 1987	Sep-86	B-1A	5 - 10	Chromium	50.5		19[c]	5400	2.7
HartCrowser 1986	Feb-86	Area 4	0 - 2	Chromium	37		19[c]	5400	1.9
HartCrowser 1987	Sep-86	B-2A	10 - 15	Chromium	36.6		19[c]	5400	1.9
HartCrowser 1986	May-86	B-1	3 - 12	Chromium	35		19[c]	5400	1.8
HartCrowser 1987	Sep-86	B-2A	5 - 10	Chromium	32.6		19[c]	5400	1.7
Parametrix & SAIC	May-91	MH	<1	Chromium	27.7		19[c]	5400	1.5
HartCrowser 1986	Feb-86	Area 1	0 - 2	Chromium	27		19[c]	5400	1.4
HartCrowser 1987	Sep-86	B-1A	20	Chromium	22.6		19[c]	5400	1.2
HartCrowser 1987	Sep-86	B-1A	17 - 20	Chromium	22.5		19[c]	5400	1.2
HartCrowser 1986	Feb-86	Area 5	0 - 2	Chromium	22		19[c]	5400	1.2
HartCrowser 1986	Feb-86	Area 3	0 - 2	Chromium	20		19[c]	5400	1.1
HartCrowser 1987	Sep-86	B-2A	10 - 15	Chrysene	1.2	J	0.14	9.2	8.6
HartCrowser 1987	Sep-86	B-1A	17 - 20	Chrysene	0.48	J	0.14	9.2	3.4
HartCrowser 1987	Sep-86	B-2A	10 - 15	Indeno(1,2,3-cd)pyrene	1.1	J	0.14	1.8	7.9
HartCrowser 1987	Sep-86	B-1A	17 - 20	Indeno(1,2,3-cd)pyrene	0.33	J	0.14	1.8	2.4
HartCrowser 1986	Feb-86	Area 6	0 - 2	Lead	1,400		250	1300	5.6
HartCrowser 1986	Feb-86	Area 1	0 - 2	Lead	1,400		250	1300	5.6
HartCrowser 1986	Feb-86	Area 2	0 - 2	Lead	640		250	1300	2.6
HartCrowser 1987	Sep-86	B-2A	5 - 10	Lead	444		250	1300	1.8
HartCrowser 1986	**Feb-86**	**Area 6**	**0 - 2**	**Mercury**	**6.7**		24	**0.59**	**11.4**
HartCrowser 1987	Sep-86	B-2A	10 - 15	Mercury	2.18		24	0.59	3.7
HartCrowser 1986	Feb-86	Area 2	0 - 2	Mercury	1		24	0.59	1.7
HartCrowser 1986	Feb-86	Area 4	0 - 2	Mercury	0.6		24	0.59	1.0
HartCrowser 1986	**May-86**	**B-2**	**3 - 10**	**Methylene chloride**	**0.35**		**0.02**	NA	**17.5**
HartCrowser 1986	**Feb-86**	**Area 6**	**0 - 2**	**Methylene chloride**	**0.33**		**0.02**	NA	**16.5**
HartCrowser 1987	**Sep-86**	**B-1A**	**20**	**Methylene chloride**	**0.31**	**J**	**0.02**	NA	**15.5**
HartCrowser 1987	**Sep-86**	**B-1A**	**5 - 10**	**Methylene chloride**	**0.2**	**J**	**0.02**	NA	**10.0**
HartCrowser 1986	May-86	B-1	3 - 12	Methylene chloride	0.13		0.02	NA	6.5
HartCrowser 1987	Sep-86	B-1A	10 - 15	Methylene chloride	0.12	J	0.02	NA	6.0
HartCrowser 1987	Sep-86	B-5	13	Methylene chloride	0.11	B	0.02	NA	5.5
HartCrowser 1986	Feb-86	Area 1	0 - 2	Methylene chloride	0.06		0.02	NA	3.0
HartCrowser 1986	Feb-86	Area 5	0 - 2	Methylene chloride	0.053		0.02	NA	2.7
HartCrowser 1986	Feb-86	Area 4	0 - 2	Methylene chloride	0.051		0.02	NA	2.6
HartCrowser 1986	Feb-86	Area 2	0 - 2	Methylene chloride	0.04		0.02	NA	2.0
HartCrowser 1987	Sep-86	B-4	14 - 18	Methylene chloride	0.029	B	0.02	NA	1.5
HartCrowser 1987	Sep-86	B-4	7 - 13	Methylene chloride	0.026	B	0.02	NA	1.3
HartCrowser 1987	Sep-86	B-5	15	Methylene chloride	0.025	B	0.02	NA	1.3
HartCrowser 1987	Sep-86	B-5	7 - 13	Methylene chloride	0.02	B	0.02	NA	1.0
HartCrowser 1987	Sep-86	B-1A	5 - 10	N-Nitrosodiphenylamine	0.89	BJ	200	0.23	3.9
HartCrowser 1987	Sep-86	B-1A	5 - 10	PCBs, total (calculated)	6.58		1	1.3	6.6
HartCrowser 1987	Sep-86	B-2A	10 - 15	PCBs, total (calculated)	5.89		1	1.3	5.9
HartCrowser 1987	Sep-86	B-1A	10 - 15	PCBs, total (calculated)	5.52		1	1.3	5.5
HartCrowser 1987	Sep-86	B-1A	17 - 20	PCBs, total (calculated)	5.07		1	1.3	5.1
HartCrowser 1987	Sep-86	B-2A	16 - 20	PCBs, total (calculated)	3.07		1	1.3	3.1
HartCrowser 1987	Sep-86	B-1A	20	PCBs, total (calculated)	3.03		1	1.3	3.0
HartCrowser 1986	May-86	B-2	3 - 10	PCBs, total (calculated)	2.9		1	1.3	2.9
HartCrowser 1986	May-86	B-1	3 - 12	PCBs, total (calculated)	2.75		1	1.3	2.8
HartCrowser 1987	Sep-86	B-2A	20	PCBs, total (calculated)	1.67		1	1.3	1.7
HartCrowser 1986	Feb-86	Area 6	0 - 2	Pentachlorophenol	0.81		8.3	0.73	1.1
HartCrowser 1986	**Feb-86**	**Area 6**	**0 - 2**	**Tetrachloroethylene**	**0.87**		**0.05**	NA	**17.4**
HartCrowser 1987	Sep-86	B-1A	5 - 10	Tetrachloroethylene	0.42		0.05	NA	8.4
HartCrowser 1987	Sep-86	B-1A	10 - 15	Tetrachloroethylene	0.35		0.05	NA	7.0
HartCrowser 1986	May-86	B-2	3 - 10	Tetrachloroethylene	0.13		0.05	NA	2.6
HartCrowser 1987	Sep-86	B-2A	10 - 15	Tetrachloroethylene	0.072		0.05	NA	1.4
HartCrowser 1987	Sep-86	B-2A	5 - 10	Trichloroethylene	0.09	B	0.03	NA	3.0

Table 3
Chemicals Above Screening Levels in Soil
Trotsky Property

Source	Sample Date	Sample Location	Sample Depth (ft)	Chemical	Soil Conc'n (mg/kg DW)		MTCA Cleanup Level[e] (mg/kg)	Soil-to-Sediment Screening Level (Based on CSL)[f] (mg/kg)	Exceedance Factor
HartCrowser 1987	Sep-86	B-2A	10 - 15	Trichloroethylene	0.042	B	0.03	NA	1.4
HartCrowser 1986	Feb-86	Area 6	0 - 2	Trichloroethylene	0.039		0.03	NA	1.3

a - Includes manhole sediment sample from Parametrix & SAIC 1991
b - Table presents detected chemicals only
c - Value for Chromium VI
d - composite of Samples 1, 2, 3 and 4 as shown in Figure 5
e - The lower of MTCA Method A or B cleanup levels was selected, from CLARC database
f - From: SAIC 2006

MH - Manhole
DW - dry weight
CSL - Contaminant Screening Level from Washington Sediment Management Standards
NA - Not available

NOTE: HartCrowser 1987 data sheets were poor quality and numbers were very difficult to read; the accuracy of some of the data in this table is therefore questionable.

Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or Soil-to-Sediment Screening Value, whichever is lower. Only samples with exceedance factors greater than or equal to 1 are shown.
Chemicals with exceedance factors greater than 10 are shown in **Bold**

Table 4
Chemicals Above Screening Levels in Groundwater
Trotsky Property

Source	Sample Date	Sample Location	Chemical	Groundwater Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	GW-to-Sediment Screening Level[b] (Based on CSL) (ug/L)	Exceedance Factor
HartCrowser1987	**Mar-87**	**B-2**	**1,2-Dichlorobenzene**	**190**	720	**5.2**	**36.5**
HartCrowser1986	**May-86**	**B-2**	**2,4-Dimethylphenol**	**320**	**160**	**2**	**160**
Cabuco 1991	**Jun-91**	**B-2**	**2,4-Dimethylphenol**	**100**	160	**2**	**50**
HartCrowser1986	**May-86**	**B-3**	**2,4-Dimethylphenol**	**28**	160	**2**	**14**
HartCrowser1986	May-86	B-2	2-Methylphenol	26	NA	7.1	3.7
HartCrowser1987	Mar-87	B-2	2-Methylphenol	11	NA	7.1	1.5
HartCrowser1987	**Mar-87**	**B-2**	**4,4'-DDD**	**37**	**0.36**	NA	**103**
HartCrowser1987	**Mar-87**	**B-2**	**4,4'-DDE**	**54**	**0.26**	NA	**208**
HartCrowser1987	**Mar-87**	**B-2**	**4,4'-DDT**	**32**	**0.26**	NA	**123**
HartCrowser1986	May-86	B-3	Acenaphthene	10	960	9.3	1.1
HartCrowser1986	May-86	B-2	Antimony (dissolved)	15	6.4	NA	2.3
HartCrowser1986	**May-86**	**B-2**	**Arsenic (dissolved)**	**17**	**0.058**	370	**293**
HartCrowser1987	**Mar-87**	**B-2**	**Arsenic (dissolved)**	**10**	**0.058**	370	**172**
Cabuco 1991	**Jun-91**	**B-2**	**Arsenic (dissolved)**	**1.4**	**0.058**	370	**24**
HartCrowser1986	**May-86**	**B-2**	**Benzene**	**17**	**0.8**	NA	**21**
HartCrowser1987	**Mar-87**	**B-2**	**Benzene**	**16**	**0.8**	NA	**20**
Cabuco 1991	**Jun-91**	**B-2**	**Benzene**	**13**	**0.8**	NA	**16**
HartCrowser1986	May-86	B-1	Cadmium (dissolved)	6	5	3.4	1.8
HartCrowser1986	May-86	B-2	Lead (dissolved)	27	15	13	2.1
HartCrowser1986	May-86	B-2	Methylene chloride	11	5	NA	2.2
HartCrowser1986	May-86	B-3	Methylene chloride	8	5	NA	1.6
HartCrowser1986	May-86	B-3	Naphthalene	120	160	92	1.3
HartCrowser1986	May-86	B-3	Silver (dissolved)	10	80	1.5	6.7
HartCrowser1986	May-86	B-1	Silver (dissolved)	4	80	1.5	2.7
HartCrowser1986	May-86	B-2	Silver (dissolved)	3	80	1.5	2.0
HartCrowser1986	May-86	B-2	trans-1,2-Dichoroethylene	190	160	NA	1.2
HartCrowser1986	**May-86**	**B-2**	**Vinyl chloride**	**310**	**0.029**	NA	**10690**
HartCrowser1987	**Mar-87**	**B-2**	**Vinyl chloride**	**250**	**0.029**	NA	**8621**
Cabuco 1991	**Jun-91**	**B-2**	**Vinyl chloride**	**25**	**0.029**	NA	**862**
HartCrowser1986	May-86	B-1	Zinc (dissolved)	110	4800	76	1.4

a - MTCA cleanup level is the lower of the MTCA Method A and B cleanup levels. Cyanide does not have a MTCA cleanup level, therefore the MCL was used.
b - From SAIC 2006

Notes:
1. Exceedance factors are the ratio of the detected concentration to the MTCA Cleanup Level or GW-to-Sediment
2. Screening Value, whichever is lower. Only samples with exceedance factors greater than or equal to 1 are shown.
3. Chemicals with exceedance factors greater than 10 are shown in **Bold**
4. Samples were analyzed for dissolved metals; this method may underestimate total metals concentrations.

Table 5
Chemicals Above Screening Levels in Boyer Towing Sediment Samples (Parcels 14 and 15)
Early Action Area 2

Source	Date Sampled	Sample Location	Chemical	Conc'n (mg/kg DW)		SQS	CSL	Units	SQS Exceedance Factora	CSL Exceedance Factora	MTCA Cleanup Level (mg/kg)	MTCA Exceedance Factor
SPU 2003d	**2/11/2003**	**Wells1**	**Arsenic**	**30**		57	93	mg/kg DW			**0.67**	**44.8**
SPU 2003d	**2/11/2003**	**Wells2**	**Arsenic**	**20**	**U**	57	93	mg/kg DW			**0.67**	**29.9**
SPU 2003d	**2/11/2003**	**Boyer 1**	**Arsenic**	**20**		57	93	mg/kg DW			**0.67**	**29.9**
SPU 2003d	**2/11/2003**	**Wells1**	**Bis(2-ethylhexyl)phthalate**	**150**		**47**	**78**	**mg/kg OC**	**113**	**68.2**	71	2.1
SPU 2003d	**2/11/2003**	**Boyer 1**	**Bis(2-ethylhexyl)phthalate**	**53**		**47**	**78**	**mg/kg OC**	**40.0**	**24.1**	71	
SPU 2003d	**2/11/2003**	**Wells2**	**Bis(2-ethylhexyl)phthalate**	**37**		**47**	**78**	**mg/kg OC**	**27.9**	**16.8**	71	
SPU 2003d	**2/11/2003**	**Boyer 1**	**Butylbenzylphthalate**	**10**		**4.9**	**64**	**mg/kg OC**	**72.4**	5.5	16,000	
SPU 2003d	**2/11/2003**	**Wells1**	**Butylbenzylphthalate**	**5.3**		**4.9**	**64**	**mg/kg OC**	**38.4**	2.9	16,000	
SPU 2003d	**2/11/2003**	**Wells2**	**Butylbenzylphthalate**	**4.1**		**4.9**	**64**	**mg/kg OC**	**29.7**	2.3	16,000	
SPU 2003d	2/11/2003	Wells1	Cadmium	9		5.1	6.7	mg/kg DW	1.8	1.3	2	4.5
SPU 2003d	2/11/2003	Boyer 1	Cadmium	6.3		5.1	6.7	mg/kg DW	1.2		2	3.2
SPU 2003d	2/11/2003	Wells2	Cadmium	5.2		5.1	6.7	mg/kg DW	1.0		2	2.6
SPU 2003d	2/11/2003	Wells1	Copper	527		390	390	mg/kg DW	1.4	1.4	3,000	
SPU 2003d	2/11/2003	Boyer 1	Diethylphthalate	4.6		61	110	mg/kg OC	2.7	1.5		
SPU 2003d	2/11/2003	Boyer 1	Dimethylphthalate	2.8		53	53	mg/kg OC	1.9	1.9		
SPU 2003d	2/11/2003	Boyer 1	Di-n-octylphthalate	6.1	M	58	4,500	mg/kg OC	3.7		1600	
SPU 2003d	2/11/2003	Wells1	Di-n-octylphthalate	4.2	M	58	4,500	mg/kg OC	2.6		1600	
SPU 2003d	2/11/2003	Wells1	Di-n-octylphthalate	4.1	M	58	4,500	mg/kg OC	2.5		1600	
SPU 2003d	2/11/2003	Wells2	Lead	421		450	530	mg/kg DW			250	1.7
SPU 2003d	2/11/2003	Boyer 1	Lead	308		450	530	mg/kg DW			250	1.2
SPU 2003d	2/11/2003	Wells1	Zinc	2570		410	960	mg/kg DW	6.3	2.7	24,000	
SPU 2003d	2/11/2003	Boyer 1	Zinc	1120		410	960	mg/kg DW	2.7	1.2	24,000	

Samples Wells1 and Wells2 were collected from two 55-gallon drums of sediment removed from three catch basins at Parcel 14 (Wells Truck/Trailer Repair)
Sample Boyer1 was collected from the foreboy of the southern-most oil/water separator at Parcel 15 (Boyer Alaska Barge Lines)

Note: No TOC data were available for these samples; to estimate whether concentrations of organics exceed CSL or SQS values, an average TOC for the EAA-2 slip of 2.82% was calculated based on available data from other studies.

OC - Organic carbon normalized
DW - Dry weight

Exceedance factors are the ratio of the detected concentration to the CSL or SQS; exceedance factors are shown only if they are greater than or equal to 1.
Chemicals with exceedance factors greater than 10 are shown in **Bold**

Table 6
Chemicals Detected in Seep Samples Above Screening Levels
Early Action Area 2 - Douglas Management Company

Source	Date Sampled	Sample Location	Chemical	Conc'n (ug/L)		Marine Chronic WQS	Marine Acute WQS	Chronic WQS Exceedance Factor	GW-to-Sediment Screening Level (Based on CSL)[a]	Exceedance Factor
Filtered Samples										
LDWG 2004	6/30/2004	Seep 54	Copper	4.53	U	3.1	4.8	1.5	120	
LDWG 2004	6/30/2004	Seep 54	Mercury	0.0132		NA			0.0074	1.8
LDWG 2004	6/30/2004	Seep 54	PCBs (total-calc'd)	0.26		0.03	10	8.7	1.5	
LDWG 2004	6/30/2004	Seep 54	Dieldrin	0.0095	U	0.0019		5.0	NA	
Unfiltered Samples										
LDWG 2004	**6/30/2004**	**Seep 54**	**Lead**	**296**		NA			**13**	**22.8**
LDWG 2004	**6/30/2004**	**Seep 54**	**Mercury**	**0.582**		0.25	1.8	2.3	**0.0074**	**78.6**
LDWG 2004	6/30/2004	Seep 54	Zinc	322		NA			76	4.2
LDWG 2004	6/30/2004	Seep 54	Aroclor-1248	4.7		NA			1.5	3.1
LDWG 2004	6/30/2004	Seep 54	Aroclor-1254	2.3	J	NA			0.86	2.7
LDWG 2004	6/30/2004	Seep 54	Aroclor-1260	1.9		NA			0.31	6.1
LDWG 2004	**6/30/2004**	**Seep 54**	**PCBs (total-calc'd)**	**8.9**	**J**	**0.03**	10	**297**	1.5	5.9
LDWG 2004	**6/30/2004**	**Seep 54**	**4,4'-DDT**	**0.017**	**U**	**0.001**		**17.0**	NA	
LDWG 2004	6/30/2004	Seep 54	Aldrin	0.0083	U	0.0019		4.4	NA	
LDWG 2004	**6/30/2004**	**Seep 54**	**Dieldrin**	**0.11**	**U**	**0.0019**		**57.9**	NA	
LDWG 2004	**6/30/2004**	**Seep 54**	**Endrin**	**0.057**	**U**	**0.0023**		**24.8**	NA	
LDWG 2004	6/30/2004	Seep 54	Heptachlor	0.0083	U	0.0036		2.3	NA	
LDWG 2004	**6/30/2004**	**Seep 54**	**Toxaphene**	**0.1**	**U**	**0.0002**		**500**	NA	

