FINAL
SOURCE CONTROL EVALUATION REPORT

JORGENSEN FORGE FACILITY
8531 EAST MARGINAL WAY SOUTH
SEATTLE, WASHINGTON

Prepared for Submittal to

Washington State Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, Washington 98008-5452

Prepared by

Anchor Environmental, L.L.C.
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Farallon Consulting, L.L.C.
975 Fifth Avenue Northwest
Issaquah, Washington 98027

On behalf of

Jorgensen Forge Corporation
8531 East Marginal Way South
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Table of Contents

EXECUTIVE SUMMARY 1

1 INTRODUCTION 7
1.1 Purpose 8
1.2 Ecology Source Control Strategy and LDW EPA Superfund Process 8
1.3 Scope of Work 9
1.4 Data Sources and Quality 10
1.5 Report Organization 11

2 SEDIMENT INVESTIGATION AREA INFORMATION 13
2.1 Sediment Investigation Area Description 13
2.2 Physical Setting 14
2.2.1 Regional Geology 14
2.2.2 Local Geology 15
2.2.3 Hydrogeology 16
2.2.4 Lower Duwamish Waterway 17
2.2.4.1 Estuarine Features 17
2.2.4.2 Bathymetry and Shoreline Conditions Adjacent to SIA 18
2.2.4.3 Sediment Characteristics Adjacent to the SIA 19
2.2.4.4 Sediment Transport and Deposition 19
2.2.4.5 Summary of Dredging Activities 20
2.3 Historical Operations 21
2.4 Current Operations 21
2.4.1 Facilities Information 24
2.4.1.1 Lathe Equipment 24
2.4.1.2 Presses 28
2.4.1.3 Ring Mill 31
2.4.1.4 Ring Expander 33
2.4.1.5 Outdoor Scale Vaults 33
2.4.1.6 Melt Shop Area Below Ground Features 34
2.4.1.7 Steam Clean Area 36
2.4.1.8 Oil-Water Separators 37
2.4.1.9 Underground Storage Tanks 39
2.4.1.10 Chemical Storage Areas and Containment 39
2.4.1.11 Waste Product Storage Areas and Containment 41
2.4.1.12 Quench Tanks 42
2.4.1.13 Metallurgical Laboratory 44
2.4.2 Manufacturing Waste Products 44
2.4.2.1 Melt Bag House Dust 45
2.4.2.2 Furnace Slag 45
2.4.2.3 Billet Grinding Bag House Swarf 46
2.4.3 On-Site Stormwater Conveyance System 46
2.4.4 Current Stormwater Best Management Practices 49

2.5 Surrounding Facilities and Potential Off-Site Sources 51
2.5.1.1 Boeing Plant 2 Facility 51
2.5.1.2 Boeing-Isaacson Property 55
2.5.1.3 King County International Airport 56

3 REGULATORY HISTORY 59
3.1 Regulated Underground Storage Tanks 59
3.2 Hazardous Waste and Chemical Management Practices 59
3.2.1 Resource Conservation and Recovery Act Generator Status 59
3.2.2 Inspections 59
3.2.2.1 Routine Inspections by Jorgensen Personnel 59
3.2.2.2 Stormwater Inspections 60
3.2.2.3 EPA TSCA PCB Inspection 61
3.2.2.4 Ecology RCRA Inspection 62
3.3 Permit Violations 62
3.4 Spills/Discharges 62
3.5 Spill Response 63

4 SUMMARY OF SIA INVESTIGATIONS AND REMEDIAL ACTIONS 65
4.1 SIA MTCA Investigations and Remedial Actions 65
4.1.1 Preliminary Site Assessment 65
4.1.2 Limited Site Characterization 66
4.1.3 SECOR Site Assessment and Remedial Actions 67
4.1.3.1 Area 1 – Hollowbore Location 68
4.1.3.2 Area 2 – Oil/Water Separator Location 69
4.1.3.3 Former Area 3 – Former Underground Storage Tank Location 70
4.1.3.4 Area 4 – West of Decommissioned Oil Storage Area 71
4.1.3.5 Diesel Fuel Area – West of Aluminum Heat Treat Building 71
4.2 EPA Superfund Investigations 73
4.3 On-Property Boeing-Related RCRA Investigations 74
4.3.1 Other Area 11 – PCB and TPH Release 75
4.3.2 2-66 Sheet Pile Interim Measure 76
4.4 Phase 2 RI Shoreline Seep Investigation 77