NA - Value not available

Exceedance factors are the ratio of the detected concentration to the CSL or SQS; exceedance factors are shown only if they are greater than or equal to 1.
Chemicals with exceedance factors greater than 10 are shown in **Bold**

a - From SAIC 2006

Appendix A

Site Photos

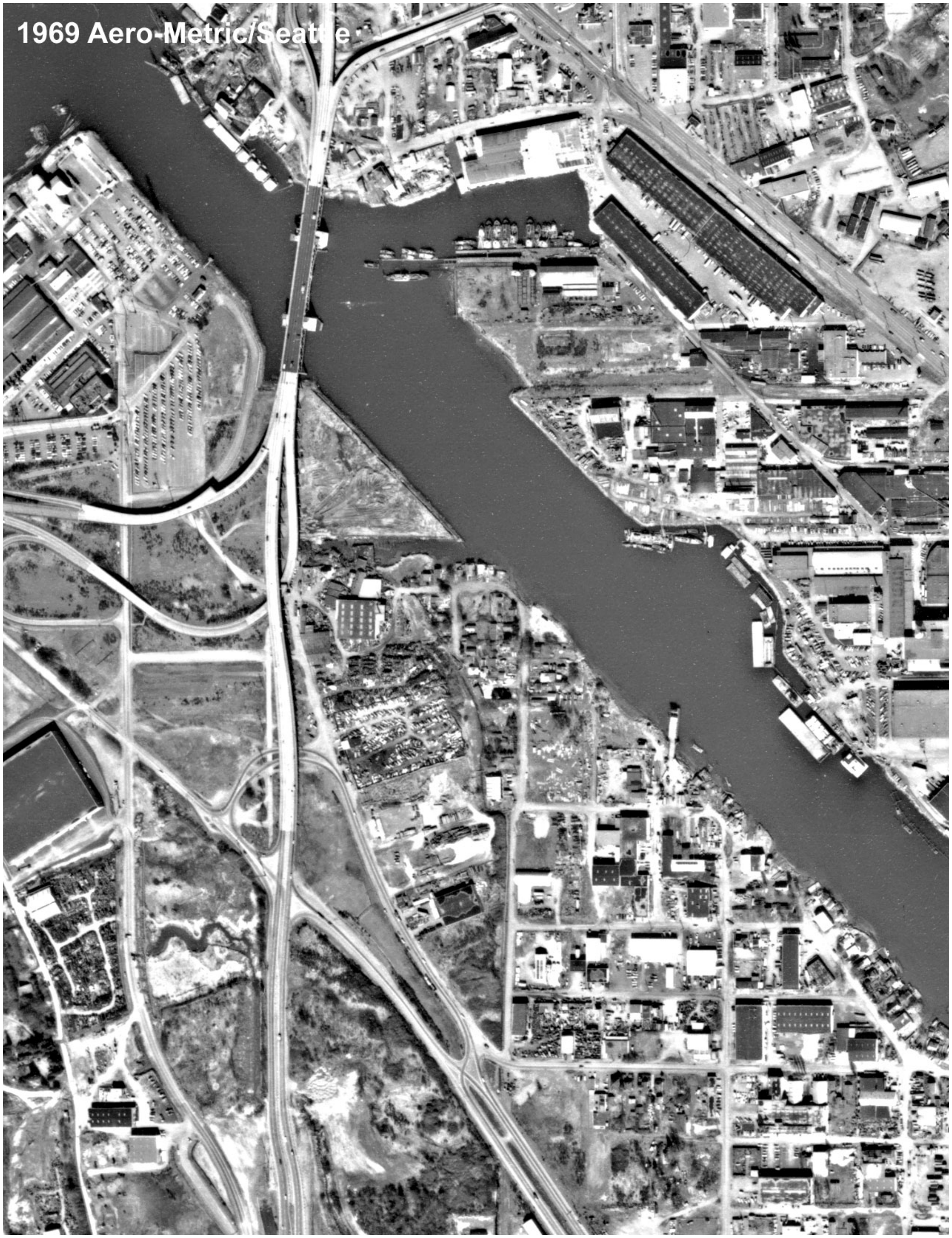
A1. Aerial Photographs

Early Action Area 2 – 2006
(Google Maps 2006)

Early Action Area 2 -- 2000

Early Action Area 2 – 1984

Early Action Area 2 – 1974



Early Action Area 2 – 1969

Early Action Area 2 – 1960

Early Action Area 2 – 1946

Property of Museum of History & Industry, Seattle

Early Action Area 2 -- 1938

A2. Seep Photographs

(Source: LDWG 2004)

Early Action Area 2
Seep 53 During Reconnaissance Survey
(LDWG 2004)

Early Action Area 2
Seep 54 During Reconnaissance Survey
(LDWG 2004)

A3. Site Visit Photographs

(Ecology Site Visit, May 2004)


International Container Co.
EAA-2, looking west toward the head of the inlet

Storm drain at head of inlet

Photo#52, 55, 56
Photos 53-54
Photo#45-46
Photos 47-51
Concrete


Photo # 45


Photo # 46: Close-up of previous photo

Photo # 47: Waste drums in sediments at EAA-2

Photo # 48: Close-up of waste material from previous photo. Slight petroleum sheen

Photo # 49: Unknown material seep in area of waste drums

Photo # 50: Oil sheen, discolored soils with noticeable petroleum smell in area of drum waste.

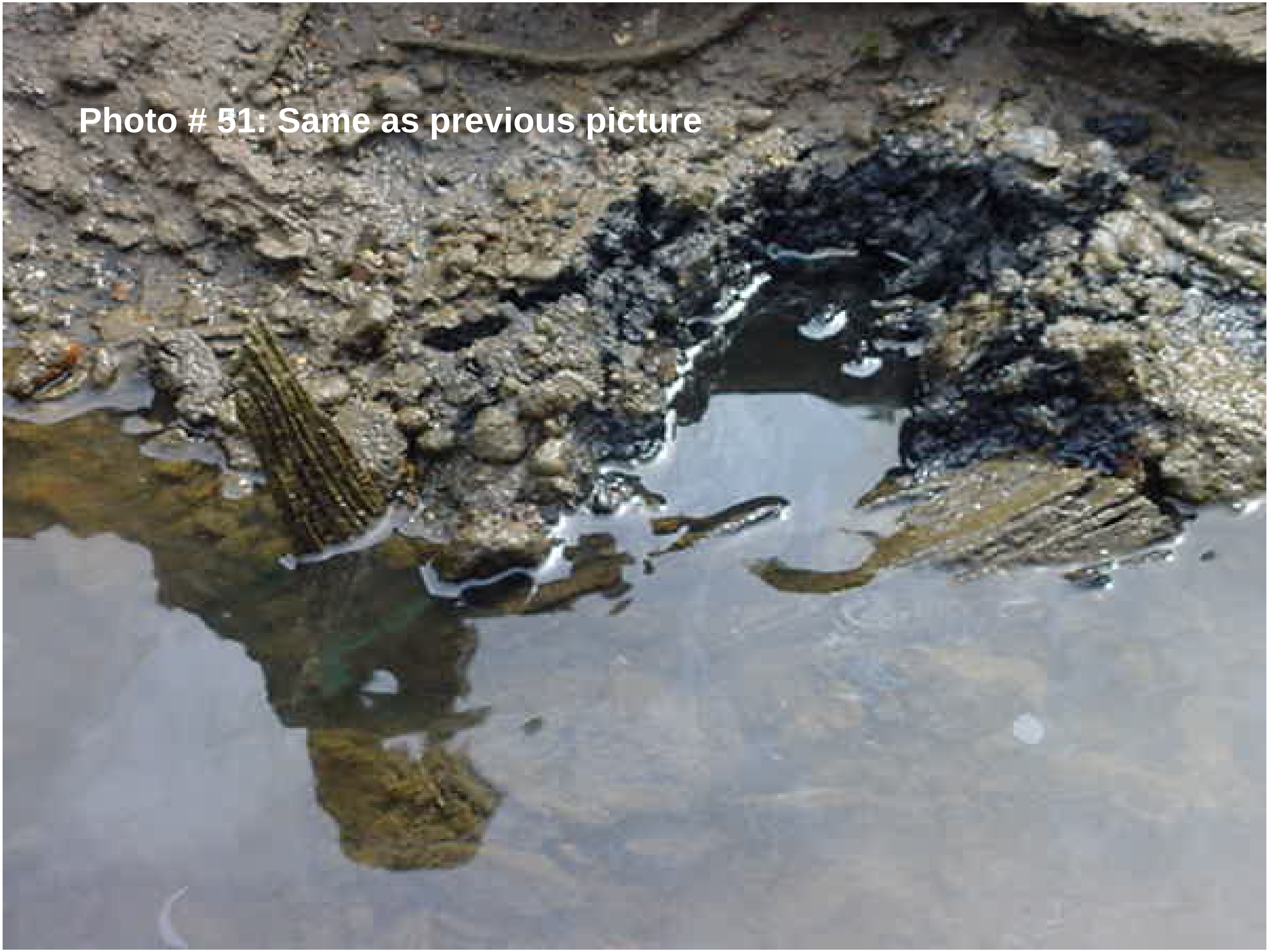


Photo # 51: Same as previous picture


Photo # 52: Waste pile under Building at EAA-2

Photo # 53: Unidentified material deposit in channel bottom at EAA-2


Photo # 54: Close-up of unidentified deposit

Photo # 55: Small seep in area of waste pile. Soils in this area smell of petroleum.


Photo # 56: Unknown material discharge at piling base near the waste piles at EAA-2

Appendix B

Sample Data

Table B-1
Sediment Sampling Results
Early Action Area 2

Source	Sample Location	Chemical	Conc'n (mg/kg DW)		TOC % dw	SQS	CSL	Units	SQS Exceedance Factor[a]	CSL Exceedance Factor[a]
Weston 1999	723	2-Methylnaphthalene	0.1		5.47	38	64	mg/kg OC-dry		
Weston 1999	705	2-Methylnaphthalene	0.07		2.96	38	64	mg/kg OC-dry		
Weston 1999	705	Acenaphthene	0.18		2.96	16	57	mg/kg OC-dry		
Weston 1999	723	Acenaphthene	0.05		5.47	16	57	mg/kg OC-dry		
Weston 1999	705	Anthracene	0.46		2.96	220	1200	mg/kg OC-dry		
Weston 1999	723	Anthracene	0.16		5.47	220	1200	mg/kg OC-dry		
Weston 1999	705	Antimony	6	J	2.96	150	200	mg/kg, dry wt.		
Weston 1999	723	Aroclor-1242	2.4		5.47	NA	NA			
Weston 1999	705	Aroclor-1242	0.61		2.96	NA	NA			
Weston 1999	704	Aroclor-1242	0.092		0.47	NA	NA			
LDWG 2005	LDW-SS84	Aroclor-1248	12		4.12	NA	NA			
LDWG 2005	LDW-SS84	Aroclor-1254	6.8		4.12	NA	NA			
Weston 1999	723	Aroclor-1254	1.33		5.47	NA	NA			
Weston 1999	705	Aroclor-1254	1.05		2.96	NA	NA			
Weston 1999	704	Aroclor-1254	0.063		0.47	NA	NA			
LDWG 2005	LDW-SS84	Aroclor-1260	4.3		4.12	NA	NA			
Parametrix & SAIC 1991	SS-2	Aroclor-1260	4.2		NA	NA	NA			
Weston 1999	705	Aroclor-1260	1.18		2.96	NA	NA			
Weston 1999	723	Aroclor-1260	0.977		5.47	NA	NA			
Parametrix & SAIC 1991	SS-3	Aroclor-1260	0.94		NA	NA	NA			
Parametrix & SAIC 1991	SS-1	Aroclor-1260	0.22		NA	NA	NA			
Weston 1999	704	Aroclor-1260	0.032		0.47	NA	NA			
LDWG 2005	LDW-SS84	Arsenic	12.3		4.12	57	93	mg/kg, dry wt.		
Weston 1999	723	Arsenic	10.1		5.47	57	93	mg/kg, dry wt.		
Weston 1999	705	Arsenic	9.9		2.96	57	93	mg/kg, dry wt.		
Weston 1999	704	Arsenic	5.2		0.47	57	93	mg/kg, dry wt.		
Weston 1999	723	Benzo(a)anthracene	0.44		5.47	110	270	mg/kg OC-dry		
LDWG 2005	LDW-SS84	Benzo(a)anthracene	0.4		4.12	110	270	mg/kg OC-dry		
Weston 1999	705	Benzo(a)anthracene	0.33		2.96	110	270	mg/kg OC-dry		
LDWG 2005	LDW-SS84	Benzo(a)pyrene	0.51		4.12	99	210	mg/kg OC-dry		

Table B-1
Sediment Sampling Results
Early Action Area 2

Source	Sample Location	Chemical	Conc'n (mg/kg DW)		TOC % dw	SQS	CSL	Units	SQS Exceedance Factor[a]	CSL Exceedance Factor[a]
Weston 1999	723	Benzo(a)pyrene	0.32		5.47	99	210	mg/kg OC-dry		
Weston 1999	705	Benzo(a)pyrene	0.31		2.96	99	210	mg/kg OC-dry		
LDWG 2005	LDW-SS84	Benzo(g,h,i)perylene	0.23	J	4.12	31	78	mg/kg OC-dry		
Weston 1999	705	Benzo(g,h,i)perylene	0.22		2.96	31	78	mg/kg OC-dry		
Weston 1999	723	Benzo(g,h,i)perylene	0.18		5.47	31	78	mg/kg OC-dry		
LDWG 2005	LDW-SS84	Benzofluoranthenes (total-calc'd)	1.13		4.12	230	450	mg/kg OC-dry		
Weston 1999	723	Benzofluoranthenes (total-calc'd)	0.84		5.47	230	450	mg/kg OC-dry		
Weston 1999	705	Benzofluoranthenes (total-calc'd)	0.8		2.96	230	450	mg/kg OC-dry		
Weston 1999	704	Benzofluoranthenes (total-calc'd)	0.02		0.47	230	450	mg/kg OC-dry		
LDWG 2005	LDW-SS84	Bis(2-ethylhexyl)phthalate	4.2		4.12	47	78	mg/kg OC-dry	2.2	1.3
Weston 1999	705	Bis(2-ethylhexyl)phthalate	2.5		2.96	47	78	mg/kg OC-dry	1.8	1.1
Weston 1999	723	Bis(2-ethylhexyl)phthalate	2.3		5.47	47	78	mg/kg OC-dry		
Weston 1999	704	Bis(2-ethylhexyl)phthalate	0.03		0.47	47	78	mg/kg OC-dry		
Weston 1999	705	Butyl benzyl phthalate	0.11		2.96	4.9	64	mg/kg OC-dry		
Weston 1999	723	Butyl benzyl phthalate	0.09		5.47	4.9	64	mg/kg OC-dry		
Parametrix & SAIC 1991	SS-2	Cadmium	2.1		NA	5.1	6.7	mg/kg, dry wt.		
LDWG 2005	LDW-SS84	Cadmium	2	J	4.12	5.1	6.7	mg/kg, dry wt.		
Parametrix & SAIC 1991	SS-3	Cadmium	1.5		NA	5.1	6.7	mg/kg, dry wt.		
Weston 1999	723	Cadmium	1.18		5.47	5.1	6.7	mg/kg, dry wt.		
Weston 1999	705	Cadmium	0.9		2.96	5.1	6.7	mg/kg, dry wt.		
LDWG 2005	LDW-SS84	Chromium	122	J	4.12	260	270	mg/kg, dry wt.		
Parametrix & SAIC 1991	SS-2	Chromium	103		NA	260	270	mg/kg, dry wt.		
Parametrix & SAIC 1991	SS-3	Chromium	89.9		NA	260	270	mg/kg, dry wt.		
Parametrix & SAIC 1991	SS-1	Chromium	60.2		NA	260	270	mg/kg, dry wt.		
Weston 1999	723	Chromium	55		5.47	260	270	mg/kg, dry wt.		
Weston 1999	705	Chromium	52		2.96	260	270	mg/kg, dry wt.		
Weston 1999	704	Chromium	16		0.47	260	270	mg/kg, dry wt.		
LDWG 2005	LDW-SS84	Chrysene	0.7		4.12	100	460	mg/kg OC-dry		

Table B-1
Sediment Sampling Results
Early Action Area 2

Source	Sample Location	Chemical	Conc'n (mg/kg DW)		TOC % dw	SQS	CSL	Units	SQS Exceedance Factor[a]	CSL Exceedance Factor[a]
Weston 1999	723	Chrysene	0.68		5.47	100	460	mg/kg OC-dry		
Weston 1999	705	Chrysene	0.48		2.96	100	460	mg/kg OC-dry		
Weston 1999	704	Chrysene	0.03		0.47	100	460	mg/kg OC-dry		
Parametrix & SAIC 1991	SS-1	Copper	370			390	390	mg/kg, dry wt.		
Parametrix & SAIC 1991	SS-3	Copper	289			390	390	mg/kg, dry wt.		
Parametrix & SAIC 1991	SS-2	Copper	211			390	390	mg/kg, dry wt.		
LDWG 2005	LDW-SS84	Copper	117		4.12	390	390	mg/kg, dry wt.		
Weston 1999	705	Copper	86		2.96	390	390	mg/kg, dry wt.		
Weston 1999	723	Copper	83		5.47	390	390	mg/kg, dry wt.		
Weston 1999	704	Copper	20		0.47	390	390	mg/kg, dry wt.		
Weston 1999	705	DDTs (total-calc'd)	0.173		2.96	6.9	69	ug/kg, dry wt.	25.1	2.5
Weston 1999	705	Dibenzo(a,h)anthracene	0.08		2.96	12	33	mg/kg OC-dry		
Weston 1999	705	Dibenzofuran	0.06		2.96	15	58	mg/kg OC-dry		
Weston 1999	723	Dibenzofuran	0.03		5.47	15	58	mg/kg OC-dry		
Weston 1999	705	Dieldrin	0.017	J	2.96	10		ug/kg, dry wt.	1.7	
Weston 1999	705	Dimethyl phthalate	0.04		2.96	53	53	mg/kg OC-dry		
Weston 1999	723	Dimethyl phthalate	0.03		5.47	53	53	mg/kg OC-dry		
LDWG 2005	LDW-SS84	Di-n-butyl phthalate	0.38		4.12	220	1700	mg/kg OC-dry		
Weston 1999	723	Di-n-butyl phthalate	0.3		5.47	220	1700	mg/kg OC-dry		
Weston 1999	705	Di-n-butyl phthalate	0.07		2.96	220	1700	mg/kg OC-dry		
LDWG 2005	LDW-SS84	Fluoranthene	1.1		4.12	160	1200	mg/kg OC-dry		
Weston 1999	705	Fluoranthene	0.82		2.96	160	1200	mg/kg OC-dry		
Weston 1999	723	Fluoranthene	0.68		5.47	160	1200	mg/kg OC-dry		
Weston 1999	704	Fluoranthene	0.03		0.47	160	1200	mg/kg OC-dry		
Weston 1999	705	Fluorene	0.14		2.96	23	79	mg/kg OC-dry		
Weston 1999	723	Fluorene	0.05		5.47	23	79	mg/kg OC-dry		
Weston 1999	705	Indeno(1,2,3-cd)pyrene	0.22		2.96	34	88	mg/kg OC-dry		
LDWG 2005	LDW-SS84	Indeno(1,2,3-cd)pyrene	0.22	J	4.12	34	88	mg/kg OC-dry		
Weston 1999	723	Indeno(1,2,3-cd)pyrene	0.18		5.47	34	88	mg/kg OC-dry		
LDWG 2005	LDW-SS84	Lead	615		4.12	450	530	mg/kg, dry wt.	1.4	1.2

Table B-1
Sediment Sampling Results
Early Action Area 2

Source	Sample Location	Chemical	Conc'n (mg/kg DW)		TOC % dw	SQS	CSL	Units	SQS Exceedance Factor[a]	CSL Exceedance Factor[a]
Parametrix & SAIC 1991	SS-2	Lead	529		NA	450	530	mg/kg, dry wt.	1.2	1.0
Parametrix & SAIC 1991	SS-3	Lead	422		NA	450	530	mg/kg, dry wt.		
Parametrix & SAIC 1991	SS-1	Lead	247		NA	450	530	mg/kg, dry wt.		
Weston 1999	723	Lead	245		5.47	450	530	mg/kg, dry wt.		
Weston 1999	705	Lead	179	J	2.96	450	530	mg/kg, dry wt.		
Weston 1999	704	Lead	22.8		0.47	450	530	mg/kg, dry wt.		
LDWG 2005	LDW-SS84	Mercury	2.46		4.12	0.41	0.59	mg/kg, dry wt.	6.0	4.2
Parametrix & SAIC 1991	SS-3	Mercury	1.8		NA	0.41	0.59	mg/kg, dry wt.	4.4	3.1
Weston 1999	723	Mercury	1.6		5.47	0.41	0.59	mg/kg, dry wt.	3.9	2.7
Weston 1999		Mercury	0.82		2.96	0.41	0.59	mg/kg, dry wt.	2.0	1.4
Parametrix & SAIC 1991	SS-2	Mercury	0.29		NA	0.41	0.59	mg/kg, dry wt.		
Parametrix & SAIC 1991	SS-1	Mercury	0.22		NA	0.41	0.59	mg/kg, dry wt.		
Weston 1999	704	Mercury	0.05		0.47	0.41	0.59	mg/kg, dry wt.		
Weston 1999	705	Naphthalene	0.06		2.96	99	170	mg/kg OC-dry		
Weston 1999	723	Naphthalene	0.05		5.47	99	170	mg/kg OC-dry		
LDWG 2005	LDW-SS84	Nickel	39		4.12	140	370	mg/kg, dry wt.		
Parametrix & SAIC 1991	SS-2	Nickel	26.2		NA	140	370	mg/kg, dry wt.		
Parametrix & SAIC 1991	SS-3	Nickel	23.6		NA	140	370	mg/kg, dry wt.		
Weston 1999	705	Nickel	23.6		2.96	140	370	mg/kg, dry wt.		
Weston 1999	723	Nickel	19.3		5.47	140	370	mg/kg, dry wt.		
Parametrix & SAIC 1991	SS-1	Nickel	17.4		NA	140	370	mg/kg, dry wt.		
Weston 1999	704	Nickel	9.7		0.47	140	370	mg/kg, dry wt.		
LDWG 2005	LDW-SS84	PCBs (total-calc'd)	23		4.12	12	65	mg/kg OC-dry	46.5	8.6
NOAA 1998	261	PCBs (total-calc'd)	5.2		1.09	12	65	mg/kg OC-dry	39.8	7.3

Table B-1
Sediment Sampling Results
Early Action Area 2

Source	Sample Location	Chemical	Conc'n (mg/kg DW)		TOC % dw	SQS	CSL	Units	SQS Exceedance Factor[a]	CSL Exceedance Factor[a]
Weston 1999	723	PCBs (total-calc'd)	4.707		5.47	12	65	mg/kg OC-dry	7.2	1.3
Parametrix & SAIC 1991	SS-2	PCBs (total-calc'd)	4.2		NA	12	65	mg/kg OC-dry	12.4	2.3
Weston 1999	705	PCBs (total-calc'd)	2.84		2.96	12	65	mg/kg OC-dry	8.0	1.5
Parametrix & SAIC 1991	SS-3	PCBs (total-calc'd)	0.94		NA	12	65	mg/kg OC-dry	2.8	
Parametrix & SAIC 1991	SS-1	PCBs (total-calc'd)	0.22		NA	12	65	mg/kg OC-dry		
Weston 1999	704	PCBs (total-calc'd)	0.187		0.47	12	65	mg/kg OC-dry	3.3	
Weston 1999	723	Pentachlorophenol	0.3		5.47	360	690	ug/kg, dry wt.		
Weston 1999	705	Pentachlorophenol	0.1	J	2.96	360	690	ug/kg, dry wt.		
Weston 1999	705	Phenanthrene	0.36		2.96	100	480	mg/kg OC-dry		
LDWG 2005	LDW-SS84	Phenanthrene	0.33		4.12	100	480	mg/kg OC-dry		
Weston 1999	723	Phenanthrene	0.32		5.47	100	480	mg/kg OC-dry		
Weston 1999	723	Phenol	0.05		5.47	420	1200	ug/kg, dry wt.		
Weston 1999	705	Phenol	0.04		2.96	420	1200	ug/kg, dry wt.		
Weston 1999	723	Pyrene	1.4		5.47	1000	1400	mg/kg OC-dry		
LDWG 2005	LDW-SS84	Pyrene	0.98		4.12	1000	1400	mg/kg OC-dry		
Weston 1999	705	Pyrene	0.87		2.96	1000	1400	mg/kg OC-dry		
Weston 1999	704	Pyrene	0.03		0.47	1000	1400	mg/kg OC-dry		
LDWG 2005	LDW-SS84	Silver	1.7		4.12	6.1	6.1	mg/kg, dry wt.		
Weston 1999	705	Silver	1.11		2.96	6.1	6.1	mg/kg, dry wt.		
Weston 1999	723	Silver	1.07		5.47	6.1	6.1	mg/kg, dry wt.		
Weston 1999	704	Silver	0.11		0.47	6.1	6.1	mg/kg, dry wt.		
LDWG 2005	LDW-SS84	Total HPAH (calc'd)	5.3	J	4.12	960	5300	mg/kg OC-dry		
Weston 1999	723	Total HPAH (calc'd)	4.72		5.47	960	5300	mg/kg OC-dry		
Weston 1999	705	Total HPAH (calc'd)	4.13		2.96	960	5300	mg/kg OC-dry		
Weston 1999	704	Total HPAH (calc'd)	0.11		0.47	960	5300	mg/kg OC-dry		
Weston 1999	705	Total LPAH (calc'd)	1.2		2.96	370	780	mg/kg OC-dry		
Weston 1999	723	Total LPAH (calc'd)	0.63		5.47	370	780	mg/kg OC-dry		
LDWG 2005	LDW-SS84	Total LPAH (calc'd)	0.33		4.12	370	780	mg/kg OC-dry		
LDWG 2005	LDW-SS84	Zinc	417		4.12	410	960	mg/kg, dry wt.	1.0	

Table B-1
Sediment Sampling Results
Early Action Area 2

Source	Sample Location	Chemical	Conc'n (mg/kg DW)	TOC % dw	SQS	CSL	Units	SQS Exceedance Factor[a]	CSL Exceedance Factor[a]
Parametrix & SAIC 1991	SS-2	Zinc	362	NA	410	960	mg/kg, dry wt.		
Parametrix & SAIC 1991	SS-1	Zinc	287	NA	410	960	mg/kg, dry wt.		
Parametrix & SAIC 1991	SS-3	Zinc	280	NA	410	960	mg/kg, dry wt.		
Weston 1999	723	Zinc	247	5.47	410	960	mg/kg, dry wt.		
Weston 1999	705	Zinc	240	2.96	410	960	mg/kg, dry wt.		
Weston 1999	704	Zinc	57	0.47	410	960	mg/kg, dry wt.		

a -No TOC data were available for Parametrix & SAIC 1991; to determine whether concentrations of organics exceed CSL or SQS values, an average TOC for the EAA-2 slip of 2.82% was calculated based on available data from other studies.

Exceedance factors are the ratio of the detected concentration to the CSL or SQS; exceedance factors are shown only if they are greater than or equal to 1.
Table presents detections only.

Table B-2
In-Line Sediment Sampling Results
Early Action Area 2: 2nd Ave. S. Drainage Basin

Source	Date Sampled	Sample Location	Chemical	Conc'n (mg/kg DW)		SQS	CSL	Units	SQS Exceedance Factor[a]	CSL Exceedance Factor[a]	MTCA Cleanup Level[b] (mg/kg)	MTCA Exceedance Factor
SPU 2006	4/13/2005	RCB44	2,4-Dinitrotoluene	29		NA	NA				160	
SPU 2006	4/13/2005	RCB44	2,6-Dinitrotoluene	0.49	J	NA	NA				80	
SPU 2006	4/13/2005	RCB45	3,3'-Dichlorobenzidine	1		NA	NA				2.2	
SPU 2006	4/13/2005	RCB44	Aroclor 1254	0.1		NA	NA				NA	
SPU 2006	4/13/2005	RCB45	Aroclor 1254	0.048	P	NA	NA				NA	
SPU 2006	4/13/2005	RCB44	Aroclor 1260	0.15		NA	NA				NA	
SPU 2006	4/13/2005	RCB45	Aroclor 1260	0.074		NA	NA				NA	
SPU 2006	4/13/2005	RCB45	Arsenic	23		57	93	mg/kg DW			0.67	34.3
SPU 2006	4/13/2005	RCB44	Arsenic	11		57	93	mg/kg DW			0.67	16.4
SPU 2006	4/13/2005	RCB44	Benzo(a)pyrene	0.27		99	210	mg/kg OC			0.14	1.9
SPU 2006	4/13/2005	RCB44	Benzo(b)fluoranthene	0.3		NA	NA				0.14	2.1
SPU 2006	4/13/2005	RCB45	Benzo(b)fluoranthene	0.23		NA	NA				0.14	1.6
SPU 2006	4/13/2005	RCB44	Benzo(k)fluoranthene	0.23		NA	NA				0.14	1.6
SPU 2006	4/13/2005	RCB44	Benzofluoranthenes (total-calc'd)	0.53		230	450	mg/kg OC			NA	
SPU 2006	4/13/2005	RCB45	Benzofluoranthenes (total-calc'd)	0.23		230	450	mg/kg OC			NA	
SPU 2006	4/13/2005	RCB45	Bis(2-ethylhexyl)phthalate	7.8		47	78	mg/kg OC	5.9	3.5	71	
SPU 2006	4/13/2005	RCB44	Bis(2-ethylhexyl)phthalate	1.6		47	78	mg/kg OC	1.2		71	
SPU 2006	4/13/2005	RCB44	Butylbenzylphthalate	0.2		4.9	64	mg/kg OC	1.4		16,000	
SPU 2006	4/13/2005	RCB44	Chrysene	0.22		110	460	mg/kg OC			0.14	1.6
SPU 2006	4/13/2005	RCB45	Chrysene	0.22		110	460	mg/kg OC			0.14	1.6
SPU 2006	4/13/2005	RCB45	Copper	105		390	390	mg/kg DW			3,000	
SPU 2006	4/13/2005	RCB44	Copper	98.8		390	390	mg/kg DW			3,000	
SPU 2006	4/13/2005	RCB44	Di-n-butylphthalate	37	B	220	1,700	mg/kg OC	6.0		8,000	
SPU 2006	4/13/2005	RCB45	Di-n-butylphthalate	0.37	B	220	1,700	mg/kg OC			8,000	
SPU 2006	4/13/2005	RCB45	Fluoranthene	0.39		160	1,200	mg/kg OC			3,200	
SPU 2006	4/13/2005	RCB44	Fluoranthene	0.34		160	1,200	mg/kg OC			3,200	
SPU 2006	4/13/2005	RCB44	Lead	113		450	530	mg/kg DW			250	
SPU 2006	4/13/2005	RCB45	Lead	87		450	530	mg/kg DW			250	
SPU 2006	4/13/2005	RCB45	Mercury	0.07		0.41	0.59	mg/kg DW			24	
SPU 2006	4/13/2005	RCB44	Mercury	0.06		0.41	0.59	mg/kg DW			24	
SPU 2006	4/13/2005	RCB44	N-nitrosodiphenylamine	24		11	11	mg/kg OC	77.4	77.4	200	
SPU 2006	4/13/2005	RCB44	PCBs (total-calc'd)	0.25		12	65	mg/kg OC			1	
SPU 2006	4/13/2005	RCB45	PCBs (total-calc'd)	0.122		12	65	mg/kg OC			1	

Table B-2
In-Line Sediment Sampling Results
Early Action Area 2: 2nd Ave. S. Drainage Basin

Source	Date Sampled	Sample Location	Chemical	Conc'n (mg/kg DW)		SQS	CSL	Units	SQS Exceedance Factor[a]	CSL Exceedance Factor[a]	MTCA Cleanup Level[b] (mg/kg)	MTCA Exceedance Factor
SPU 2006	4/13/2005	RCB44	Phenol	0.13		420	1,200	ug/kg DW			48,000	
SPU 2006	4/13/2005	RCB45	Pyrene	0.29		1,000	1,400	mg/kg OC			2,400	
SPU 2006	4/13/2005	RCB44	Pyrene	0.24		1,000	1,400	mg/kg OC			2,400	
SPU 2006	4/13/2005	RCB45	TPH-diesel	880		NA	NA				2,000	
SPU 2006	4/13/2005	RCB44	TPH-diesel	600		NA	NA				2,000	
SPU 2006	4/13/2005	RCB45	TPH-oil	3,900		NA	NA				2,000	2.0
SPU 2006	4/13/2005	RCB44	TPH-oil	3,100		NA	NA				2,000	1.6
SPU 2006	4/13/2005	RCB44	Zinc	444		410	960	mg/kg DW	1.1		24,000	
SPU 2006	4/13/2005	RCB45	Zinc	394		410	960	mg/kg DW		0.4	24,000	

Data have not undergone quality assurance review, and are therefore considered preliminary.

a -No TOC data were available for Parametrix & SAIC 1991; to determine whether concentrations of organics exceed CSL or SQS values, an average TOC for the EAA-2 slip of 2.82% was calculated based on available data from other studies.
b - The lower of MTCA Method A or B cleanup levels was selected, from CLARC database

Exceedance factors are the ratio of the detected concentration to the CSL or SQS; exceedance factors are shown only if they are greater than or equal to 1.
Table presents detections only.

Table B-3
Soil Sampling Results[a,b]
Trotsky Property

Source	Sample Date	Sample Location	Sample Depth (ft)	Chemical	Soil Conc'n (mg/kg DW)		MTCA Cleanup Level[e] (mg/kg)	Soil-to-Sediment Screening Level (Based on CSL)[f] (mg/kg)
HartCrowser 1987	Sep-86	B-1A	5 - 10	1,1,1-Trichloroethane	0.012	J	2	NA
HartCrowser 1987	Sep-86	B-1A	20	1,1,2,2-Tetrachloroethane	0.017	J	5	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	1,1-Dichloroethane	0.0014	J	8000	NA
HartCrowser 1987	Sep-86	B-2A	5 - 10	1,2,4-Trichlorobenzene	0.15	J	800	0.046
HartCrowser 1987	Sep-86	B-1A	10 - 15	1,2,4-Trichlorobenzene	0.078	J	800	0.046
HartCrowser 1986	Feb-86	Area 6	0 - 2	1,2-Dichlorobenzene	0.66		7200	NA
HartCrowser 1987	Sep-86	B-1A	20	1,2-Dichloroethane	0.00034	J	11	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	2,4,5-Trichlorophenol	1.4	J	8000	NA
HartCrowser 1987	Sep-86	B-2A	5 - 10	2,4-Dichlorophenol	0.58		240	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	2,4-Dichlorophenol	0.53	J	240	NA
HartCrowser 1987	Sep-86	B-2A	10 - 15	2,4-Dimethylphenol	1.1	J	1600	0.037
HartCrowser 1987	Sep-86	B-2A	5 - 10	2,4-Dimethylphenol	1	J	1600	0.037
HartCrowser 1986	May-86	B-2	3 - 10	2,4-Dimethylphenol	0.93		1600	0.037
HartCrowser 1987	Sep-86	B-2A	16 - 20	2,4-Dimethylphenol	0.11	J	1600	0.037
HartCrowser 1987	Sep-86	B-2A	5 - 10	2-Methylnaphthalene	2		NA	1.4
HartCrowser 1986	May-86	B-2	3 - 10	2-Methylnaphthalene	1.5		NA	1.4
HartCrowser 1986	Feb-86	Area 6	0 - 2	2-Methylnaphthalene	1.26		NA	1.4
HartCrowser 1987	Sep-86	B-1A	5 - 10	2-Methylnaphthalene	1.1		NA	1.4
HartCrowser 1987	Sep-86	B-1A	10 - 15	2-Methylnaphthalene	1.1	J	NA	1.4
HartCrowser 1986	May-86	B-1	3 - 12	2-Methylnaphthalene	0.77		NA	1.4
HartCrowser 1987	Sep-86	B-2A	10 - 15	2-Methylnaphthalene	0.34	J	NA	1.4
HartCrowser 1987	Sep-86	B-4	2 - 6	2-Methylnaphthalene	0.23	J	NA	1.4
HartCrowser 1987	Sep-86	B-2A	16 - 20	2-Methylnaphthalene	0.21	J	NA	1.4
HartCrowser 1987	Sep-86	B-1A	10 - 15	2-Methylphenol	0.51	J	NA	0.091
HartCrowser 1986	Feb-86	Area 5	0 - 2	4,4'-DDD	3.02		4.2	NA
HartCrowser 1986	Feb-86	Area 4	0 - 2	4,4'-DDD	0.219		4.2	NA
HartCrowser 1986	Feb-86	Area 2	0 - 2	4,4'-DDD	0.11		4.2	NA
HartCrowser 1986	Feb-86	Area 6	0 - 2	4,4'-DDE	0.427		2.9	NA
HartCrowser 1986	Feb-86	Area 2	0 - 2	4,4'-DDE	0.046		2.9	NA
HartCrowser 1986	Feb-86	Area 6	0 - 2	4,4'-DDT	0.684		2.9	NA
HartCrowser 1986	Feb-86	Area 4	0 - 2	4,4'-DDT	0.246		2.9	NA
HartCrowser 1986	Feb-86	Area 5	0 - 2	4,4'-DDT	0.199		2.9	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	4-Methylphenol	0.93	J	NA	NA
HartCrowser 1987	Sep-86	B-2A	5 - 10	4-Methylphenol	0.6		NA	NA
HartCrowser 1986	May-86	B-2	3 - 10	4-Methylphenol	0.53		NA	NA
HartCrowser 1986	May-86	B-1	3 - 12	4-Methylphenol	0.51		NA	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	4-Methylphenol	0.5		NA	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	Acenaphthene	0.72		4800	1.2
HartCrowser 1986	May-86	B-1	3 - 12	Acenaphthene	0.68		4800	1.2
HartCrowser 1987	Sep-86	B-1A	10 - 15	Acenaphthene	0.42	J	4800	1.2
HartCrowser 1986	May-86	B-2	3 - 10	Acenaphthene	0.33		4800	1.2
HartCrowser 1987	Sep-86	B-2A	5 - 10	Acenaphthene	0.14	J	4800	1.2
HartCrowser 1986	May-86	B-2	3 - 10	Acetone	1.7		8000	NA
HartCrowser 1986	May-86	B-1	3 - 12	Acetone	0.41		8000	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	Acetone	0.41	J	8000	NA
HartCrowser 1987	Sep-86	B-4	7 - 13	Acetone	0.17	J	8000	NA
HartCrowser 1986	Feb-86	Area 6	0 - 2	Acetone	0.092		8000	NA
HartCrowser 1987	Sep-86	B-5	13	Acetone	0.045	B	8000	NA
HartCrowser 1986	Feb-86	Area 5	0 - 2	Acetone	0.044		8000	NA
HartCrowser 1986	Feb-86	Area 4	0 - 2	Acetone	0.04		8000	NA
HartCrowser 1987	Sep-86	B-5	2 - 6	Acetone	0.02	B	8000	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	Acetone	0.0077	J	8000	NA
HartCrowser 1987	Sep-86	B-1A	17 - 20	Acetone	0.007		8000	NA

Table B-3
Soil Sampling Results[a,b]
Trotsky Property

Source	Sample Date	Sample Location	Sample Depth (ft)	Chemical	Soil Conc'n (mg/kg DW)		MTCA Cleanup Level[e] (mg/kg)	Soil-to-Sediment Screening Level (Based on CSL)[f] (mg/kg)
HartCrowser 1986	May-86	B-2	3 - 10	Anthracene	1.3		24000	24
HartCrowser 1987	Sep-86	B-1A	5 - 10	Anthracene	0.36		24000	24
HartCrowser 1986	May-86	B-1	3 - 12	Anthracene	0.25		24000	24
HartCrowser 1987	Sep-86	B-1A	10 - 15	Anthracene	0.19	J	24000	24
HartCrowser 1986	May-86	B-1	3 - 12	Antimony	5		32	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	Antimony	0.6		32	NA
HartCrowser 1987	Sep-86	B-4	14 - 18	Antimony	0.5		32	NA
HartCrowser 1987	Sep-86	B-1A	17 - 20	Antimony	0.4		32	NA
HartCrowser 1987	Sep-86	B-1A	20	Antimony	0.3		32	NA
HartCrowser 1987	Sep-86	B-5	7 - 13	Antimony	0.3		32	NA
HartCrowser 1987	Sep-86	B-2A	5 - 10	Antimony	0.2		32	NA
HartCrowser 1987	Sep-86	B-2A	16 - 20	Antimony	0.2		32	NA
HartCrowser 1987	Sep-86	B-4	2 - 6	Antimony	0.2		32	NA
HartCrowser 1987	Sep-86	B-4	7 - 13	Antimony	0.2		32	NA
HartCrowser 1987	Sep-86	B-5	15	Antimony	0.2		32	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	Antimony	0.1		32	NA
HartCrowser 1987	Sep-86	B-2A	10 - 15	Antimony	0.1		32	NA
HartCrowser 1987	Sep-86	B-5	15 - 18	Antimony	0.1		32	NA
HartCrowser 1987	Sep-86	B-2A	5 - 10	Aroclor-1248	12.4		NA	1.3
HartCrowser 1987	Sep-86	B-1A	5 - 10	Aroclor-1248	4.37		NA	1.3
HartCrowser 1987	Sep-86	B-2A	10 - 15	Aroclor-1248	4.22		NA	1.3
HartCrowser 1987	Sep-86	B-1A	10 - 15	Aroclor-1248	3.48		NA	1.3
HartCrowser 1987	Sep-86	B-1A	17 - 20	Aroclor-1248	3.42		NA	1.3
HartCrowser 1987	Sep-86	B-2A	16 - 20	Aroclor-1248	2.31		NA	1.3
HartCrowser 1987	Sep-86	B-1A	20	Aroclor-1248	1.93		NA	1.3
HartCrowser 1986	May-86	B-1	3 - 12	Aroclor-1248	1.8		NA	1.3
HartCrowser 1986	May-86	B-2	3 - 10	Aroclor-1248	1.7		NA	1.3
HartCrowser 1987	Sep-86	B-2A	20	Aroclor-1248	1.05		NA	1.3
HartCrowser 1987	Sep-86	B-4	2 - 6	Aroclor-1248	0.42		NA	1.3
HartCrowser 1987	Sep-86	B-2A	5 - 10	Aroclor-1260	2.9		NA	1.3
HartCrowser 1987	Sep-86	B-1A	5 - 10	Aroclor-1260	2.21		NA	1.3
HartCrowser 1987	Sep-86	B-1A	10 - 15	Aroclor-1260	2.04		NA	1.3
HartCrowser 1987	Sep-86	B-2A	10 - 15	Aroclor-1260	1.67		NA	1.3
HartCrowser 1987	Sep-86	B-1A	17 - 20	Aroclor-1260	1.65		NA	1.3
HartCrowser 1986	May-86	B-2	3 - 10	Aroclor-1260	1.2		NA	1.3
HartCrowser 1987	Sep-86	B-1A	20	Aroclor-1260	1.1		NA	1.3
HartCrowser 1986	May-86	B-1	3 - 12	Aroclor-1260	0.95		NA	1.3
HartCrowser 1987	Sep-86	B-2A	16 - 20	Aroclor-1260	0.76		NA	1.3
HartCrowser 1987	Sep-86	B-2A	20	Aroclor-1260	0.62		NA	1.3
HartCrowser 1986	Feb-86	Area 4	0 - 2	Aroclor-1260	0.435		NA	1.3
HartCrowser 1986	Feb-86	Area 3	0 - 2	Aroclor-1260	0.398		NA	1.3
HartCrowser 1987	Sep-86	B-4	2 - 6	Aroclor-1260	0.32		NA	1.3
HartCrowser 1986	Feb-86	Area 6	0 - 2	Arsenic	7.8		0.67	12000
HartCrowser 1987	Sep-86	B-1A	20	Arsenic	7.8		0.67	12000
HartCrowser 1987	Sep-86	B-1A	17 - 20	Arsenic	7.6		0.67	12000
HartCrowser 1987	Sep-86	B-2A	10 - 15	Arsenic	6.4		0.67	12000
HartCrowser 1986	May-86	B-2	3 - 10	Arsenic	6.2		0.67	12000
HartCrowser 1986	Feb-86	Area 2	0 - 2	Arsenic	5.5		0.67	12000
HartCrowser 1986	May-86	B-1	3 - 12	Arsenic	5.1		0.67	12000
HartCrowser 1986	Feb-86	Area 1	0 - 2	Arsenic	5		0.67	12000
HartCrowser 1986	Feb-86	Area 4	0 - 2	Arsenic	5		0.67	12000
HartCrowser 1987	Sep-86	B-5	13	Arsenic	4.8		0.67	12000