5 SUMMARY OF ENVIRONMENTAL DATA AND COMPARISON TO SCREENING LEVELS 79
5.1 Screening Levels 79
5.1.1 Screening Level Application 82
5.1.2 Soil and Catch Basin Solids 82
5.1.3 Groundwater 83
5.1.4 Surface Water and Stormwater 84
5.2 Soil 85
5.2.1 Polychlorinated Biphenyls 85
5.2.2 Total Petroleum Hydrocarbons 86

5.2.3 Metals ... 87
5.2.3.1 Arsenic ... 88
5.2.3.2 Cadmium ... 89
5.2.3.3 Chromium ... 89
5.2.3.4 Copper ... 89
5.2.3.5 Lead ... 90
5.2.3.6 Mercury ... 90
5.2.3.7 Nickel ... 91
5.2.3.8 Silver ... 91
5.2.3.9 Zinc ... 91
5.2.4 Semivolatile Organic Compounds ... 92
5.2.4.1 Polycyclic Aromatic Hydrocarbons ... 92
5.2.4.2 Other Organic Compounds ... 92
5.2.5 Volatile Organic Compounds ... 92
5.3 Groundwater ... 93
5.3.1 Polychlorinated Biphenyls ... 93
5.3.2 Petroleum Hydrocarbons ... 93
5.3.3 Metals ... 94
5.3.3.1 Arsenic ... 95
5.3.3.2 Cadmium ... 95
5.3.3.3 Chromium ... 95
5.3.3.4 Copper ... 96
5.3.3.5 Lead ... 96
5.3.3.6 Mercury ... 96
5.3.3.7 Nickel ... 97
5.3.3.8 Silver ... 97
5.3.3.9 Zinc ... 97
5.3.3.10 Metals Summary ... 98
5.3.4 Semivolatile Organic Compounds ... 98
5.3.4.1 Polycyclic Aromatic Hydrocarbons ... 99
5.3.4.2 Other Organic Compounds ... 99
5.3.5 Volatile Organic Compounds ... 100
5.4 Light Non-Aqueous Phase Liquid ... 101
5.4.1 Cutting Oil Plume ... 102
5.4.2 Hydraulic Oil Plume ... 103
5.5 Surface Water ... 103
5.6 Stormwater Discharge and Solids ... 104
5.6.1 Stormwater ... 104
5.6.2 Property Line Outfall Solids ... 105
5.6.3 Catch Basin Solids ... 106
5.7 Sediment ... 107
5.7.1 Surface Sediment ... 108
5.7.1.1 Physical Results ... 108

5.7.1.2 Polychlorinated Biphenyls 108
5.7.1.3 Metals 109
5.7.1.4 Semivolatile Organic Compounds 109
5.7.2 Subsurface Sediment 109
5.7.2.1 Physical Results 110
5.7.2.2 Polychlorinated Biphenyls 110
5.7.2.3 Metals 110
5.7.2.4 Semivolatile Organic Compounds 111
5.7.3 Sediment Porewater 111

6 CONCEPTUAL SITE MODEL 113
6.1 SIA History and Operations 113
6.2 Potential Sources of Chemicals of Interest 114
6.2.1 Primary Potential Sources 114
6.2.2 Secondary Potential Sources 115
6.2.3 Off-Site Potential Sources 116
6.3 Chemicals of Interest 116
6.4 Screening Levels for Chemicals of Interest 116
6.5 Nature and Extent of Chemicals in Secondary Potential Sources 117
6.5.1 Polychlorinated Biphenyls 117
6.5.2 Total Petroleum Hydrocarbons 118
6.5.3 Metals 118
6.5.4 Semivolatile Organic Compounds 119
6.5.5 Volatile Organic Compounds 119
6.6 Chemicals that Represent an Ongoing Source 120
6.7 Potential Migration Pathways to LDW 122
6.8 Migration Pathways 123
6.8.1 Primary Migration Pathways 123
6.8.2 Secondary Migration Pathways 124
6.8.3 Direct Discharge 124
6.8.3.1 Surface Dust and Particulate 125
6.8.3.2 Wastewater Discharge 125
6.8.3.3 LNAPL Discharge 126
6.8.4 Stormwater Discharge 126
6.8.5 Discharge of Groundwater 128
6.8.6 Erosion of Solids 129
6.9 Summary of Migration Pathways 130