Table B-3
Soil Sampling Results[a,b]
Trotsky Property

Source	Sample Date	Sample Location	Sample Depth (ft)	Chemical	Soil Conc'n (mg/kg DW)		MTCA Cleanup Level[e] (mg/kg)	Soil-to-Sediment Screening Level (Based on CSL)[f] (mg/kg)
HartCrowser 1986	Feb-86	Area 3	0 - 2	Arsenic	4.5		0.67	12000
HartCrowser 1987	Sep-86	B-4	7 - 13	Arsenic	4.1		0.67	12000
HartCrowser 1987	Sep-86	B-5	7 - 13	Arsenic	3.9		0.67	12000
HartCrowser 1987	Sep-86	B-1A	10 - 15	Arsenic	3.4		0.67	12000
HartCrowser 1987	Sep-86	B-2A	5 - 10	Arsenic	3.3		0.67	12000
HartCrowser 1987	Sep-86	B-5	15	Arsenic	3		0.67	12000
HartCrowser 1987	Sep-86	B-1A	5 - 10	Arsenic	2.9		0.67	12000
HartCrowser 1987	Sep-86	B-5	2 - 6	Arsenic	2.4		0.67	12000
HartCrowser 1987	Sep-86	B-4	14 - 18	Arsenic	2.1		0.67	12000
HartCrowser 1987	Sep-86	B-4	2 - 6	Arsenic	1.9		0.67	12000
HartCrowser 1987	Sep-86	B-5	15 - 18	Arsenic	1.6		0.67	12000
HartCrowser 1987	Sep-86	B-2A	16 - 20	Arsenic	1.3		0.67	12000
HartCrowser 1987	Sep-86	B-2A	20	Arsenic	1.2		0.67	12000
HartCrowser 1987	Sep-86	B-1A	10 - 15	Benzene	0.0045	J	0.03	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	Benzene	0.0044	J	0.03	NA
HartCrowser 1987	Sep-86	B-2A	10 - 15	Benzene	0.0028	BJ	0.03	NA
HartCrowser 1987	Sep-86	B-1A	17 - 20	Benzene	0.0023	J	0.03	NA
HartCrowser 1987	Sep-86	B-1A	20	Benzene	0.0013	BJ	0.03	NA
HartCrowser 1987	Sep-86	B-2A	10 - 15	Benzo(a)anthracene	1.1	J	0.14	5.4
HartCrowser 1987	Sep-86	B-1A	17 - 20	Benzo(a)anthracene	0.41	J	0.14	5.4
HartCrowser 1987	Sep-86	B-2A	10 - 15	Benzo(a)pyrene	1	J	0.14	4.2
HartCrowser 1987	Sep-86	B-2A	10 - 15	Benzo(g,h,i)perylene	0.78	J	NA	1.6
HartCrowser 1987	Sep-86	B-1A	17 - 20	Benzo(g,h,i)perylene	0.3	J	NA	1.6
HartCrowser 1987	Sep-86	B-2A	16 - 20	Benzo(g,h,i)perylene	0.14	J	NA	1.6
HartCrowser 1987	Sep-86	B-5	13	Beryllium	3.9		160	NA
HartCrowser 1987	Sep-86	B-1A	17 - 20	Beryllium	3.6		160	NA
HartCrowser 1987	Sep-86	B-5	7 - 13	Beryllium	3.6		160	NA
HartCrowser 1987	Sep-86	B-1A	20	Beryllium	3.5		160	NA
HartCrowser 1987	Sep-86	B-5	15	Beryllium	3.3		160	NA
HartCrowser 1987	Sep-86	B-4	7 - 13	Beryllium	3		160	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	Beryllium	2.9		160	NA
HartCrowser 1987	Sep-86	B-2A	10 - 15	Beryllium	2.9		160	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	Beryllium	2.7		160	NA
HartCrowser 1987	Sep-86	B-5	15 - 18	Beryllium	2.3		160	NA
HartCrowser 1987	Sep-86	B-4	2 - 6	Beryllium	1.7		160	NA
HartCrowser 1987	Sep-86	B-5	2 - 6	Beryllium	1.7		160	NA
HartCrowser 1987	Sep-86	B-2A	5 - 10	Beryllium	1.5		160	NA
HartCrowser 1987	Sep-86	B-2A	16 - 20	Beryllium	1.4		160	NA
HartCrowser 1987	Sep-86	B-4	14 - 18	Beryllium	1.2		160	NA
HartCrowser 1987	Sep-86	B-2A	20	Beryllium	1.1		160	NA
HartCrowser 1986	Feb-86	Area 1	0 - 2	Beryllium	0.4		160	NA
HartCrowser 1986	Feb-86	Area 2	0 - 2	Beryllium	0.4		160	NA
HartCrowser 1986	Feb-86	Area 3	0 - 2	Beryllium	0.4		160	NA
HartCrowser 1986	Feb-86	Area 4	0 - 2	Beryllium	0.4		160	NA
HartCrowser 1986	Feb-86	Area 5	0 - 2	Beryllium	0.4		160	NA
HartCrowser 1986	May-86	B-2	3 - 10	Beryllium	0.4		160	NA
HartCrowser 1986	Feb-86	Area 6	0 - 2	Beryllium	0.3		160	NA
HartCrowser 1986	May-86	B-1	3 - 12	Beryllium	0.3		160	NA
HartCrowser 1986	Feb-86	Area 2	0 - 2	Bis(2-ethylhexyl)phthalate	6.9		71	1.6
HartCrowser 1986	Feb-86	Area 1	0 - 2	Bis(2-ethylhexyl)phthalate	5.8		71	1.6
HartCrowser 1987	Sep-86	B-1A	10 - 15	Bis(2-ethylhexyl)phthalate	5.4	B	71	1.6
HartCrowser 1986	Feb-86	Area 6	0 - 2	Bis(2-ethylhexyl)phthalate	4.8		71	1.6

Table B-3
Soil Sampling Results[a,b]
Trotsky Property

Source	Sample Date	Sample Location	Sample Depth (ft)	Chemical	Soil Conc'n (mg/kg DW)		MTCA Cleanup Level[e] (mg/kg)	Soil-to-Sediment Screening Level (Based on CSL)[f] (mg/kg)
HartCrowser 1986	May-86	B-1	3 - 12	Bis(2-ethylhexyl)phthalate	2.63		71	1.6
HartCrowser 1986	May-86	B-2	3 - 10	Bis(2-ethylhexyl)phthalate	1.8		71	1.6
HartCrowser 1987	Sep-86	B-2A	5 - 10	Bis(2-ethylhexyl)phthalate	1.6	B	71	1.6
HartCrowser 1987	Sep-86	B-2A	10 - 15	Bis(2-ethylhexyl)phthalate	1.5	BJ	71	1.6
HartCrowser 1987	Sep-86	B-1A	17 - 20	Bis(2-ethylhexyl)phthalate	0.94	B	71	1.6
HartCrowser 1987	Sep-86	B-1A	20	Bis(2-ethylhexyl)phthalate	0.57	BJ	71	1.6
HartCrowser 1987	Sep-86	B-4	14 - 18	Bis(2-ethylhexyl)phthalate	0.53	B	71	1.6
HartCrowser 1987	Sep-86	B-5	2 - 6	Bis(2-ethylhexyl)phthalate	0.42	B	71	1.6
HartCrowser 1987	Sep-86	B-5	13	Bis(2-ethylhexyl)phthalate	0.38	B	71	1.6
HartCrowser 1986	Feb-86	Area 5	0 - 2	Bis(2-ethylhexyl)phthalate	0.36		71	1.6
HartCrowser 1987	Sep-86	B-2A	16 - 20	Bis(2-ethylhexyl)phthalate	0.34	BJ	71	1.6
HartCrowser 1986	Feb-86	Area 3	0 - 2	Bis(2-ethylhexyl)phthalate	0.32		71	1.6
HartCrowser 1987	Sep-86	B-4	2 - 6	Bis(2-ethylhexyl)phthalate	0.27	BJ	71	1.6
HartCrowser 1987	Sep-86	B-5	7 - 13	Bis(2-ethylhexyl)phthalate	0.24	BJ	71	1.6
HartCrowser 1987	Sep-86	B-5	15 - 18	Bis(2-ethylhexyl)phthalate	0.24	BJ	71	1.6
HartCrowser 1987	Sep-86	B-2A	20	Bis(2-ethylhexyl)phthalate	0.19	BJ	71	1.6
HartCrowser 1987	Sep-86	B-4	7 - 13	Bis(2-ethylhexyl)phthalate	0.11	BJ	71	1.6
HartCrowser 1987	Sep-86	B-5	15	Bis(2-ethylhexyl)phthalate	0.065	BJ	71	1.6
HartCrowser 1986	Feb-86	Area 5	0 - 2	Butyl benzyl phthalate	0.15		16000	1.3
HartCrowser 1986	Feb-86	Area 6	0 - 2	Cadmium	3.5		2	34
HartCrowser 1987	Sep-86	B-2A	10 - 15	Cadmium	1.53		2	34
HartCrowser 1986	Feb-86	Area 2	0 - 2	Cadmium	1.4		2	34
HartCrowser 1987	Sep-86	B-1A	10 - 15	Cadmium	0.84		2	34
HartCrowser 1987	Sep-86	B-1A	5 - 10	Cadmium	0.74		2	34
HartCrowser 1987	Sep-86	B-2A	5 - 10	Cadmium	0.73		2	34
HartCrowser 1987	Sep-86	B-1A	20	Cadmium	0.72		2	34
HartCrowser 1987	Sep-86	B-4	2 - 6	Cadmium	0.72		2	34
HartCrowser 1987	Sep-86	B-1A	17 - 20	Cadmium	0.66		2	34
HartCrowser 1986	Feb-86	Area 1	0 - 2	Cadmium	0.5		2	34
HartCrowser 1986	Feb-86	Area 3	0 - 2	Cadmium	0.5		2	34
HartCrowser 1987	Sep-86	B-2A	16 - 20	Cadmium	0.15		2	34
HartCrowser 1987	Sep-86	B-4	7 - 13	Cadmium	0.15		2	34
HartCrowser 1987	Sep-86	B-5	7 - 13	Cadmium	0.07		2	34
HartCrowser 1987	Sep-86	B-5	13	Cadmium	0.06		2	34
HartCrowser 1987	Sep-86	B-4	14 - 18	Cadmium	0.05		2	34
HartCrowser 1987	Sep-86	B-5	15	Cadmium	0.05		2	34
HartCrowser 1987	Sep-86	B-2A	20	Cadmium	0.04		2	34
HartCrowser 1987	Sep-86	B-5	15 - 18	Cadmium	0.03		2	34
HartCrowser 1987	Sep-86	B-5	2 - 6	Cadmium	0.02		2	34
HartCrowser 1987	Sep-86	B-2A	10 - 15	Carbon Disulfide	0.027	J	8000	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	Carbon Disulfide	0.011	J	8000	NA
HartCrowser 1987	Sep-86	B-5	7 - 13	Carbon Disulfide	0.0027	J	8000	NA
HartCrowser 1987	Sep-86	B-1A	20	Carbon Disulfide	0.0023	J	8000	NA
HartCrowser 1987	Sep-86	B-5	13	Carbon Disulfide	0.0022	J	8000	NA
HartCrowser 1987	Sep-86	B-5	15	Carbon Disulfide	0.002	J	8000	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	Carbon Disulfide	0.0016	J	8000	NA
HartCrowser 1987	Sep-86	B-1A	17 - 20	Carbon Disulfide	0.0012	J	8000	NA
HartCrowser 1987	Sep-86	B-2A	16 - 20	Carbon Disulfide	0.00057	J	8000	NA
HartCrowser 1987	Sep-86	B-5	2 - 6	Carbon Disulfide	0.00036	J	8000	NA
HartCrowser 1987	Sep-86	B-2A	20	Carbon Disulfide	0.0003	J	8000	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	Chlorobenzene	0.032	J	1600	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	Chlorobenzene	0.0024	J	1600	NA

Table B-3
Soil Sampling Results[a,b]
Trotsky Property

Source	Sample Date	Sample Location	Sample Depth (ft)	Chemical	Soil Conc'n (mg/kg DW)		MTCA Cleanup Level[e] (mg/kg)	Soil-to-Sediment Screening Level (Based on CSL)[f] (mg/kg)
HartCrowser 1987	Sep-86	B-1A	20	Chlorobenzene	0.0013	J	1600	NA
HartCrowser 1987	Sep-86	B-1A	20	Chloroform	0.00057	J	160	NA
HartCrowser 1986	Feb-86	Area 2	0 - 2	Chromium	200		19[c]	5400
HartCrowser 1986	Feb-86	Area 6	0 - 2	Chromium	200		19[c]	5400
HartCrowser 1986	May-86	B-2	3 - 10	Chromium	120		19[c]	5400
HartCrowser 1987	Sep-86	B-1A	10 - 15	Chromium	55.1		19[c]	5400
HartCrowser 1987	Sep-86	B-1A	5 - 10	Chromium	50.5		19[c]	5400
HartCrowser 1986	Feb-86	Area 4	0 - 2	Chromium	37		19[c]	5400
HartCrowser 1987	Sep-86	B-2A	10 - 15	Chromium	36.6		19[c]	5400
HartCrowser 1986	May-86	B-1	3 - 12	Chromium	35		19[c]	5400
HartCrowser 1987	Sep-86	B-2A	5 - 10	Chromium	32.6		19[c]	5400
Parametrix & SAIC	May-91	MH	<1	Chromium	27.7		19[c]	5400
HartCrowser 1986	Feb-86	Area 1	0 - 2	Chromium	27		19[c]	5400
HartCrowser 1987	Sep-86	B-1A	20	Chromium	22.6		19[c]	5400
HartCrowser 1987	Sep-86	B-1A	17 - 20	Chromium	22.5		19[c]	5400
HartCrowser 1986	Feb-86	Area 5	0 - 2	Chromium	22		19[c]	5400
HartCrowser 1986	Feb-86	Area 3	0 - 2	Chromium	20		19[c]	5400
Parametrix & SAIC	May-91	SC-1[d]	<1	Chromium	15.9		19[c]	5400
HartCrowser 1987	Sep-86	B-5	13	Chromium	14.6		19[c]	5400
HartCrowser 1987	Sep-86	B-5	7 - 13	Chromium	14		19[c]	5400
HartCrowser 1987	Sep-86	B-5	15	Chromium	13.2		19[c]	5400
HartCrowser 1987	Sep-86	B-2A	16 - 20	Chromium	12.4		19[c]	5400
HartCrowser 1987	Sep-86	B-4	2 - 6	Chromium	12.2		19[c]	5400
HartCrowser 1987	Sep-86	B-4	7 - 13	Chromium	11.6		19[c]	5400
HartCrowser 1987	Sep-86	B-4	14 - 18	Chromium	10.6		19[c]	5400
HartCrowser 1987	Sep-86	B-5	15 - 18	Chromium	10.4		19[c]	5400
HartCrowser 1987	Sep-86	B-2A	20	Chromium	7.6		19[c]	5400
HartCrowser 1987	Sep-86	B-5	2 - 6	Chromium	7.6		19[c]	5400
HartCrowser 1987	Sep-86	B-2A	10 - 15	Chrysene	1.2	J	0.14	9.2
HartCrowser 1987	Sep-86	B-1A	17 - 20	Chrysene	0.48	J	0.14	9.2
HartCrowser 1987	Sep-86	B-2A	10 - 15	cis-1,2-Dichloroethene	0.018	J	800	NA
HartCrowser 1987	Sep-86	B-2A	5 - 10	cis-1,2-Dichloroethene	0.015	J	800	NA
HartCrowser 1987	Sep-86	B-2A	16 - 20	cis-1,2-Dichloroethene	0.0066	J	800	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	cis-1,2-Dichloroethene	0.0059	J	800	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	cis-1,2-Dichloroethene	0.0033	J	800	NA
HartCrowser 1987	Sep-86	B-1A	17 - 20	cis-1,2-Dichloroethene	0.0011	J	800	NA
HartCrowser 1987	Sep-86	B-2A	20	cis-1,2-Dichloroethene	0.0008	J	800	NA
HartCrowser 1986	Feb-86	Area 6	0 - 2	Copper	100		3000	780
HartCrowser 1986	May-86	B-2	3 - 10	Copper	72		3000	780
HartCrowser 1987	Sep-86	B-1A	10 - 15	Copper	50.7		3000	780
HartCrowser 1987	Sep-86	B-1A	5 - 10	Copper	49.5		3000	780
HartCrowser 1987	Sep-86	B-1A	17 - 20	Copper	48		3000	780
HartCrowser 1987	Sep-86	B-2A	10 - 15	Copper	41.6		3000	780
HartCrowser 1987	Sep-86	B-1A	20	Copper	40.6		3000	780
Parametrix & SAIC	May-91	MH	<1	Copper	40		3000	780
HartCrowser 1987	Sep-86	B-5	13	Copper	35.5		3000	780
HartCrowser 1987	Sep-86	B-5	7 - 13	Copper	35.3		3000	780
HartCrowser 1986	May-86	B-1	3 - 12	Copper	35		3000	780
HartCrowser 1986	Feb-86	Area 2	0 - 2	Copper	28		3000	780
HartCrowser 1987	Sep-86	B-4	7 - 13	Copper	26.6		3000	780
HartCrowser 1987	Sep-86	B-5	15	Copper	26.3		3000	780
HartCrowser 1986	Feb-86	Area 1	0 - 2	Copper	26		3000	780