7 IDENTIFIED DATA GAPS 133
7.1 Ecology Data Gaps 133
7.1.1 Arsenic Contamination from Boeing-Isaacson Property 134
7.1.2 Geochemical Effects of TPH in Soil 135
7.1.3 Property-Line Stormwater Line Ownership 135
7.1.4 Wastewater Quality and Processes of Disposal 136

7.1.5 Groundwater Quality in the Central Portion of the SIA 136
7.2 Source Control Evaluation Identified Data Gaps 137
7.3 Proposed Additional Investigations to Fill Identified Data Gaps 137

8 REFERENCES 139

List of Tables

Table 2-1 Summary of Groundwater Elevation and LNAPL Data
Table 2-2 Summary of Groundwater Quality Field Measurements
Table 2-3 Summary of Belowground Equipment and Containment
Table 2-4 Summary of Chemical Storage Areas, Containment, and Best Management Practices
Table 2-5 Waste Storage Areas, Containment, and Best Management Practices
Table 2-6 Summary of Analytical Results for Operations By-Products
Table 5-1 Screening Level Values for the Source Control Evaluation
Table 5-2 Summary of Soil Analytical Results for Polychlorinated Biphenyls
Table 5-3 Summary of Soil Analytical Results for Petroleum Hydrocarbons
Table 5-4 Summary of Soil Analytical Data for Non-SMS Metals
Table 5-5 Summary of Soil Analytical Results for SMS Metals
Table 5-6 Summary of Soil Analytical Results for Polycyclic Aromatic Hydrocarbons
Table 5-7 Summary of Soil Analytical Results for Semivolatile Organic Compounds
Table 5-8 Summary of Soil Analytical Results for Halogenated Volatile Organic Compounds
Table 5-9 Summary of Groundwater Analytical Results for Polychlorinated Biphenyls
Table 5-10 Summary of Groundwater Analytical Results for Petroleum Hydrocarbons
Table 5-11 Summary of Groundwater Analytical Results for Total and Dissolved SMS Metals
Table 5-12 Summary of Groundwater Analytical Results for Total and Dissolved Non-SMS Metals
Table 5-13 Summary of Groundwater Analytical Results for Polycyclic Aromatic Hydrocarbons
Table 5-14 Summary of Groundwater Analytical Results for Semivolatile Organic Compounds
Table 5-15 Summary of Groundwater Analytical Results Halogenated Volatile Organic Compounds
Table 5-16 Summary of Groundwater Analytical Results for Detected Volatile Organic Compounds
Table 5-17 Summary of BTEX in LNAPL
Table 5-18 Summary of Halogenated Volatile Organic Compounds in LNAPL
Table 5-19 Summary of Polychlorinated Biphenyls in LNAPL
Table 5-20 Summary of Polycyclic Aromatic Hydrocarbons in LNAPL
Table 5-21 Summary of Semivolatile Organic Compounds in LNAPL
Table 5-22 Summary of Stormwater Analytical Results for SMS Metals

Table 5-23 Summary of Stormwater Analytical Results for Polychlorinated Biphenyls

List of Figures

Figure 1-1 SIA Vicinity Map
Figure 1-2 SIA Map
Figure 1-3 Cross-Section (E→W)
Figure 2-1 SIA Map Showing Groundwater Contours (5/18/2006)
Figure 2-2 SIA Map Showing Groundwater Contours (1/11/2007)
Figure 2-3a Outfall and Shoreline Reconnaissance Photolog – Northern Shoreline
Figure 2-3b Outfall and Shoreline Reconnaissance Photolog – Central Shoreline
Figure 2-3c Outfall and Shoreline Reconnaissance Photolog – Southern Shoreline
Figure 2-4 Potential Source Areas
Figure 2-5 Current Property Stormwater Drainage System
Figure 5-1 SIA Plan Showing Sample Locations
Figure 5-2 SIA Plan Showing Total PCBs in Soil
Figure 5-3 SIA Plan Showing Petroleum Hydrocarbon in Soil
Figure 5-4 SIA Plan Showing Arsenic Data for Soil
Figure 5-5 SIA Plan Showing Cadmium Data for Soil
Figure 5-6 SIA Plan Showing Chromium Data for Soil
Figure 5-7 SIA Plan Showing Copper Data for Soil
Figure 5-8 SIA Plan Showing Lead Data for Soil
Figure 5-9 SIA Plan Showing Mercury Data for Soil
Figure 5-10 SIA Plan Showing Nickel Data for Soil
Figure 5-11 SIA Plan Showing Silver Data for Soil
Figure 5-12 SIA Plan Showing Zinc Data for Soil
Figure 5-13 SIA Plan Showing Sample Locations for Halogenated VOCs in Soil
Figure 5-14 SIA Plan Showing LNAPL and Dissolved-Phase TPH in Groundwater
Figure 5-15 SIA Plan Showing Sample Locations for Metals in Groundwater
Figure 5-16 SIA Plan Showing Sample Locations for VOCs in Groundwater
Figure 5-17 SIA Plan Showing Geometry of Cutting Oil LNAPL Plume Over Time
Figure 5-18 Stormwater Line PCB Analytical Results
Figure 5-19 SIA Plan Showing Analytical Results of Catch Basin Sampling
Figure 5-20 Surface Sediment Sample Locations
Figure 5-21 Surface Sediment Samples – Full SMS Analysis
Figure 5-22 Subsurface Sediment Sample Locations
Figure 6-1 Schematic Diagram Presenting Conceptual Site Model

List of Appendices

Appendix A Aerial Photograph Summary
Appendix B Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results – Vicinity of Jorgensen Facility

Appendix C Spill Control Plan
Appendix D By-Product Laboratory Analytical Results
Appendix E Boeing-Isaacson Supporting Information
Appendix F Seattle Public Utilities Stormwater Pollution Prevention Inspection Letter
Appendix G 1955 Stormwater Easement – Boeing 15-Inch Connection to 24-Inch Property Line Outfall
Appendix H LDW RI Risk-Based Threshold Concentrations

µg/mg	micrograms per kilogram
µg/L	microgram per liter
ACOE	U.S. Army Corps of Engineers
Anchor	Anchor Environmental, L.L.C.
AOC	Administrative Order on Consent
AOD	argon-oxygen decarbonization
AST	aboveground storage tank
BEHP	benzylethylhexlphthalate
bfs	below floor surface
bgs	below ground surface
BMP	best management practice
BTEX	benzene, toluene, ethylbenzene, and xylene
CMS	Corrective Measure Study
COC	contaminant of concern
CSCSL	Confirmed and Suspected Contaminated Site List
CSL	Cleanup Screening Level
CSM	Conceptual Site Model
CSO	combined sewer overflow
DCE	dichloroethene
DDC	density-driven convection
DOC	dissolved organic carbon
DRO	TPH as diesel range organics
EAA-4	Early Action Area – 4
EAF	electric arc furnace
Ecology	Washington State Department of Ecology
EE/CA	Engineering Evaluation/Cost Analysis
EMJ	Earle M. Jorgensen
EPA	U.S. Environmental Protection Agency
Farallon	Farallon Consulting, L.L.C.
FS	Feasibility Study
HDPE	high density polyethylene
HVOC	halogenated volatile organic compounds
IM	Interim Measure