Table B-3
Soil Sampling Results[a,b]
Trotsky Property

Source	Sample Date	Sample Location	Sample Depth (ft)	Chemical	Soil Conc'n (mg/kg DW)		MTCA Cleanup Level[e] (mg/kg)	Soil-to-Sediment Screening Level (Based on CSL)[f] (mg/kg)
Parametrix & SAIC	May-91	SC-1[d]	<1	Copper	22		3000	780
HartCrowser 1987	Sep-86	B-2A	5 - 10	Copper	21.5		3000	780
HartCrowser 1987	Sep-86	B-5	15 - 18	Copper	18.3		3000	780
HartCrowser 1986	Feb-86	Area 4	0 - 2	Copper	15		3000	780
HartCrowser 1987	Sep-86	B-2A	20	Copper	14.1		3000	780
HartCrowser 1987	Sep-86	B-4	2 - 6	Copper	13.1		3000	780
HartCrowser 1986	Feb-86	Area 3	0 - 2	Copper	13		3000	780
HartCrowser 1986	Feb-86	Area 5	0 - 2	Copper	13		3000	780
HartCrowser 1987	Sep-86	B-2A	16 - 20	Copper	12.6		3000	780
HartCrowser 1987	Sep-86	B-5	2 - 6	Copper	12.3		3000	780
HartCrowser 1987	Sep-86	B-4	14 - 18	Copper	10.9		3000	780
HartCrowser 1986	Feb-86	Area 4	0 - 2	Cyanide	9.8		1600	NA
HartCrowser 1986	May-86	B-2	3 - 10	Cyanide	8.3		1600	NA
HartCrowser 1986	Feb-86	Area 6	0 - 2	Cyanide	4.5		1600	NA
HartCrowser 1986	Feb-86	Area 2	0 - 2	Cyanide	3.6		1600	NA
HartCrowser 1986	Feb-86	Area 5	0 - 2	Cyanide	3.6		1600	NA
HartCrowser 1986	Feb-86	Area 3	0 - 2	Cyanide	1.9		1600	NA
HartCrowser 1986	May-86	B-1	3 - 12	Cyanide	0.7		1600	NA
HartCrowser 1986	Feb-86	Area 1	0 - 2	Cyanide	0.6		1600	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	Dibenzofuran	0.63		160	1.2
HartCrowser 1986	May-86	B-1	3 - 12	Dibenzofuran	0.42		160	1.2
HartCrowser 1987	Sep-86	B-1A	10 - 15	Dibenzofuran	0.38	J	160	1.2
HartCrowser 1986	May-86	B-2	3 - 10	Dibenzofuran	0.16		160	1.2
HartCrowser 1986	Feb-86	Area 4	0 - 2	Dieldrin	0.029		0.063	NA
HartCrowser 1986	Feb-86	Area 5	0 - 2	Dieldrin	0.016		0.063	NA
HartCrowser 1986	Feb-86	Area 2	0 - 2	Di-n-butylphthalate	0.68		8000	39
HartCrowser 1986	Feb-86	Area 6	0 - 2	Di-n-butylphthalate	0.6		8000	39
HartCrowser 1986	May-86	B-2	3 - 10	Di-n-butylphthalate	0.53		8000	39
HartCrowser 1987	Sep-86	B-5	13	Di-n-butylphthalate	0.24	J	8000	39
HartCrowser 1987	Sep-86	B-2A	16 - 20	Di-n-butylphthalate	0.074	BJ	8000	39
HartCrowser 1986	Feb-86	Area 1	0 - 2	Di-n-butylphthalate	0.057		8000	39
HartCrowser 1987	Sep-86	B-5	2 - 6	Di-n-butylphthalate	0.057	BJ	8000	39
HartCrowser 1987	Sep-86	B-4	14 - 18	Di-n-butylphthalate	0.056	BJ	8000	39
HartCrowser 1987	Sep-86	B-5	13	Di-n-butylphthalate	0.049	BJ	8000	39
HartCrowser 1987	Sep-86	B-5	15 - 18	Di-n-butylphthalate	0.04	BJ	8000	39
HartCrowser 1987	Sep-86	B-1A	20	Di-n-octyl phthalate	1.1	J	1600	90
HartCrowser 1986	May-86	B-1	3 - 12	Di-n-octyl phthalate	0.38		1600	90
HartCrowser 1986	May-86	B-2	3 - 10	Di-n-octyl phthalate	0.13		1600	90
HartCrowser 1986	Feb-86	Area 1	0 - 2	Endrin	0.104		24	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	Ethylbenzene	1.2	B	6	NA
HartCrowser 1987	Sep-86	B-2A	10 - 15	Ethylbenzene	0.92	B	6	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	Ethylbenzene	0.73	B	6	NA
HartCrowser 1986	May-86	B-2	3 - 10	Ethylbenzene	0.19		6	NA
HartCrowser 1986	Feb-86	Area 6	0 - 2	Ethylbenzene	0.11		6	NA
HartCrowser 1987	Sep-86	B-1A	17 - 20	Ethylbenzene	0.047	B	6	NA
HartCrowser 1987	Sep-86	B-1A	20	Ethylbenzene	0.012		6	NA
HartCrowser 1987	Sep-86	B-2A	5 - 10	Ethylbenzene	0.011	B	6	NA
HartCrowser 1987	Sep-86	B-2A	20	Ethylbenzene	0.00148	J	6	NA
HartCrowser 1987	Sep-86	B-2A	16 - 20	Ethylbenzene	0.0013	BJ	6	NA
HartCrowser 1987	Sep-86	B-4	2 - 6	Ethylbenzene	0.001	J	6	NA
HartCrowser 1987	Sep-86	B-4	7 - 13	Ethylbenzene	0.001	J	6	NA
HartCrowser 1987	Sep-86	B-5	15	Ethylbenzene	0.001	J	6	NA

Table B-3
Soil Sampling Results[a,b]
Trotsky Property

Source	Sample Date	Sample Location	Sample Depth (ft)	Chemical	Soil Conc'n (mg/kg DW)		MTCA Cleanup Level[e] (mg/kg)	Soil-to-Sediment Screening Level (Based on CSL)[f] (mg/kg)
HartCrowser 1987	Sep-86	B-5	2 - 6	Ethylbenzene	0.001	J	6	NA
HartCrowser 1987	Sep-86	B-5	7 - 13	Ethylbenzene	0.001	J	6	NA
HartCrowser 1987	Sep-86	B-5	15 - 18	Ethylbenzene	0.001	J	6	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	Fluoranthene	1.1		3200	24
HartCrowser 1987	Sep-86	B-2A	10 - 15	Fluoranthene	0.94	J	3200	24
HartCrowser 1986	Feb-86	Area 2	0 - 2	Fluoranthene	0.84		3200	24
HartCrowser 1987	Sep-86	B-1A	10 - 15	Fluoranthene	0.83	J	3200	24
HartCrowser 1986	May-86	B-1	3 - 12	Fluoranthene	0.75		3200	24
HartCrowser 1987	Sep-86	B-1A	17 - 20	Fluoranthene	0.68	J	3200	24
HartCrowser 1987	Sep-86	B-2A	5 - 10	Fluoranthene	0.5		3200	24
HartCrowser 1986	May-86	B-2	3 - 10	Fluoranthene	0.39		3200	24
HartCrowser 1987	Sep-86	B-1A	20	Fluoranthene	0.28	J	3200	24
HartCrowser 1987	Sep-86	B-2A	16 - 20	Fluoranthene	0.12	J	3200	24
HartCrowser 1986	Feb-86	Area 1	0 - 2	Fluoranthene	0.072		3200	24
HartCrowser 1987	Sep-86	B-4	7 - 13	Fluoranthene	0.033	J	3200	24
HartCrowser 1987	Sep-86	B-5	2 - 6	Fluoranthene	0.023	J	3200	24
HartCrowser 1987	Sep-86	B-1A	5 - 10	Fluorene	0.6		3200	1.6
HartCrowser 1987	Sep-86	B-1A	10 - 15	Fluorene	0.47	J	3200	1.6
HartCrowser 1986	May-86	B-1	3 - 12	Fluorene	0.43		3200	1.6
HartCrowser 1986	May-86	B-2	3 - 10	Fluorene	0.34		3200	1.6
HartCrowser 1987	Sep-86	B-2A	10 - 15	Fluorene	0.18	J	3200	1.6
HartCrowser 1987	Sep-86	B-2A	10 - 15	Indeno(1,2,3-cd)pyrene	1.1	J	0.14	1.8
HartCrowser 1987	Sep-86	B-1A	17 - 20	Indeno(1,2,3-cd)pyrene	0.33	J	0.14	1.8
HartCrowser 1987	Sep-86	B-1A	10 - 15	Isophorone	1.6		1100	NA
HartCrowser 1987	Sep-86	B-1A	20	Isophorone	0.45	J	1100	NA
HartCrowser 1986	Feb-86	Area 1	0 - 2	Lead	1,400		250	1300
HartCrowser 1986	Feb-86	Area 6	0 - 2	Lead	1,400		250	1300
HartCrowser 1986	Feb-86	Area 2	0 - 2	Lead	640		250	1300
HartCrowser 1987	Sep-86	B-2A	5 - 10	Lead	444		250	1300
HartCrowser 1987	Sep-86	B-1A	10 - 15	Lead	171.3		250	1300
HartCrowser 1986	May-86	B-2	3 - 10	Lead	170		250	1300
HartCrowser 1986	Feb-86	Area 4	0 - 2	Lead	160		250	1300
HartCrowser 1987	Sep-86	B-2A	10 - 15	Lead	158.2		250	1300
HartCrowser 1987	Sep-86	B-1A	5 - 10	Lead	157.6		250	1300
Parametrix & SAIC	May-91	MH	<1	Lead	93.3		250	1300
HartCrowser 1986	May-86	B-1	3 - 12	Lead	63		250	1300
HartCrowser 1986	Feb-86	Area 5	0 - 2	Lead	60		250	1300
HartCrowser 1987	Sep-86	B-1A	20	Lead	56.9		250	1300
HartCrowser 1987	Sep-86	B-1A	17 - 20	Lead	51.5		250	1300
Parametrix & SAIC	May-91	SC-1[d]	<1	Lead	49.2		250	1300
HartCrowser 1986	Feb-86	Area 3	0 - 2	Lead	48		250	1300
HartCrowser 1987	Sep-86	B-2A	16 - 20	Lead	26.3		250	1300
HartCrowser 1987	Sep-86	B-4	2 - 6	Lead	22.6		250	1300
HartCrowser 1987	Sep-86	B-2A	20	Lead	7.4		250	1300
HartCrowser 1987	Sep-86	B-5	7 - 13	Lead	1.7		250	1300
HartCrowser 1987	Sep-86	B-4	7 - 13	Lead	1		250	1300
HartCrowser 1987	Sep-86	B-5	2 - 6	Lead	0.8		250	1300
HartCrowser 1987	Sep-86	B-4	14 - 18	Lead	0.6		250	1300
HartCrowser 1987	Sep-86	B-5	13	Lead	0.6		250	1300
HartCrowser 1986	Feb-86	Area 6	0 - 2	Mercury	6.7		24	0.59
HartCrowser 1987	Sep-86	B-2A	10 - 15	Mercury	2.18		24	0.59
HartCrowser 1986	Feb-86	Area 2	0 - 2	Mercury	1		24	0.59

Table B-3
Soil Sampling Results[a,b]
Trotsky Property

Source	Sample Date	Sample Location	Sample Depth (ft)	Chemical	Soil Conc'n (mg/kg DW)		MTCA Cleanup Level[e] (mg/kg)	Soil-to-Sediment Screening Level (Based on CSL)[f] (mg/kg)
HartCrowser 1986	Feb-86	Area 4	0 - 2	Mercury	0.6		24	0.59
HartCrowser 1986	Feb-86	Area 1	0 - 2	Mercury	0.5		24	0.59
HartCrowser 1986	May-86	B-2	3 - 10	Mercury	0.4		24	0.59
HartCrowser 1986	Feb-86	Area 3	0 - 2	Mercury	0.3		24	0.59
HartCrowser 1987	Sep-86	B-2A	5 - 10	Mercury	0.26		24	0.59
HartCrowser 1987	Sep-86	B-1A	10 - 15	Mercury	0.22		24	0.59
HartCrowser 1986	Feb-86	Area 5	0 - 2	Mercury	0.2		24	0.59
HartCrowser 1986	May-86	B-1	3 - 12	Mercury	0.2		24	0.59
HartCrowser 1987	Sep-86	B-1A	5 - 10	Mercury	0.19		24	0.59
HartCrowser 1987	Sep-86	B-4	2 - 6	Mercury	0.12		24	0.59
HartCrowser 1987	Sep-86	B-1A	17 - 20	Mercury	0.06		24	0.59
HartCrowser 1987	Sep-86	B-2A	16 - 20	Mercury	0.06		24	0.59
HartCrowser 1987	Sep-86	B-1A	20	Mercury	0.05		24	0.59
HartCrowser 1987	Sep-86	B-5	2 - 6	Mercury	0.03		24	0.59
HartCrowser 1987	Sep-86	B-2A	20	Mercury	0.02		24	0.59
HartCrowser 1987	Sep-86	B-4	7 - 13	Mercury	0.02		24	0.59
HartCrowser 1987	Sep-86	B-5	13	Mercury	0.02		24	0.59
HartCrowser 1987	Sep-86	B-5	15	Mercury	0.02		24	0.59
HartCrowser 1987	Sep-86	B-5	7 - 13	Mercury	0.02		24	0.59
HartCrowser 1987	Sep-86	B-5	15 - 18	Mercury	0.02		24	0.59
HartCrowser 1987	Sep-86	B-4	14 - 18	Mercury	0.01		24	0.59
HartCrowser 1987	Sep-86	B-1A	20	Methyl ethyl ketone (2-butanone)	0.013	J	48000	NA
HartCrowser 1987	Sep-86	B-1A	17 - 20	Methyl ethyl ketone (2-butanone)	0.0086	J	48000	NA
HartCrowser 1987	Sep-86	B-5	7 - 13	Methyl ethyl ketone (2-butanone)	0.0054	J	48000	NA
HartCrowser 1987	Sep-86	B-5	15	Methyl ethyl ketone (2-butanone)	0.0047	J	48000	NA
HartCrowser 1987	Sep-86	B-5	15 - 18	Methyl ethyl ketone (2-butanone)	0.0045	J	48000	NA
HartCrowser 1987	Sep-86	B-4	7 - 13	Methyl ethyl ketone (2-butanone)	0.0038	J	48000	NA
HartCrowser 1987	Sep-86	B-5	13	Methyl ethyl ketone (2-butanone)	0.0033	J	48000	NA
HartCrowser 1987	Sep-86	B-1A	20	Methyl ethyl ketone (2-butanone)	0.0028	J	48000	NA
HartCrowser 1987	Sep-86	B-4	14 - 18	Methyl ethyl ketone (2-butanone)	0.0024	J	48000	NA
HartCrowser 1987	Sep-86	B-4	2 - 6	Methyl ethyl ketone (2-butanone)	0.001	J	48000	NA
HartCrowser 1987	Sep-86	B-5	2 - 6	Methyl ethyl ketone (2-butanone)	0.001	J	48000	NA
HartCrowser 1987	Sep-86	B-1A	17 - 20	Methyl isobutyl ketone (4-methyl-2-pentanone)	0.0026	J	6400	NA
HartCrowser 1987	Sep-86	B-1A	20	Methyl isobutyl ketone (4-methyl-2-pentanone)	0.0016	J	6400	NA
HartCrowser 1987	Sep-86	B-2A	5 - 10	Methyl isobutyl ketone (4-methyl-2-pentanone)	0.001	J	6400	NA
HartCrowser 1987	Sep-86	B-4	2 - 6	Methyl isobutyl ketone (4-methyl-2-pentanone)	0.001	J	6400	NA
HartCrowser 1986	May-86	B-2	3 - 10	Methylene chloride	0.35		0.02	NA
HartCrowser 1986	Feb-86	Area 6	0 - 2	Methylene chloride	0.33		0.02	NA

Table B-3
Soil Sampling Results[a,b]
Trotsky Property

Source	Sample Date	Sample Location	Sample Depth (ft)	Chemical	Soil Conc'n (mg/kg DW)		MTCA Cleanup Level[e] (mg/kg)	Soil-to-Sediment Screening Level (Based on CSL)[f] (mg/kg)
HartCrowser 1987	Sep-86	B-1A	20	Methylene chloride	0.31	J	0.02	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	Methylene chloride	0.2	J	0.02	NA
HartCrowser 1986	May-86	B-1	3 - 12	Methylene chloride	0.13		0.02	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	Methylene chloride	0.12	J	0.02	NA
HartCrowser 1987	Sep-86	B-5	13	Methylene chloride	0.11	B	0.02	NA
HartCrowser 1986	Feb-86	Area 1	0 - 2	Methylene chloride	0.06		0.02	NA
HartCrowser 1986	Feb-86	Area 5	0 - 2	Methylene chloride	0.053		0.02	NA
HartCrowser 1986	Feb-86	Area 4	0 - 2	Methylene chloride	0.051		0.02	NA
HartCrowser 1986	Feb-86	Area 2	0 - 2	Methylene chloride	0.04		0.02	NA
HartCrowser 1987	Sep-86	B-4	14 - 18	Methylene chloride	0.029	B	0.02	NA
HartCrowser 1987	Sep-86	B-4	7 - 13	Methylene chloride	0.026	B	0.02	NA
HartCrowser 1987	Sep-86	B-5	15	Methylene chloride	0.025	B	0.02	NA
HartCrowser 1987	Sep-86	B-5	7 - 13	Methylene chloride	0.02	B	0.02	NA
HartCrowser 1987	Sep-86	B-1A	17 - 20	Methylene chloride	0.013	B	0.02	NA
HartCrowser 1987	Sep-86	B-2A	10 - 15	Methylene chloride	0.013	B	0.02	NA
HartCrowser 1987	Sep-86	B-2A	20	Methylene chloride	0.0072	J	0.02	NA
HartCrowser 1987	Sep-86	B-4	2 - 6	Methylene chloride	0.007	B	0.02	NA
Parametrix & SAIC	May-91	MH	<1	Methylene chloride	0.0066		0.02	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	Naphthalene	2.9		5	3.8
HartCrowser 1987	Sep-86	B-1A	5 - 10	Naphthalene	2.8		5	3.8
HartCrowser 1986	May-86	B-1	3 - 12	Naphthalene	1.9		5	3.8
HartCrowser 1986	May-86	B-2	3 - 10	Naphthalene	1.9		5	3.8
HartCrowser 1987	Sep-86	B-2A	5 - 10	Naphthalene	1.7		5	3.8
HartCrowser 1987	Sep-86	B-1A	17 - 20	Naphthalene	0.65	J	5	3.8
HartCrowser 1987	Sep-86	B-2A	10 - 15	Naphthalene	0.53	J	5	3.8
HartCrowser 1987	Sep-86	B-1A	20	Naphthalene	0.37	J	5	3.8
HartCrowser 1987	Sep-86	B-2A	16 - 20	Naphthalene	0.099	J	5	3.8
HartCrowser 1986	May-86	B-2	3 - 10	Nickel	61		1600	NA
HartCrowser 1986	Feb-86	Area 6	0 - 2	Nickel	47		1600	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	Nickel	31.9		1600	NA
HartCrowser 1986	May-86	B-1	3 - 12	Nickel	28		1600	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	Nickel	26.6		1600	NA
Parametrix & SAIC	May-91	MH	<1	Nickel	26.6		1600	NA
HartCrowser 1986	Feb-86	Area 1	0 - 2	Nickel	22		1600	NA
HartCrowser 1986	Feb-86	Area 2	0 - 2	Nickel	21		1600	NA
Parametrix & SAIC	May-91	SC-1[d]	<1	Nickel	15.8		1600	NA
HartCrowser 1986	Feb-86	Area 4	0 - 2	Nickel	15		1600	NA
HartCrowser 1987	Sep-86	B-1A	20	Nickel	14.4		1600	NA
HartCrowser 1987	Sep-86	B-2A	10 - 15	Nickel	14		1600	NA
HartCrowser 1987	Sep-86	B-1A	17 - 20	Nickel	13.9		1600	NA
HartCrowser 1986	Feb-86	Area 5	0 - 2	Nickel	12		1600	NA
HartCrowser 1987	Sep-86	B-5	7 - 13	Nickel	11.2		1600	NA
HartCrowser 1986	Feb-86	Area 3	0 - 2	Nickel	11		1600	NA
HartCrowser 1987	Sep-86	B-5	13	Nickel	10.3		1600	NA
HartCrowser 1987	Sep-86	B-4	7 - 13	Nickel	10.1		1600	NA
HartCrowser 1987	Sep-86	B-2A	5 - 10	Nickel	9.9		1600	NA
HartCrowser 1987	Sep-86	B-5	15	Nickel	9.9		1600	NA
HartCrowser 1987	Sep-86	B-4	2 - 6	Nickel	7.6		1600	NA
HartCrowser 1987	Sep-86	B-5	2 - 6	Nickel	6.7		1600	NA
HartCrowser 1987	Sep-86	B-5	15 - 18	Nickel	6.5		1600	NA
HartCrowser 1987	Sep-86	B-2A	16 - 20	Nickel	6.4		1600	NA
HartCrowser 1987	Sep-86	B-2A	20	Nickel	5.9		1600	NA