Jorgensen Forge	Jorgensen Forge Corporation
KCIA	King County International Airport
LDW	Lower Duwamish Waterway
LDWG	Lower Duwamish Waterway Group
LNAPL	light non-aqueous phase liquid
Metro	Metro King County sewer system
mg/kg	milligrams per kilogram
MHHW	mean higher high water
MLLW	mean lower low water
MOU	Memorandum of Understanding
MSDS	Material Safety Data Sheet
MTCA	Model Toxics Control Act
NPDES	National Pollution Discharge Elimination System
OA	Other Area
ORO	TPH as oil range organics
ORP	oxidation-reduction potential
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyls
PCE	tetrachloroethene
ppm	parts per million
ppt	parts per thousand
PQL	practical quantitation limit
RCRA	Resource Conservation and Recovery Act
RCW	Revised Code of Washington
RFI	RCRA Facility Investigation
RI	Remedial Investigation
RM	River Mile
SAIC	Science Applications International Corporation
SIA	Sediment Investigation Area
SMS	Sediment Management Standards
SPU	Seattle Public Utilities
SQS	Sediment Quality Standards
SVOC	semivolatile organic compound

SWMU	Stormwater Management Unit
SWPPP	Stormwater Pollution Prevention Plan
TCE	trichloroethene
TOC	total organic carbon
TPH	total petroleum hydrocarbon
TRI	Toxics Release Inventory
TSC	Toxic Substances Criteria
TSCA	Toxic Substance Control Act
TSD	treatment, storage, and disposal
TSS	total suspended solids
UST	underground storage tank
VOC	volatile organic compound
WAC	Washington Administrative Code

EXECUTIVE SUMMARY

Jorgensen Forge Corporation (Jorgensen Forge), current owner and operator of the Jorgensen Forge Facility located at 8531 East Marginal Way in Seattle, Washington, and the former owner and operator, Earle M. Jorgensen (EMJ), recently finalized negotiations with the U.S. Environmental Protection Agency (EPA) for an Amended Administrative Order on Consent (AOC) for preparation of an Engineering Evaluation/Cost Analysis (EE/CA) to address affected sediments along a portion of the Lower Duwamish Waterway (LDW) adjacent to the Jorgensen Forge Facility. The EE/CA will evaluate a range of cleanup alternatives and identify the most practical cleanup approach. An evaluation and confirmation that sources of chemicals to the LDW from the Jorgensen Forge Facility are controlled prior to implementation of the sediment cleanup activities will be critical to the success of this future cleanup. Jorgensen Forge has prepared this Source Control Evaluation Report (Evaluation Report) to present the results of a Source Control Evaluation being conducted at the Jorgensen Forge Facility to meet this objective.

This Source Control Evaluation is being conducted to meet the requirements of Agreed Order No. DE 4127 issued by the Washington State Department of Ecology (Ecology) and entered into by Jorgensen Forge. This Source Control Evaluation is being conducted and sequenced such that the nature and extent of potential ongoing sources of chemicals from the uplands to the adjacent sediment will be documented and controlled prior to initiation of sediment cleanup activities to minimize the potential for sediment recontamination.

The Source Control Evaluation addresses the upland area defined as the Sediment Investigation Area (SIA), which is defined to the north, east, and south by the property boundaries and to the west by the top of the shoreline bank. Per the Agreed Order, the SIA does not include the LDW sediments or shoreline bank area adjacent to the Jorgensen Forge Facility that will be addressed by Jorgensen Forge and EMJ under the EPA Superfund cleanup process. This Source Control Evaluation does not address other potential sources of chemicals to sediments adjacent to the SIA that do not migrate through the SIA. These additional potential sources to the LDW sediments adjacent to the SIA will be evaluated as part of the EPA Superfund cleanup process.

The SIA occupies approximately 20 acres at 8531 East Marginal Way South in Seattle, King County, Washington within the Duwamish River Valley on the east bank of the LDW. The SIA was developed in 1942 and has been operated by various entities as a steel fabricator and distributor since that time. Jorgensen Forge currently operates a steel and aluminum forge and mill that produce custom, high precision steel and aluminum parts. The SIA is developed with an approximately 124,000-square foot industrial operations building, two office buildings, a laboratory, and several small storage outbuildings. The majority of the surfaces on the SIA are covered with buildings, concrete, or asphalt. Stormwater on the SIA is managed through an extensive stormwater conveyance system with discharges to both the Metro King County sewer system (Metro) and to the LDW through four permitted outfalls.

Chemicals of interest have been defined for this Source Control Evaluation based on the historical and current operations, chemicals known to be present on the SIA, and chemicals that specifically pose a risk to sediment. The chemicals of interest include polychlorinated biphenyls (PCBs), metals, petroleum hydrocarbons, semivolatile organic compounds (SVOCs) consisting of polycyclic aromatic hydrocarbons (PAHs) and other organic compounds that are identified because of their potential threat to sediment quality, and volatile organic compounds (VOCs).

Screening levels have been developed by reviewing potentially applicable laws and regulations to define concentrations for the chemicals of interest that are considered protective of sediment quality in the LDW or, where use of sediment screening level values is inappropriate, screening level values that are protective of surface water quality in the LDW. The screening levels that are protective of sediment quality were preferentially selected as screening levels over screening levels that are protective of surface water quality given the focus of the Agreed Order is on sediment quality. Screening levels were established for soil and catch basin solids, `groundwater, and stormwater as surface water. All existing environmental data that has been collected on the SIA is compared to the applicable screening levels to evaluate potential threats to the LDW. An exceedence of a screening level does not necessarily indicate an unacceptable risk to sediment quality, but indicates that further consideration for source control using a weight-of-evidence evaluation are warranted.

PCBs and metals have been detected in soil at concentrations exceeding the screening levels. Concentrations of petroleum hydrocarbons and halogenated VOCs have been detected in soil. Concentrations of the chemicals of interest have not been detected in groundwater exceeding the screening levels. There is limited data for SVOCs in soil and groundwater; however, the results of the data available do not identify concentrations of SVOCs exceeding the screening levels. A single seep sample, suspected to be groundwater discharge from the southwest portion of the SIA, was collected at a seep location along the shoreline bank. The laboratory analytical results of the surface water sample did not detect concentrations of PCBs, SVOCs, or VOCs, and the detected concentrations of dissolved metals do not exceed the screening levels. Copper and nickel have been detected at concentrations exceeding the screening levels in stormwater discharging from outfalls. Concentrations of PCBs, copper, chromium, nickel, and zinc were detected in solids collected from catch basins exceeding the screening levels.

Light non-aqueous phase liquid (LNAPL) is present on groundwater in two separate areas on the eastern portion of the SIA. The LNAPL consists of cutting oil on the northeast portion of the SIA (Area 1) and hydraulic oil and diesel fuel on the southeastern portion of the SIA (Area 2). Historical and ongoing semi-annual groundwater monitoring in these areas indicated that the LNAPL plumes are stable and there is no indication of dissolution of LNAPL into groundwater.

Two categories of potential sources of chemicals of interest have been defined for the Source Control Evaluation. Primary potential sources are those that have the potential to directly impact LDW sediments and soil, groundwater, or catch basins, and secondary potential sources are those that have the potential to impact LDW sediments through an indirect release. The primary potential sources on the SIA include chemicals that are used and stored on the SIA and waste products associated with operations on the SIA. The chemicals of interest associated with the primary potential sources include metals, petroleum products, and solvents. The secondary potential sources consist of media, including soil, groundwater, catch basin solids, and LNAPL that have been impacted by current operations at the SIA. The chemicals of interest associated with the secondary potential sources include PCBs, metals, petroleum products, SVOCs, and VOCs.

The potential migration pathways for chemicals of interest to reach the LDW include: Direct Discharge, Stormwater Discharge, Discharge of Groundwater, and Erosion of Solids. Currently, chemicals of interest present on the SIA have the potential to impact the LDW through Direct Discharge, Stormwater Discharge, and Erosion of Solids. Chemicals of interest have not been detected in groundwater at concentrations that represent a potential source to LDW sediments.