Table B-3
Soil Sampling Results[a,b]
Trotsky Property

Source	Sample Date	Sample Location	Sample Depth (ft)	Chemical	Soil Conc'n (mg/kg DW)		MTCA Cleanup Level[e] (mg/kg)	Soil-to-Sediment Screening Level (Based on CSL)[f] (mg/kg)
HartCrowser 1987	Sep-86	B-4	14 - 18	Nickel	5		1600	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	N-Nitrosodiphenylamine	0.89	BJ	200	0.23
HartCrowser 1987	Sep-86	B-1A	5 - 10	PCBs, total (calculated)	6.58		1	1.3
HartCrowser 1987	Sep-86	B-2A	10 - 15	PCBs, total (calculated)	5.89		1	1.3
HartCrowser 1987	Sep-86	B-1A	10 - 15	PCBs, total (calculated)	5.52		1	1.3
HartCrowser 1987	Sep-86	B-1A	17 - 20	PCBs, total (calculated)	5.07		1	1.3
HartCrowser 1987	Sep-86	B-2A	16 - 20	PCBs, total (calculated)	3.07		1	1.3
HartCrowser 1987	Sep-86	B-1A	20	PCBs, total (calculated)	3.03		1	1.3
HartCrowser 1986	May-86	B-2	3 - 10	PCBs, total (calculated)	2.9		1	1.3
HartCrowser 1986	May-86	B-1	3 - 12	PCBs, total (calculated)	2.75		1	1.3
HartCrowser 1987	Sep-86	B-2A	20	PCBs, total (calculated)	1.67		1	1.3
HartCrowser 1987	Sep-86	B-4	2 - 6	PCBs, total (calculated)	0.74		1	1.3
HartCrowser 1986	Feb-86	Area 4	0 - 2	PCBs, total (calculated)	0.435		1	1.3
HartCrowser 1986	Feb-86	Area 3	0 - 2	PCBs, total (calculated)	0.398		1	1.3
HartCrowser 1986	Feb-86	Area 6	0 - 2	Pentachlorophenol	0.81		8.3	0.73
HartCrowser 1986	Feb-86	Area 2	0 - 2	Pentachlorophenol	0.48		8.3	0.73
HartCrowser 1986	Feb-86	Area 1	0 - 2	Pentachlorophenol	0.07		8.3	0.73
HartCrowser 1987	Sep-86	B-1A	5 - 10	Phenanthrene	1.8		NA	9.7
HartCrowser 1987	Sep-86	B-1A	10 - 15	Phenanthrene	1.3	J	NA	9.7
HartCrowser 1986	May-86	B-2	3 - 10	Phenanthrene	0.99		NA	9.7
HartCrowser 1986	May-86	B-1	3 - 12	Phenanthrene	0.93		NA	9.7
HartCrowser 1986	Feb-86	Area 6	0 - 2	Phenanthrene	0.66		NA	9.7
HartCrowser 1986	Feb-86	Area 2	0 - 2	Phenanthrene	0.64		NA	9.7
HartCrowser 1987	Sep-86	B-2A	10 - 15	Phenanthrene	0.58	J	NA	9.7
HartCrowser 1987	Sep-86	B-1A	17 - 20	Phenanthrene	0.42	J	NA	9.7
HartCrowser 1987	Sep-86	B-4	2 - 6	Phenanthrene	0.17	J	NA	9.7
HartCrowser 1987	Sep-86	B-2A	16 - 20	Phenanthrene	0.12	J	NA	9.7
HartCrowser 1986	Feb-86	Area 1	0 - 2	Phenanthrene	0.086		NA	9.7
HartCrowser 1987	Sep-86	B-4	7 - 13	Phenanthrene	0.032	J	NA	9.7
HartCrowser 1987	Sep-86	B-5	2 - 6	Phenanthrene	0.029	J	NA	9.7
HartCrowser 1987	Sep-86	B-2A	5 - 10	Phenol	0.91	B	48000	2.1
HartCrowser 1986	May-86	B-2	3 - 10	Phenol	0.32		48000	2.1
HartCrowser 1987	Sep-86	B-1A	5 - 10	Phenol	0.23	BJ	48000	2.1
HartCrowser 1986	May-86	B-2	3 - 10	Phenols, Total	1.6		48000	2.1
HartCrowser 1986	May-86	B-1	3 - 12	Phenols, Total	0.7		48000	2.1
HartCrowser 1986	Feb-86	Area 2	0 - 2	Phenols, Total	0.6		48000	2.1
HartCrowser 1987	Sep-86	B-2A	10 - 15	Pyrene	1.2	J	2400	28
HartCrowser 1987	Sep-86	B-1A	17 - 20	Pyrene	0.97		2400	28
HartCrowser 1987	Sep-86	B-1A	10 - 15	Pyrene	0.71	J	2400	28
HartCrowser 1986	Feb-86	Area 2	0 - 2	Pyrene	0.51		2400	28
HartCrowser 1986	Feb-86	Area 6	0 - 2	Pyrene	0.5		2400	28
HartCrowser 1986	May-86	B-1	3 - 12	Pyrene	0.47		2400	28
HartCrowser 1986	May-86	B-2	3 - 10	Pyrene	0.37		2400	28
HartCrowser 1987	Sep-86	B-2A	5 - 10	Pyrene	0.33	J	2400	28
HartCrowser 1987	Sep-86	B-2A	16 - 20	Pyrene	0.14	J	2400	28
HartCrowser 1987	Sep-86	B-4	7 - 13	Pyrene	0.038	J	2400	28
HartCrowser 1987	Sep-86	B-1A	10 - 15	Selenium	0.5		400	NA
HartCrowser 1987	Sep-86	B-5	7 - 13	Selenium	0.4		400	NA
HartCrowser 1987	Sep-86	B-5	15 - 18	Selenium	0.4		400	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	Selenium	0.3		400	NA
HartCrowser 1987	Sep-86	B-4	7 - 13	Selenium	0.3		400	NA
HartCrowser 1987	Sep-86	B-5	13	Selenium	0.3		400	NA

Table B-3
Soil Sampling Results[a,b]
Trotsky Property

Source	Sample Date	Sample Location	Sample Depth (ft)	Chemical	Soil Conc'n (mg/kg DW)		MTCA Cleanup Level[e] (mg/kg)	Soil-to-Sediment Screening Level (Based on CSL)[f] (mg/kg)
HartCrowser 1987	Sep-86	B-2A	10 - 15	Selenium	0.2		400	NA
HartCrowser 1987	Sep-86	B-5	15	Selenium	0.2		400	NA
HartCrowser 1987	Sep-86	B-1A	20	Selenium	0.1		400	NA
HartCrowser 1987	Sep-86	B-2A	16 - 20	Selenium	0.1		400	NA
HartCrowser 1987	Sep-86	B-4	2 - 6	Selenium	0.1		400	NA
HartCrowser 1987	Sep-86	B-5	2 - 6	Selenium	0.1		400	NA
HartCrowser 1986	Feb-86	Area 2	0 - 2	Silver	1.2		400	12
HartCrowser 1986	May-86	B-2	3 - 10	Silver	0.9		400	12
HartCrowser 1986	May-86	B-1	3 - 12	Silver	0.5		400	12
HartCrowser 1986	Feb-86	Area 3	0 - 2	Silver	0.2		400	12
HartCrowser 1986	Feb-86	Area 6	0 - 2	Silver	0.2		400	12
HartCrowser 1987	Sep-86	B-2A	10 - 15	Silver	0.17		400	12
HartCrowser 1987	Sep-86	B-1A	10 - 15	Silver	0.14		400	12
HartCrowser 1987	Sep-86	B-1A	17 - 20	Silver	0.13		400	12
HartCrowser 1987	Sep-86	B-1A	20	Silver	0.11		400	12
HartCrowser 1986	Feb-86	Area 4	0 - 2	Silver	0.1		400	12
HartCrowser 1987	Sep-86	B-1A	5 - 10	Silver	0.1		400	12
HartCrowser 1987	Sep-86	B-2A	5 - 10	Silver	0.03		400	12
HartCrowser 1987	Sep-86	B-2A	20	Silver	0.02		400	12
HartCrowser 1987	Sep-86	B-4	14 - 18	Silver	0.02		400	12
HartCrowser 1987	Sep-86	B-1A	5 - 10	Styrene	0.085		33	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	Styrene	0.051		33	NA
HartCrowser 1987	Sep-86	B-2A	10 - 15	Styrene	0.0048	J	33	NA
HartCrowser 1987	Sep-86	B-1A	17 - 20	Styrene	0.0023	J	33	NA
HartCrowser 1987	Sep-86	B-1A	20	Styrene	0.0021	J	33	NA
HartCrowser 1987	Sep-86	B-2A	5 - 10	Styrene	0.001	J	33	NA
HartCrowser 1987	Sep-86	B-4	2 - 6	Styrene	0.001	J	33	NA
HartCrowser 1986	Feb-86	Area 6	0 - 2	Tetrachloroethylene	0.87		0.05	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	Tetrachloroethylene	0.42		0.05	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	Tetrachloroethylene	0.35		0.05	NA
HartCrowser 1986	May-86	B-2	3 - 10	Tetrachloroethylene	0.13		0.05	NA
HartCrowser 1987	Sep-86	B-2A	10 - 15	Tetrachloroethylene	0.072		0.05	NA
HartCrowser 1987	Sep-86	B-2A	5 - 10	Tetrachloroethylene	0.023		0.05	NA
HartCrowser 1987	Sep-86	B-1A	17 - 20	Tetrachloroethylene	0.0071	J	0.05	NA
HartCrowser 1987	Sep-86	B-2A	16 - 20	Tetrachloroethylene	0.0057	J	0.05	NA
HartCrowser 1987	Sep-86	B-4	2 - 6	Tetrachloroethylene	0.0035	J	0.05	NA
HartCrowser 1987	Sep-86	B-1A	20	Tetrachloroethylene	0.0032	J	0.05	NA
HartCrowser 1987	Sep-86	B-5	2 - 6	Tetrachloroethylene	0.0014	J	0.05	NA
HartCrowser 1987	Sep-86	B-1A	20	Thallium	0.1		6.4	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	Thallium	0.1		6.4	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	Thallium	0.1		6.4	NA
HartCrowser 1987	Sep-86	B-2A	10 - 15	Toluene	0.28	B	7	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	Toluene	0.11	B	7	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	Toluene	0.091	B	7	NA
HartCrowser 1986	May-86	B-2	3 - 10	Toluene	0.035		7	NA
HartCrowser 1987	Sep-86	B-2A	5 - 10	Toluene	0.021	B	7	NA
HartCrowser 1987	Sep-86	B-1A	17 - 20	Toluene	0.0062	J	7	NA
HartCrowser 1987	Sep-86	B-1A	20	Toluene	0.0039	J	7	NA
HartCrowser 1987	Sep-86	B-2A	16 - 20	Toluene	0.0016	BJ	7	NA
HartCrowser 1987	Sep-86	B-2A	10 - 15	trans-1,2-Dichloroethane	0.0027	J	1600	NA
HartCrowser 1987	Sep-86	B-2A	16 - 20	trans-1,2-Dichloroethane	0.0016	J	1600	NA
HartCrowser 1987	Sep-86	B-2A	5 - 10	trans-1,2-Dichloroethane	0.0015	J	1600	NA

Table B-3
Soil Sampling Results[a,b]
Trotsky Property

Source	Sample Date	Sample Location	Sample Depth (ft)	Chemical	Soil Conc'n (mg/kg DW)		MTCA Cleanup Level[e] (mg/kg)	Soil-to-Sediment Screening Level (Based on CSL)[f] (mg/kg)
HartCrowser 1987	Sep-86	B-2A	20	trans-1,2-Dichloroethane	0.00048	J	1600	NA
HartCrowser 1987	Sep-86	B-2A	5 - 10	Trichloroethylene	0.09	B	0.03	NA
HartCrowser 1987	Sep-86	B-2A	10 - 15	Trichloroethylene	0.042	B	0.03	NA
HartCrowser 1986	Feb-86	Area 6	0 - 2	Trichloroethylene	0.039		0.03	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	Trichloroethylene	0.026	B	0.03	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	Trichloroethylene	0.017	B	0.03	NA
HartCrowser 1987	Sep-86	B-2A	16 - 20	Trichloroethylene	0.017	B	0.03	NA
HartCrowser 1987	Sep-86	B-1A	17 - 20	Trichloroethylene	0.0037	J	0.03	NA
HartCrowser 1987	Sep-86	B-2A	10 - 15	Vinyl chloride	0.015		0.67	NA
HartCrowser 1987	Sep-86	B-2A	5 - 10	Vinyl chloride	0.0038	J	0.67	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	Vinyl chloride	0.002	J	0.67	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	Vinyl chloride	0.0008	J	0.67	NA
HartCrowser 1987	Sep-86	B-1A	17 - 20	Vinyl chloride	0.00045	J	0.67	NA
HartCrowser 1987	Sep-86	B-1A	5 - 10	Xylenes	1.3		9	NA
HartCrowser 1987	Sep-86	B-1A	10 - 15	Xylenes	1.1	B	9	NA
HartCrowser 1987	Sep-86	B-2A	10 - 15	Xylenes	0.78	B	9	NA
HartCrowser 1986	May-86	B-2	3 - 10	Xylenes	0.36		9	NA
HartCrowser 1986	Feb-86	Area 6	0 - 2	Xylenes	0.32		9	NA
HartCrowser 1987	Sep-86	B-2A	5 - 10	Xylenes	0.144	B	9	NA
HartCrowser 1987	Sep-86	B-1A	17 - 20	Xylenes	0.036	B	9	NA
HartCrowser 1986	May-86	B-1	3 - 12	Xylenes	0.028		9	NA
HartCrowser 1987	Sep-86	B-1A	20	Xylenes	0.014	J	9	NA
HartCrowser 1987	Sep-86	B-5	7 - 13	Xylenes	0.002	J	9	NA
HartCrowser 1987	Sep-86	B-5	15	Xylenes	0.0011	J	9	NA
HartCrowser 1987	Sep-86	B-4	2 - 6	Xylenes	0.001	J	9	NA
HartCrowser 1987	Sep-86	B-5	13	Xylenes	0.001	J	9	NA
HartCrowser 1987	Sep-86	B-5	2 - 6	Xylenes	0.001	J	9	NA
HartCrowser 1987	Sep-86	B-5	15 - 18	Xylenes	0.001	J	9	NA
HartCrowser 1986	Feb-86	Area 6	0 - 2	Zinc	640		24000	770
HartCrowser 1986	Feb-86	Area 2	0 - 2	Zinc	440		24000	770
HartCrowser 1986	May-86	B-2	3 - 10	Zinc	290		24000	770
HartCrowser 1987	Sep-86	B-2A	10 - 15	Zinc	217		24000	770
HartCrowser 1987	Sep-86	B-2A	5 - 10	Zinc	149		24000	770
HartCrowser 1987	Sep-86	B-1A	10 - 15	Zinc	141		24000	770
HartCrowser 1987	Sep-86	B-1A	5 - 10	Zinc	140		24000	770
HartCrowser 1986	Feb-86	Area 1	0 - 2	Zinc	130		24000	770
HartCrowser 1986	Feb-86	Area 4	0 - 2	Zinc	120		24000	770
HartCrowser 1986	Feb-86	Area 3	0 - 2	Zinc	91		24000	770
HartCrowser 1987	Sep-86	B-1A	20	Zinc	91		24000	770
Parametrix & SAIC	May-91	MH	<1	Zinc	90.6		24000	770
HartCrowser 1987	Sep-86	B-1A	17 - 20	Zinc	87		24000	770
HartCrowser 1986	May-86	B-1	3 - 12	Zinc	81		24000	770
HartCrowser 1986	Feb-86	Area 5	0 - 2	Zinc	70		24000	770
Parametrix & SAIC	May-91	SC-1[d]	<1	Zinc	58.1		24000	770
HartCrowser 1987	Sep-86	B-4	2 - 6	Zinc	37		24000	770
HartCrowser 1987	Sep-86	B-2A	16 - 20	Zinc	35		24000	770
HartCrowser 1987	Sep-86	B-5	13	Zinc	35		24000	770
HartCrowser 1987	Sep-86	B-5	7 - 13	Zinc	35		24000	770
HartCrowser 1987	Sep-86	B-4	7 - 13	Zinc	34		24000	770
HartCrowser 1987	Sep-86	B-5	15	Zinc	32		24000	770
HartCrowser 1987	Sep-86	B-5	15 - 18	Zinc	28		24000	770
HartCrowser 1987	Sep-86	B-5	2 - 6	Zinc	23		24000	770

Table B-3
Soil Sampling Results[a,b]
Trotsky Property

Source	Sample Date	Sample Location	Sample Depth (ft)	Chemical	Soil Conc'n (mg/kg DW)		MTCA Cleanup Level[e] (mg/kg)	Soil-to-Sediment Screening Level (Based on CSL)[f] (mg/kg)
HartCrowser 1987	Sep-86	B-4	14 - 18	Zinc	22		24000	770
HartCrowser 1987	Sep-86	B-2A	20	Zinc	19		24000	770

a - Includes manhole sediment sample from Parametrix & SAIC 1991
b - Table presents detected chemicals only
c - Value for Chromium VI
d - composite of Samples 1, 2, 3 and 4 as shown in Figure 5
e - The lower of MTCA Method A or B cleanup levels was selected, from CLARC database
f - From: SAIC 2006

MH - Manhole
DW - dry weight
CSL - Contaminant Screening Level from Washington Sediment Management Standards
NA - Not available

NOTE: HartCrowser 1987 data sheets were poor quality and numbers were very difficult to read; the accuracy of some of the data in this table is therefore questionable.

Table B-4
Groundwater Sampling Results
Trotsky Property

Source	Sample Date	Sample Location	Chemical	Groundwater Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	GW-to-Sediment Screening Level[b] (Based on CSL) (ug/L)
Cabuco 1991	Jun-91	B-2	1,1-Dichloroethane	9.2	800	NA
HartCrowser1987	Mar-87	B-2	1,2-Dichlorobenzene	190	720	5.2
HartCrowser1986	May-86	B-2	2,4-Dimethylphenol	320	160	2
Cabuco 1991	Jun-91	B-2	2,4-Dimethylphenol	100	160	2
HartCrowser1986	May-86	B-3	2,4-Dimethylphenol	28	160	2
HartCrowser1986	May-86	B-3	2-Methylnaphthalene	10	32	31
Cabuco 1991	Jun-91	B-2	2-Methylnaphthalene	7.4	32	31
HartCrowser1986	May-86	B-2	2-Methylphenol	26	NA	7.1
HartCrowser1987	Mar-87	B-2	2-Methylphenol	11	NA	7.1
HartCrowser1987	Mar-87	B-2	4,4'-DDD	37	0.36	NA
HartCrowser1987	Mar-87	B-2	4,4'-DDE	54	0.26	NA
HartCrowser1987	Mar-87	B-2	4,4'-DDT	32	0.26	NA
HartCrowser1986	May-86	B-2	4-Chloro-m-cresol	130	NA	NA
HartCrowser1987	Mar-87	B-2	4-Chloro-m-cresol	49	NA	NA
HartCrowser1986	May-86	B-2	4-Methylphenol	70	NA	77
HartCrowser1987	Mar-87	B-2	4-Methylphenol	50	NA	77
HartCrowser1986	May-86	B-3	Acenaphthene	10	960	9.3
HartCrowser1986	May-86	B-2	Acetone	56	800	NA
HartCrowser1986	May-86	B-3	Acetone	21	800	NA
HartCrowser1986	May-86	B-1	Acetone	16	800	NA
HartCrowser1987	Mar-87	B-2	Acetone	12	800	NA
HartCrowser1986	May-86	B-2	Antimony (dissolved)	15	6.4	NA
HartCrowser1986	May-86	B-2	Arsenic (dissolved)	17	0.058	370
HartCrowser1987	Mar-87	B-2	Arsenic (dissolved)	10	0.058	370
Cabuco 1991	Jun-91	B-2	Arsenic (dissolved)	1.4	0.058	370
HartCrowser1986	May-86	B-2	Benzene	17	0.8	NA
HartCrowser1987	Mar-87	B-2	Benzene	16	0.8	NA
Cabuco 1991	Jun-91	B-2	Benzene	13	0.8	NA
HartCrowser1986	May-86	B-1	Cadmium (dissolved)	6	5	3.4
HartCrowser1986	May-86	B-2	Cadmium (dissolved)	2	5	3.4
HartCrowser1986	May-86	B-3	Cadmium (dissolved)	2	5	3.4
HartCrowser1986	May-86	B-3	Chromium (dissolved)	14	48	320
HartCrowser1986	May-86	B-2	Chromium (dissolved)	7	48	320
HartCrowser1987	Mar-87	B-2	Chromium (dissolved)	5	48	320
HartCrowser1986	May-86	B-1	Chromium (dissolved)	3	48	320
Cabuco 1991	Jun-91	B-2	Chromium (dissolved)	1.1	48	320
HartCrowser1986	May-86	B-1	Copper (dissolved)	6	590	120
HartCrowser1986	May-86	B-2	Copper (dissolved)	6	590	120
HartCrowser1986	May-86	B-3	Copper (dissolved)	4	590	120
HartCrowser1987	Mar-87	B-2	Cyanide	300	200	NA
HartCrowser1986	May-86	B-2	Cyanide	70	200	NA
Cabuco 1991	Jun-91	B-2	Cyanide	41	200	NA
HartCrowser1986	May-86	B-1	Cyanide	18	200	NA
Cabuco 1991	Jun-91	B-2	Ethylbenzene	510	700	NA

Table B-4
Groundwater Sampling Results
Trotsky Property

Source	Sample Date	Sample Location	Chemical	Groundwater Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	GW-to-Sediment Screening Level[b] (Based on CSL) (ug/L)
HartCrowser1986	May-86	B-2	Ethylbenzene	460	700	NA
HartCrowser1987	Mar-87	B-2	Ethylbenzene	430	700	NA
HartCrowser1986	May-86	B-2	Lead (dissolved)	27	15	13
HartCrowser1986	May-86	B-2	Methyl isobutyl ketone (4-methyl-2-pentanone)	11	640	NA
HartCrowser1986	May-86	B-2	Methylene chloride	11	5	NA
HartCrowser1986	May-86	B-3	Methylene chloride	8	5	NA
HartCrowser1986	May-86	B-3	Naphthalene	120	160	92
Cabuco 1991	Jun-91	B-2	Naphthalene	37	160	92
HartCrowser1987	Mar-87	B-2	Naphthalene	28	160	92
HartCrowser1986	May-86	B-2	Naphthalene	18	160	92
HartCrowser1986	May-86	B-1	Nickel (dissolved)	26	320	NA
HartCrowser1986	May-86	B-2	Nickel (dissolved)	22	320	NA
HartCrowser1987	Mar-87	B-2	Nickel (dissolved)	15	320	NA
HartCrowser1986	May-86	B-3	Nickel (dissolved)	9	320	NA
Cabuco 1991	Jun-91	B-2	Nickel (dissolved)	5.4	320	NA
HartCrowser1986	May-86	B-2	Phenols, total	180	4800	220
HartCrowser1987	Mar-87	B-2	Phenols, total	120	4800	220
HartCrowser1986	May-86	B-2	Phenols, total	18	4800	220
HartCrowser1986	May-86	B-3	Phenols, total	9	4800	220
HartCrowser1986	May-86	B-3	Silver (dissolved)	10	80	1.5
HartCrowser1986	May-86	B-1	Silver (dissolved)	4	80	1.5
HartCrowser1986	May-86	B-2	Silver (dissolved)	3	80	1.5
HartCrowser1987	Mar-87	B-2	Toluene	290	640	NA
HartCrowser1986	May-86	B-2	Toluene	270	640	NA
Cabuco 1991	Jun-91	B-2	Toluene	140	640	NA
HartCrowser1986	May-86	B-2	trans-1,2-Dichloroethylene	190	160	NA
HartCrowser1987	Mar-87	B-2	trans-1,2-Dichloroethylene	33	160	NA
Cabuco 1991	Jun-91	B-2	trans-1,2-Dichloroethylene	20	160	NA
HartCrowser1986	May-86	B-2	Vinyl chloride	310	0.029	NA
HartCrowser1987	Mar-87	B-2	Vinyl chloride	250	0.029	NA
Cabuco 1991	Jun-91	B-2	Vinyl chloride	25	0.029	NA
HartCrowser1987	Mar-87	B-2	Xylenes	650	1600	NA
Cabuco 1991	Jun-91	B-2	Xylenes	300	1600	NA
HartCrowser1986	May-86	B-2	Xylenes	150	1600	NA
HartCrowser1986	May-86	B-1	Zinc (dissolved)	110	4800	76
HartCrowser1987	Mar-87	B-2	Zinc (dissolved)	38	4800	76
Cabuco 1991	Jun-91	B-2	Zinc (dissolved)	29	4800	76
HartCrowser1986	May-86	B-2	Zinc (dissolved)	19	4800	76
HartCrowser1986	May-86	B-3	Zinc (dissolved)	10	4800	76

a - MTCA cleanup level is the lower of the MTCA Method A and B cleanup levels. Cyanide does not have a MTCA cleanup level, therfore the MCL was used.
b - From SAIC 2006

Table B-4
Groundwater Sampling Results
Trotsky Property

Source	Sample Date	Sample Location	Chemical	Groundwater Conc'n (ug/L)	MTCA Cleanup Level[a] (ug/L)	GW-to-Sediment Screening Level[b] (Based on CSL) (ug/L)

Note: Samples were analyzed for dissolved metals; MTCA cleanup levels are based on total metal concentrations.
Table shows detections only.

Table B-5
Sediment Sampling Results -- Boyer Towing (Parcels 14 and 15)
Early Action Area 2

Source	Date Sampled	Sample Location	Chemical	Conc'n (mg/kg DW)		SQS	CSL	Units	SQS Exceedance Factor[a]	CSL Exceedance Factor[a]	MTCA Cleanup Level[e] (mg/kg)	MTCA Exceedance Factor
SPU 2003d	2/11/2003	Wells1	Aroclor 1254	0.13	Y	NA	NA				NA	
SPU 2003d	2/11/2003	Wells2	Aroclor 1254	0.1	Y	NA	NA				NA	
SPU 2003d	2/11/2003	Wells2	Aroclor 1260	0.12		NA	NA				NA	
SPU 2003d	2/11/2003	Wells1	Aroclor 1260	0.069	Y	NA	NA				NA	
SPU 2003d	2/11/2003	Boyer 1	Aroclor 1260	0.066		NA	NA				NA	
SPU 2003d	2/11/2003	Wells1	Arsenic	30		57	93	mg/kg DW			0.67	44.8
SPU 2003d	2/11/2003	Wells2	Arsenic	20	U	57	93	mg/kg DW			0.67	29.9
SPU 2003d	2/11/2003	Boyer 1	Arsenic	20		57	93	mg/kg DW			0.67	29.9
SPU 2003d	2/11/2003	Wells1	Bis(2-ethylhexyl)phthalate	150		47	78	mg/kg OC	113	68.2	71	2.1
SPU 2003d	2/11/2003	Boyer 1	Bis(2-ethylhexyl)phthalate	53		47	78	mg/kg OC	40.0	24.1	71	
SPU 2003d	2/11/2003	Wells2	Bis(2-ethylhexyl)phthalate	37		47	78	mg/kg OC	27.9	16.8	71	
SPU 2003d	2/11/2003	Boyer 1	Butylbenzylphthalate	10		4.9	64	mg/kg OC	72.4	5.5	16,000	
SPU 2003d	2/11/2003	Wells1	Butylbenzylphthalate	5.3		4.9	64	mg/kg OC	38.4	2.9	16,000	
SPU 2003d	2/11/2003	Wells2	Butylbenzylphthalate	4.1		4.9	64	mg/kg OC	29.7	2.3	16,000	
SPU 2003d	2/11/2003	Wells1	Cadmium	9		5.1	6.7	mg/kg DW	1.8	1.3	2	4.5
SPU 2003d	2/11/2003	Boyer 1	Cadmium	6.3		5.1	6.7	mg/kg DW	1.2		2	3.2
SPU 2003d	2/11/2003	Wells2	Cadmium	5.2		5.1	6.7	mg/kg DW	1.0		2	2.6
SPU 2003d	2/11/2003	Wells1	Copper	527		390	390	mg/kg DW	1.4	1.4	3,000	
SPU 2003d	2/11/2003	Boyer 1	Copper	368		390	390	mg/kg DW			3,000	
SPU 2003d	2/11/2003	Wells2	Copper	312		390	390	mg/kg DW			3,000	
SPU 2003d	2/11/2003	Boyer 1	Diethylphthalate	4.6		61	110	mg/kg OC	2.7	1.5		
SPU 2003d	2/11/2003	Boyer 1	Dimethylphthalate	2.8		53	53	mg/kg OC	1.9	1.9		
SPU 2003d	2/11/2003	Boyer 1	Di-n-butylphthalate	6.3		220	1,700	mg/kg OC			8,000	
SPU 2003d	2/11/2003	Wells2	Di-n-butylphthalate	2		220	1,700	mg/kg OC			8,000	
SPU 2003d	2/11/2003	Wells1	Di-n-butylphthalate	1.6		220	1,700	mg/kg OC			8,000	
SPU 2003d	2/11/2003	Boyer 1	Di-n-octylphthalate	6.1	M	58	4,500	mg/kg OC	3.7		1600	
SPU 2003d	2/11/2003	Wells1	Di-n-octylphthalate	4.2	M	58	4,500	mg/kg OC	2.6		1600	
SPU 2003d	2/11/2003	Wells1	Di-n-octylphthalate	4.1	M	58	4,500	mg/kg OC	2.5		1600	
SPU 2003d	2/11/2003	Wells2	Lead	421		450	530	mg/kg DW			250	1.7
SPU 2003d	2/11/2003	Boyer 1	Lead	308		450	530	mg/kg DW			250	1.2
SPU 2003d	2/11/2003	Wells1	Lead	157		450	530	mg/kg DW			250	
SPU 2003d	2/11/2003	Boyer 1	Mercury	0.13		0.41	0.59	mg/kg DW			24	

Table B-5
Sediment Sampling Results -- Boyer Towing (Parcels 14 and 15)
Early Action Area 2

Source	Date Sampled	Sample Location	Chemical	Conc'n (mg/kg DW)		SQS	CSL	Units	SQS Exceedance Factor[a]	CSL Exceedance Factor[a]	MTCA Cleanup Level[e] (mg/kg)	MTCA Exceedance Factor
SPU 2003d	2/11/2003	Wells1	Mercury	0.12		0.41	0.59	mg/kg DW			24	
SPU 2003d	2/11/2003	Wells2	Mercury	0.1		0.41	0.59	mg/kg DW			24	
SPU 2003d	2/11/2003	Wells2	PCBs (total - calc'd)	0.22		12	65	mg/kg OC			1	
SPU 2003d	2/11/2003	Wells1	PCBs (total - calc'd)	0.2		12	65	mg/kg OC			1	
SPU 2003d	2/11/2003	Boyer 1	PCBs (total - calc'd)	0.066		12	65	mg/kg OC			1	
SPU 2003d	2/11/2003	Wells1	Zinc	2570		410	960	mg/kg DW	6.3	2.7	24,000	
SPU 2003d	2/11/2003	Boyer 1	Zinc	1120		410	960	mg/kg DW	2.7	1.2	24,000	
SPU 2003d	2/11/2003	Wells2	Zinc	729		410	960	mg/kg DW	1.8		24,000	

Samples Wells1 and Wells2 were collected from two 55-gallon drums of sediment removed from three catch basins at Parcel 14 (Wells Truck/Trailer Repair)
Sample Boyer1 was collected from the foreboy of the southern-most oil/water separator at Parcel 15 (Boyer Alaska Barge Lines)

Note: No TOC data were available for these samples; to estimate whether concentrations of organics exceed CSL or SQS values, an average TOC for the EAA-2 slip of 2.82% was calculated based on available data from other studies.

Exceedance factors are the ratio of the detected concentration to the CSL or SQS; exceedance factors are shown only if they are greater than or equal to 1.

Table B-6
Seep Sampling Results
Early Action Area 2 - Douglas Management Company

Source	Date Sampled	Sample Location	Chemical	Conc'n (ug/L)		Marine Chronic WQS	Marine Acute WQS	Chronic WQS Exceedance Factor	GW-to-Sediment Screening Level (Based on CSL)[a]	Exceedance Factor
Filtered Samples										
LDWG 2004	6/30/2004	Seep 54	Arsenic	0.404		36	69		370	
LDWG 2004	6/30/2004	Seep 54	Cadmium	0.012		9.3	42		3.4	
LDWG 2004	6/30/2004	Seep 54	Chromium	4.02	U	50	1,100		320	
LDWG 2004	6/30/2004	Seep 54	Copper	4.53	U	3.1	4.8	1.5	120	
LDWG 2004	6/30/2004	Seep 54	Lead	0.703		8.1	210		13	
LDWG 2004	6/30/2004	Seep 54	Mercury	0.0132		NA	NA		0.0074	1.8
LDWG 2004	6/30/2004	Seep 54	Nickel	0.84		8.2	74		NA	
LDWG 2004	6/30/2004	Seep 54	Zinc	5.45		81	90		76	
LDWG 2004	6/30/2004	Seep 54	1,3-Dichlorobenzene	3.6		NA	NA		NA	
LDWG 2004	6/30/2004	Seep 54	1,4-Dichlorobenzene	3.9		NA	NA		21	
LDWG 2004	6/30/2004	Seep 54	Aroclor-1248	0.21		NA	NA		1.5	
LDWG 2004	6/30/2004	Seep 54	Aroclor-1260	0.047		NA	NA		0.31	
LDWG 2004	6/30/2004	Seep 54	PCBs (total-calc'd)	0.26		0.03	10	8.7	1.5	
LDWG 2004	6/30/2004	Seep 54	Dieldrin	0.0095	U	0.0019	NA	5.0	NA	
LDWG 2004	6/30/2004	Seep 54	TPH-D	590		NA	NA		NA	
Unfiltered Samples										
LDWG 2004	6/30/2004	Seep 54	Arsenic	1.3		NA	NA		370	
LDWG 2004	6/30/2004	Seep 54	Cadmium	0.71		NA	NA		3.4	
LDWG 2004	6/30/2004	Seep 54	Chromium	74.9		NA	NA		320	
LDWG 2004	6/30/2004	Seep 54	Copper	6.47	U	NA	NA		120	
LDWG 2004	6/30/2004	Seep 54	Lead	296		NA	NA		13	**22.8**
LDWG 2004	6/30/2004	Seep 54	Mercury	0.582		0.25	1.8	2.3	0.0074	**78.6**
LDWG 2004	6/30/2004	Seep 54	Nickel	3.92		NA	NA		NA	
LDWG 2004	6/30/2004	Seep 54	Zinc	322		NA	NA		76	4.2
LDWG 2004	6/30/2004	Seep 54	Carbon disulfide	2.4		NA	NA		NA	
LDWG 2004	6/30/2004	Seep 54	Chlorobenzene	6.5		NA	NA		NA	
LDWG 2004	6/30/2004	Seep 54	1,2-Dichlorobenzene	2.9		NA	NA		5.2	

Table B-6
Seep Sampling Results
Early Action Area 2 - Douglas Management Company

Source	Date Sampled	Sample Location	Chemical	Conc'n (ug/L)		Marine Chronic WQS	Marine Acute WQS	Chronic WQS Exceedance Factor	GW-to-Sediment Screening Level (Based on CSL)[a]	Exceedance Factor
LDWG 2004	6/30/2004	Seep 54	1,3-Dichlorobenzene	58.3		NA	NA		NA	
LDWG 2004	6/30/2004	Seep 54	1,4-Dichlorobenzene	3.9		NA	NA		21	
LDWG 2004	6/30/2004	Seep 54	Aroclor-1248	4.7		NA	NA		1.5	3.1
LDWG 2004	6/30/2004	Seep 54	Aroclor-1254	2.3	J	NA	NA		0.86	2.7
LDWG 2004	6/30/2004	Seep 54	Aroclor-1260	1.9		NA	NA		0.31	6.1
LDWG 2004	6/30/2004	Seep 54	PCBs (total-calc'd)	8.9	J	0.03	10	297	1.5	5.9
LDWG 2004	6/30/2004	Seep 54	4,4'-DDT	0.017	U	0.001	NA	17.0	NA	
LDWG 2004	6/30/2004	Seep 54	Aldrin	0.0083	U	0.0019	NA	4.4	NA	
LDWG 2004	6/30/2004	Seep 54	Dieldrin	0.11	U	0.0019	NA	57.9	NA	
LDWG 2004	6/30/2004	Seep 54	Endrin	0.057	U	0.0023	NA	24.8	NA	
LDWG 2004	6/30/2004	Seep 54	Heptachlor	0.0083	U	0.0036	NA	2.3	NA	
LDWG 2004	6/30/2004	Seep 54	Toxaphene	0.1	U	0.0002	NA	500	NA	
LDWG 2004	6/30/2004	Seep 54	TPH-D	610		NA	NA		NA	

NA - Value not available

Exceedance factors are the ratio of the detected concentration to the screening level; exceedance factors are shown only if they are greater than or equal to 1.

a - From SAIC 2006

Appendix C

Site Visit Report

MEMORANDUM

Date: November 17, 2006
To: Iris Winstanley
From: Mark Dagel
Cc: Tina King
Subject: Trotsky site monitoring well inventory

Introduction

Tina King and Mark Dagel performed an inventory of known monitoring wells at the subject site on November 15, 2006. We briefly met with Rick Cabuco of Industrial Container Services (ICS) at his office on the site and were accompanied during portions of our inventory by an ICS employee (Jim).

During our visit, we located four monitoring wells. These wells appear to correspond with monitoring well locations shown on a figure prepared by Hart-Crowser labeled "J-1659, Figure 1" and dated November 1987. An offsite, upgradient well, B-3, is reported to have been installed and since destroyed by the construction of the current 1st Avenue South bridge; the site of this well was not visited.

In all cases, the wells consisted of white, 2-inch diameter PVC well casing that was originally installed in above-ground or flush mount protective casing. With the exception of well B-1, none of the wells was labeled or otherwise identified (Well B-1 was equipped with a PVC slip cap which was labeled "B-1"); other wells were identified based on their locations shown on the above-referenced figure. With the exception of B-1, all wells were installed on the concrete paved portion of the property. Well B-1 was installed just off the pavement (toward the adjacent slip) just beyond a low (~4-ft) fence.

All wells were sounded for total depth (TD) and depth-to-water (DTW) between 10:50 AM and 11:30 AM. During this time, the tidal level in the slip and Duwamish River adjacent to the site was relatively high. All well depth measurements are presented in feet relative to the highest point of the PVC casing (ft BTOC). Conditions during the visit were cool, rainy, and breezy.

Details of each of the four on-site wells are presented below:

Well B-1

TD: 22.82 ft BTOC
DTW: 7.35 ft BTOC (response of water level indicator suggested possible high salinity)

Notes: Stick-up completion consisting of locked 4-inch steel protective casing (approximately 1-ft stickup). PVC casing capped with slip cap. Well key provided did not fit padlock, so had to use bolt cutters to remove padlock; replaced with steel tamper-proof seal provided by ICS (no. 881457). Well installed just outside of low fence on unpaved area in blackberries.

Well B-2

TD: 23.97 ft BTOC
DTW: 7.13 ft BTOC

Notes: Stick-up completion consisting of 4-inch steel protective casing (approximately 8-in stickup). Cover consisted of approximately 6-inch diameter by 5-ft long steel bollard placed over protective casing. The top of the bollard was closed with a welded steel plate. The PVC well itself was sealed with a compression cap (not locked). This well is located near back gate to facility and is installed in concrete paved area.

Well B-4

TD: 21.40 ft BTOC
DTW: 11.12 ft BTOC

Notes: Subgrade completion in cast iron vault. Vault is broken (much of rim missing) and has no cover. PVC well was uncapped and cut flush with base of vault. Entire installation is in a concrete paved area.

Well B-5

TD: 21.90 ft BTOC
DTW: 7.69 ft BTOC (response of water level indicator suggested possible high salinity)

Notes: Subgrade completion in cast iron vault. Vault is broken (much of it is missing) and has no cover. PVC well was uncapped and broken flush with base of vault. Entire installation is in a concrete paved area.

Conclusions/Recommendations

Wells B-4 and B-5 are judged to be unsuitable for water quality monitoring. They appear to have been damaged and left open for an extended period of time. Staining in the PVC casing suggests that water and contaminants have likely run down into the wells over the years. These wells may be useable for water level elevation measurements only. In this case, the well completions should be replaced by a driller (licensed per WAC 173-162) so that they can be properly sealed and then properly maintained. Otherwise, these wells should be abandoned per WAC 173-160.