The potential ongoing sources of chemicals of interest to the LDW through Direct Discharge include metals, petroleum products, and solvents that are used and stored on the SIA, metals that are present in waste products, metals and petroleum products in surface dust and wastewater, and petroleum product as LNAPL. The potential ongoing sources of chemicals of interest to the LDW through Stormwater Discharge include metals, petroleum products, and solvents spilled to catch basins or sumps that drain to the stormwater system; metals and petroleum products that may accumulate as solids in catch basins; and eroded soil containing chemicals that may accumulate in catch basins and stormwater lines. The potential ongoing sources of chemicals of interest through Discharge of Groundwater include ongoing surface or subsurface releases of chemicals, releases of accumulated wastewater, leaching of chemicals from soil, and dissolution of LNAPL. The potential ongoing sources of chemicals of interest to the LDW through the Erosion of Solids includes water and/or wind erosion of exposed soil, waste piles and material storage areas, and direct deposition in the LDW or deposition in the stormwater system.

The Best Management Practices (BMPs) implemented at the SIA include implementation of the Stormwater Pollution Prevention Plan (SWPPP) and the Spill Control Plan, routine sweeping of all concrete floors and paved surfaces where dust and solid particulates may accumulate, installation and inspection of heavy duty filter fabric and oil-absorbent boom in the stormwater catch basins, removal of accumulated solids in the stormwater catch basins, secondary containment areas around the majority of the chemical storage and waste storage areas, and use of oil water separators and recycling of used oil for re-use on the SIA. The BMPs are thorough and acceptable methods of managing potential sources to the LDW.

Current data indicates that there is no direct discharge of chemicals to the LDW, and the implementation of BMPs on the SIA minimize the potential impacts from chemical releases to the LDW and to soil, groundwater, and catch basin solids on the SIA. The results of this Source Control Evaluation indicate that there is an ongoing pathway for PCBs, metals, and petroleum products to reach the LDW through the Stormwater Discharge pathway, including solids and water. The stormwater BMPs provide management for the solids and petroleum products that are a potential ongoing source to the stormwater system. The Erosion of Solids is a potentially complete migration pathway for chemicals present in soil, including PCBs, arsenic, cadmium, chromium, lead, mercury, nickel, zinc, and petroleum products to reach the LDW; however, the current condition of the shoreline bank precludes erosion and direct deposition in the LDW. The erosion of exposed soil on the SIA and deposition through the stormwater system is a likely ongoing pathway; however, the stormwater BMPs limit the migration of solids to the LDW via this pathway.

The Source Control Evaluation identified data gaps in the existing data that require additional investigation to determine the potential for ongoing LDW sediment quality impacts from the SIA. In addition, prior to completion of this Source Control Evaluation, Ecology identified a number of data gaps on the SIA they felt needed to be addressed to adequately document source control from the SIA. The data gaps identified to complete the Source Control Evaluation include the following:

- There is insufficient data available for SVOCs and PAHs in groundwater to adequately assess the potential impacts from these chemicals to sediment quality.
- The quality of stormwater that infiltrates into the railroad scale vault, groundwater that infiltrates into the vacuum de-gassing pit, and fluids that potentially enter the argon-oxygen decarbonization (AOD) vault and are subsequently pumped to the stormwater conveyance system has not been evaluated.
- The impacts of potential source areas in the Forge Shop Area and the Melt Shop Area to soil and groundwater have not been evaluated.
- The extent of LNAPL on the SIA has not been fully defined.
- The existing BMPs have not been evaluated for their effectiveness to control the impacts of the storage, distribution, and incidental releases of petroleum products on the SIA.

The identified data gaps will be addressed through expansion of future scheduled semi-annual groundwater monitoring and additional investigations. The detailed scope of work to address data gaps in the Source Control Evaluation is provided in the Data Gap Investigation Work Plan, which is provided under separate cover. The results of the additional investigation will be summarized in the Source Control Evaluation Addendum Report.