Wells B-1 and B-2 appear to be in relatively good condition and suitable for groundwater quality monitoring. Well B-1 should be locked. The steel protective casing on Well B-2 should be retrofitted with a locking steel cap and the well should be properly labeled.

Other notes

According to discussions with Rick Cabuco and ICS employee Jim, the entire site is paved and is designed to drain to a sump or sumps where it is pumped to an on-site treatment system and then to the sanitary sewer system. Treatment includes pH adjustment, oil removal, and flocculation. They indicated that this "closed" drainage system allows residual drum contents to be discharged anywhere without risk of it draining off site. In many areas, oil and sheens were evident on the runoff and in puddles on the site. In many areas, the concrete surface appears old and eroded and the concrete appears to have been installed during a number of different periods.

The slip is not readily visible from the ICS property as it is well screened by blackberries. It is somewhat visible from the adjacent property to the east and is reported to be more visible from the property on the north shore of the slip. At the time of the site visit, the water level in the slip was high and no outfalls were visible. According to Jim, there are two outfalls that discharge periodically into the slip. One outfall is at the head of the slip and discharges stormwater from West Seattle as well as overflow from the West Seattle water tower. The other outfall is on the south side of the slip approximately 25 feet west of well B-1; this outfall discharges surface water from Skyway, Washington.

Site Visit: Industrial Container Services
November 15, 2006

Photo 1: Well B-4

Photo 2: Well B-4

Photo 3: Well B-4

Photo 4: Well B-5

Photo 5: Well B-5

Photo 6: Well B-5

Photo 7: Well B-2 or B-2A

Photo 8: Well B-2 or B-2A

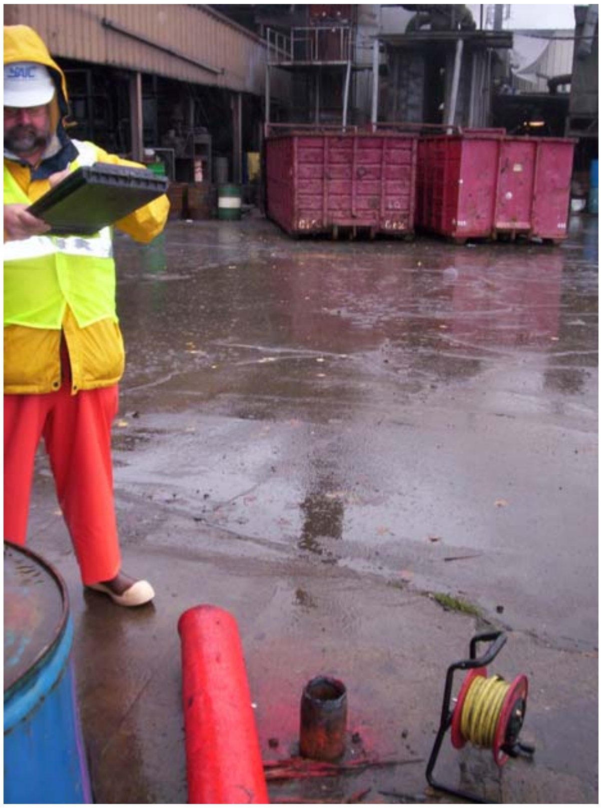


Photo 9: Well B-2 or B-2A

Photo 10: Industrial Container Services – smoke emissions from furnace

Photo 11: Well B-1 or B-1A

Photo 12: Well B-1 or B-1A

Photo 13: Well B-1 or B-1A

Photo 14: Looking east from Well B-1 along slip

Photo 15: Area approximately 30 feet west of Well B-1

Photo 16: Area approximately 30 feet west of Well B-1

Appendix D

Parcel Information

Parcel Location (see Figure 5)	Parcel No.	Facility Name	Property Owner	Facility Physical Address	Present Use	Parcel Size	RCRA ID#	USTs	Stormwater Permit	Waste Discharge Permit
1	2924049090	Alaska Marine Lines	Douglas Management Company	7100 Second Ave. S.	Container Storage	3.09 acres	None	None	None	DA 459 (Minor)
2	2924049108	Industrial Container Services	Herman & Jacqualine Trotsky	7152 First Ave. S.	Drum Reconditioning	1.00 acres	WAD000066084	None	None	7130
3	2924049030	Industrial Container Services	Herman & Jacqualine Trotsky	7152 First Ave. S.	Drum Reconditioning	5.09 acres	WAD000066084	None	None	7130
4	2924049004	Industrial Container Services	Herman & Jacqualine Trotsky	7152 First Ave. S.	Drum Reconditioning	1.04 acres	WAD000066084	None	None	7130
5	2924049064	DaVinci Gourmet	Lyle & Stephanie Waterman	7224 West Marginal Way S.	Warehouse	1.28 acres	None	None	None	7759
6	2924049107	DaVinci Gourmet	Lyle & Stephanie Waterman	7224 West Marginal Way S.	Warehouse	1.64 acres	None	None	None	7759
7	6871200045	Vacant	Boyer Towing Inc.	None Listed	Vacant (Commercial)	0.13 acres	None	None	None	None
8	6871200811	Storage Yard	Boyer Towing Inc.	None Listed	Storage Yard	0.27 acres	None	None	None	None
9	6871200620	Boyer Towing	Boyer Towing Inc.	7201 Second Ave. S.	Terminal (Marine/Commercial Fishing)	0.79 acres	None	None	None	None
10	6871200651	B&J Auto Wrecking	Boyer Towing Inc.	7225 Second Ave. S.	Automotive Repair	0.09 acres	WA0000230342	None	None	None
11	6871200660	B&J Auto Wrecking	Boyer Towing Inc.	7225 Second Ave. S.	Automotive Repair	0.17 acres	WA0000230342	None	None	None
12	6871200675	Storage Yard	Boyer Towing Inc.	7235 Second Ave. S.	Storage Yard	0.3 acres	None	None	None	None
12	6871200670	Vacant Storage Yard	Boyer Towing Inc.	7235 Second Ave. S.	Storage Yard	0.33 acres	None	None	None	None
13	6871200695	Boyer Towing	Boyer Towing Inc.	7245 Second Ave. S.	Terminal (Marine/Commercial Fishing)	0.35 acres	None	None	None	None
14	6871200750	Wells Trucking & Leasing	Boyer Towing Inc.	7265 Second Ave. S.	Truck Maintenance	0.62 acres	None	None	None	None
15	6871200210	Boyer Alaska Barge Lines/Boyer Logistics	Boyer Towing Inc.	7318 Fourth Ave. S.	Terminal (Marine/Commercial Fishing)	4.45 acres	WAD045684990	None	SO3005598	None
16	6871200100	Boyer Towing	Boyer Halvorsen Jr. & Kirsten Halvorsen	None Listed	Terminal (Marine/Commercial Fishing)	0.59 acres	None	None	None	None
17	2924049069	Vacant Land	Seattle Dept. of Transportation	None Listed	Right of Way/Utility Road	4.25 acres	None	None	None	None
18	2924049109	Northwest Center for the Retarded	Northwest Center for the Retarded	7275 West Marginal Way S.	Industrial (Light)	3.5 acres	None	None	None	DA 738 (Minor)
19	2924049101	Pioneer Human Services	Pioneer Human Services	7440 West Marginal Way S.	Industrial (General Purpose)	2.16 acres	WAD988482352	None	None	7723
20	2924049094	Pacific Plumbing Supply	Elliott Bay Holding Co. LLC	7500 West Marginal Way S.	Warehouse	0.74 acres	None	None	None	None
21	2924049093	Pacific Plumbing Supply	Elliott Bay Holding Co. LLC	7500 West Marginal Way S.	Warehouse	0.26 acres	None	None	None	None
22	7327906260	Pacific American Commercial (PACO)	Pacific American Commercial (PACO)	7400 Second Ave. S.	Equipment Maintenances	1.97 acres	WAD009279050	None	None	None
23	7327906375	PCT Construction	Ritchie Drive LLC	7400 Third Ave. S.	Warehouse	0.31 acres	WAD027463165 (Inactive 12/31/94)	Removed (1 tank)	None	None
24	7327906465	WHECO	Boyer Towing, Inc.	7417 Fourth Ave. S.	Crane Repair	0.57 acres	WAD988503066 (Inactive)	None	None	None
25	7327906426	Cunningham Manufacturing	Webster Street LLC	318 S. Webster St.	Metal Fabrication	0.78 acres	WAD009271578 (Inactive 12/31/03)	None	None	None
26	7327906525	United Iron Works	United Iron Works, Inc.	7421 Fifth Ave. S.	Steel Fabrication	0.11 acres	WAH000008482	Removed (1 tank)	None	None
27	7327906515	United Iron Works	United Iron Works, Inc.	7421 Fifth Ave. S.	Steel Fabrication	1.03 acres	WAH000008482	Removed (1 tank)	SO3002137	None
28	7327906585	Ferguson Construction	Gene J. Colin	7433 Fifth Ave. S.	Warehouse	0.51 acres	None	Removed (1 tank)	None	DA 725 (Minor)
29	7327906685	Alki Construction Co.	Boyer Towing, Inc.	7410 Fifth Ave. S.	Machine Shop/Warehouse	0.41 acres	None	None	None	None
30	7327906645	Hurlen Construction	Cascade Barge & Equipment LLC	523 S. Riverside Dr.	Vacant (Industrial)	0.57 acres	None	None	None	None
31	7327906750	Alaska Washington Co.	Boyer Towing, Inc.	7410 Fifth Ave. S.	Unknown	0.07 acres	None	None	None	None
32	2924049103	Fox Plumbing & Heating	S.P. Steinberg	7501 Second Ave. S.	Warehouse	0.69 acres	None	None	None	None
33	2924049097	Pacific American Commercial (PACO)	John Debruyn	7601 Second Ave. S.	Vacant (Industrial)	1.44 acres	None	None	None	None
34	7327906045	PACO Yard 2	South Park Equipment LLC	7500 Second Ave. S.	Warehouse	0.78 acres	None	None	None	None
35	7327906015	Storage Yard	South Park Equipment LLC	None Listed	Storage Yard	0.29 acres	None	None	None	None
36	7327906110	Pacific NW Fasteners	Benton M. Bangs Jr.	222 S. Austin St.	Industrial	0.17 acres	None	None	None	None
37	7327906011	W.G. Wright & Associates	Expanded Metal International	301 S. Webster St.	Light Manufacturing	0.17 acres	None	None	None	None
38	7327906120	Tucker-Weitzel & Assoc., Inc.	TWA Real Estate	230 S. Austin St.	Warehouse	0.17 acres	None	None	None	None
39	7327905955	Automatic Transmission Parts	DWW/MCW&JAW/BEW Partners	401 S. Webster St.	Warehouse/Vehicle Maintenance	1.26 acres	WAD988466710 (Inactive 12/31/97)	Removed (2 tanks)	None	None
40	7327905940	Ferguson Construction	Gene J. Colin	7501 Fifth Ave. S.	Warehouse	0.11 acres	None	Removed (1 tank)	None	DA 725 (Minor)
41	7327905910	Cascade Mattress Factory	Donn E. Carlson	7509 Fifth Ave. S.	Manufacturing	0.46 acres	None	None	None	None
42	7327904920	J&M/M&M (J&M Stamp & Form; M&M Roofing)	Jon Van Dyke	7620 Second Ave. S.	Industrial/Metal Working	0.63 acres	None	None	None	None
43	7327904895	Industrial Battery Systems	Edmund Stainski	211 S. Austin St.	Warehouse	0.23 acres	None	None	None	None
44	7327904875	Northwest Building Tech	Mary C. Pennacchi	216 S. Austin St.	Light Manufacturing	0.29 acres	None	None	None	None

Facility Name	Facility Physical Address	Facility Mailing Address	Facility Phone Number	Facility Owner	Facility Operator	Property Owner
Alaska Marine Lines	7100 Second Ave. S., Seattle, WA 98108	Same	NA	Alaska Marine Lines	NA	Douglas Management Company
Alaska Washington Co.	7410 Fifth Ave. S., Seattle, WA 98108	7318 Fourth Ave., S, Seattle, WA 98108	NA	NA	NA	Boyer Towing, Inc.
Alki Construction Co.	7410 Fifth Ave. S., Seattle, WA 98108	7318 Fourth Ave., S, Seattle, WA 98108	NA	NA	NA	Boyer Towing, Inc.
Automatic Transmission Parts	401 S. Webster St., Seattle, WA 98108	Same	206-764-4646	NA	Ron Fowler, District Manager	DWW/MCW&JAW/BEW Partners
B&J Auto Wrecking	7225 Second Ave. S., Seattle, WA 98108	Same	360-854-1176	B&J Auto Wrecking	Ray Salter	Boyer Towing Inc.
B&J Auto Wrecking	7225 Second Ave. S., Seattle, WA 98108	Same	NA	NA	NA	Boyer Towing Inc.
Boyer Alaska Barge Lines/Boyer Logistics	7318 Fourth Ave. S., Seattle, WA 98108	Same	206-763-8696	NA	Boyer Halverson, General Manager	Boyer Towing Inc.
Boyer Towing	7201 Second Ave. S., Seattle, WA 98108	7318 Fourth Ave., S, Seattle, WA 98108	NA	NA	NA	Boyer Towing Inc.
Boyer Towing	7245 Second Ave. S., Seattle, WA 98108	7318 Fourth Ave., S, Seattle, WA 98108	NA	NA	NA	Boyer Towing Inc.
Boyer Towing	None Listed	8324 NE Hidden Cove Rd., Bainbridge Island, WA 98110	NA	NA	NA	Boyer Halvorsen Jr. & Kirsten Halvorsen
Cascade Mattress Factory	7509 Fifth Ave. S., Seattle, WA 98108	Same	NA	NA	NA	Donn E. Carlson
Cunningham Manufacturing	318 S. Webster St., Seattle, WA 98108	Same	206-767-3713	Jim Weiss	Ken Stahl	Webster Street LLC
DaVinci Gourmet	7224 West Marginal Way S., Seattle, WA 98108	14014 Riviera Pl. NE, Seattle, WA 98125	NA	DaVinci Gourmet	DaVinci Gourmet	Lyle & Stephanie Waterman
DaVinci Gourmet	7224 West Marginal Way S., Seattle, WA 98108	14014 Riviera Pl. NE, Seattle, WA 98125	NA	DaVinci Gourmet	DaVinci Gourmet	Lyle & Stephanie Waterman
Ferguson Construction	7433 Fifth Ave. S., Seattle, WA 98108	P.O. Box 80867, Seattle, WA 98108	206-767-3810	Gene J. Colin	Kelly Downs	Gene J. Colin
Ferguson Construction	7501 Fifth Ave. S., Seattle, WA 98108	P.O. Box 80867, Seattle, WA 98108	206-767-3810	Gene J. Colin	Kelly Downs	Gene J. Colin
Fox Plumbing & Heating	7501 Second Ave. S., Seattle, WA 98108	5532 South Holly Street, Seattle, WA 98118	206-767-3311	David N. Brown, Inc.	David N. Brown, President	S.P. Steinberg
Hurlen Construction	523 S. Riverside Dr., Seattle, WA 98108	P.O. Box 80945, Seattle, WA 98108	NA	NA	NA	Cascade Barge & Equipment LLC
Industrial Battery Systems	211 S. Austin St., Seattle, WA 98108	Same	NA	NA	NA	Edmund Stainski
Industrial Container Services	7152 First Ave. S., Seattle, WA 98108	Same	206-763-2345	Industrial Container Services	Industrial Container Services/Rick Cabuco	Herman & Jacqualine Trotsky
Industrial Container Services	7152 First Ave. S., Seattle, WA 98108	Same	206-763-2345	Industrial Container Services	Industrial Container Services/Rick Cabuco	Herman & Jacqualine Trotsky
Industrial Container Services	7152 First Ave. S., Seattle, WA 98108	Same	206-763-2345	Industrial Container Services	Industrial Container Services/Rick Cabuco	Herman & Jacqualine Trotsky
J&M/M&M (J&M Stamp & Form; M&M Roofing)	7620 Second Ave. S., Seattle, WA 98108	Same	206-767-9704 206-767-5594	Joe Burk; Jerry Mylan	NA	Jon Van Dyke
Northwest Building Tech	216 S. Austini St., Seattle, WA 98108	Same	206-767-4012	Jeff Hayford	Joseph McLean	Mary C. Pennacchi
Northwest Center for the Retarded	7275 West Marginal Way S, Seattle, WA 98108	1600 W. Armory Way, Seattle, WA 98119	NA	Northwest Center for the Retarded	Northwest Center for the Retarded	Northwest Center for the Retarded
Pacific American Commercial (PACO)	7400 Second Ave. S., Seattle, WA 98108	P.O. Box 3742, Seattle, WA 98124 attn: Debruyn R. Paul	206-762-3550	R. Debruyn	Tom Gibbons	Pacific American Commercial (PACO)
Pacific American Commercial (PACO)	7601 Second Ave. S., Seattle, WA 98108	2100 E 14th Ave., Denver, CO 80206	NA	NA	NA	John Debruyn
Pacific NW Fasteners	222 S. Austin St., Seattle, WA 98108	3215 S. 259th Pl., Kent, WA 98032	206-767-4044	Twilley Industrial Tool Supply	Erika Morin	Benton M. Bangs Jr.
Pacific Plumbing Supply	7500 West Marginal Way S, Seattle, WA 98108	Same	NA	Pacific Plumbing Supply	Pacific Plumbing Supply	Elliott Bay Holding Co. LLC
Pacific Plumbing Supply	7500 West Marginal Way S, Seattle, WA 98108	Same	NA	Pacific Plumbing Supply	Pacific Plumbing Supply	Elliott Bay Holding Co. LLC
PACO Yard 2	7500 Second Ave. S., Seattle, WA 98108	Same	NA	NA	NA	South Park Equipment LLC
PCT Construction	7400 Third Ave. S., Seattle, WA 98108	660 S. Plummer Street, Seattle, WA 98134	206-762-8260	PCT Construction	Jim Nelson, Supply Manager	Ritchie Drive LLC
Pioneer Human Services	7440 West Marginal Way S, Seattle, WA 98108	Attn: VP Finance & Admin, P.O. Box 18377, Seattle, WA 98118	NA	Pioneer Human Services	Robert Gallagher	Pioneer Human Services
Storage Yard	7235 Second Ave. S., Seattle, WA 98108	7318 Fourth Ave., S, Seattle, WA 98108	NA	NA	NA	Boyer Towing Inc.
Storage Yard	None Listed	Same	NA	NA	NA	South Park Equipment LLC
Storage Yard	None Listed	7318 Fourth Ave., S, Seattle, WA 98108	NA	NA	NA	Boyer Towing Inc.
Tucker-Weitzel & Assoc., Inc.	230 S. Austin St., Seattle, WA 98108	P.O. Box 80203, Seattle, WA 98108	NA	NA	NA	TWA Real Estate
United Iron Works	7421 Fifth Ave. S., Seattle, WA 98108	P.O. Box 81023, Seattle, WA 98108	206-767-3630	Joe D'Amico, Asst. CEO	Dwight "Jake" Jacobs, Shop Foreman John Reed, Shop Supervisor	United Iron Works, Inc.
United Iron Works	7421 Fifth Ave. S., Seattle, WA 98108	P.O. Box 81023, Seattle, WA 98108	206-767-3630	Joe D'Amico, Asst. CEO	Dwight "Jake" Jacobs, Shop Foreman John Reed, Shop Supervisor	United Iron Works, Inc.
Vacant	None Listed	7318 Fourth Ave., S, Seattle, WA 98108	NA	NA	NA	Boyer Towing Inc.
Vacant Land	None Listed	Key Tower, 700 5th Ave., #3900, P.O. Box 34996, Seattle, WA 98124	NA	None	None	Seattle Dept. of Transportation
Vacant Storage Yard	7235 Second Ave. S., Seattle, WA 98108	7318 Fourth Ave., S, Seattle, WA 98108	NA	NA	NA	Boyer Towing Inc.
W.G. Wright & Associates	301 S. Webster St., Seattle, WA 98108	P.O. Box 892, Mercer Island, WA 98040	206-763-7077	NA	Todd Kelly	Expanded Metal International
Wells Trucking & Leasing	7265 Second Ave. S., Seattle, WA 98108	8324 NE Hidden Cove Rd., Bainbridge Island, WA 98110	206-762-5330	Don Wells	Joseph McLean	Boyer Towing Inc.
WHECO	7417 Fourth Ave. S., Seattle, WA 98108	7318 Fourth Ave., S, Seattle, WA 98108	206-762-7713	WHECO	Galen Loeffelbein, Division Manager	Boyer Towing, Inc.