1 INTRODUCTION

This Source Control Evaluation Report (Evaluation Report) has been prepared on behalf of Jorgensen Forge Corporation (Jorgensen Forge) by Anchor Environmental, L.L.C. (Anchor) and Farallon Consulting, L.L.C. (Farallon) to present the results of a Source Control Evaluation conducted at the Jorgensen Forge Facility located at 8531 East Marginal Way in Seattle, Washington (Figure 1-1). The Source Control Evaluation is being conducted to meet the requirements of Agreed Order No. DE 4127 (Agreed Order) issued by the Washington State Department of Ecology (Ecology) pursuant to the authority of Chapter 70.105D.050 (1) of the Revised Code of Washington (RCW) and entered into by Jorgensen Forge. The scope of work for the Source Control Evaluation (Section 1.3) was developed to meet the requirements of the Statement of Work, Exhibit B of the Agreed Order.

Jorgensen Forge and the former owner and operator, Earle M. Jorgensen (EMJ), recently finalized negotiations with the U.S. Environmental Protection Agency (EPA) for an Amended Administrative Order on Consent (AOC) for preparation of an Engineering Evaluation/Cost Analysis (EE/CA) for cleanup of affected sediments along a portion of the Lower Duwamish Waterway (LDW) adjacent to the Jorgensen Forge Facility. This Source Control Evaluation is being conducted and sequenced such that the nature and extent of any potential ongoing sources of chemicals from the uplands to the adjacent sediment will be controlled prior to initiation of these sediment cleanup activities to minimize the potential for sediment recontamination. Although Ecology is the lead agency for source control activities, the Source Control Evaluation is also being conducted in coordination with EPA to demonstrate that sources from Jorgensen Forge Facility are controlled prior to implementation of sediment cleanup activities. The overall LDW source control approach is discussed further in subsequent sections.

The Source Control Evaluation addresses the upland area defined as the Sediment Investigation Area (SIA), as shown in Figure 1-2 and Exhibit A of the Agreed Order. The SIA is defined to the north, east, and south by the property boundaries and to the west by the top of the shoreline bank. As defined in the Agreed Order, the SIA does "not include (a) the LDW sediments or shoreline bank area adjacent to the Jorgensen Property that will be addressed under the EPA Superfund process or (b) the areas addressed during activities undertaken pursuant to [Resource Conservation and Recovery Act] RCRA on the adjacent Boeing property."

1.1 Purpose

In accordance with the Agreed Order, the purpose of the Source Control Evaluation is to evaluate whether the SIA is a potential ongoing source of chemicals of interest to the adjacent LDW with the potential to cause adverse effects to sediment quality. To meet this objective, this Evaluation Report identifies chemicals that are currently being used for operations on the SIA or are known or suspected to be present in soil, groundwater, surface water, and catch basin solids on the SIA; screens the concentrations of chemicals detected in soil, groundwater, surface water, or catch basin solids on the SIA against applicable screening levels that are considered protective of sediment quality in the LDW or, where use of sediment screening level values is inappropriate, screening level values that are protective of surface water quality in the LDW; and evaluates whether there are complete migration pathways for the chemicals detected on the SIA at concentrations exceeding their applicable screening level to reach the LDW . The evaluation results are used to identify data gaps in determining whether there are ongoing sources of chemicals of interest from the SIA to the LDW, and to develop a scope of work to address any identified data gaps.

1.2 Ecology Source Control Strategy and LDW EPA Superfund Process

EPA and Ecology entered into an Order with King County, the Port of Seattle, the City of Seattle, and The Boeing Company (Boeing) in December 2000. The scope of work in the Order includes the completion of a Remedial Investigation (RI) and Feasibility Study (FS) of the LDW sediment contamination in order to assess potential risks to human health and the environment and evaluate cleanup alternatives. The EPA is the lead agency for the RI/FS. The EPA added the LDW to the Superfund list on September 13, 2001. Ecology is the lead agency for controlling ongoing sources of hazardous substances to the LDW. The source control strategy for the LDW is to identify and manage sources of chemicals to LDW sediments in coordination with, and prior to, initiation of sediment cleanups. Ecology developed the *Lower Duwamish Waterway Source Control Strategy* to document the source control strategy (Ecology 2004; Ecology Publication No. 04-09-043). EPA and Ecology have committed to coordinate their ongoing efforts to support the integration of both upland source control and LDW sediment cleanup activities to minimize the potential for sediment recontamination following LDW cleanup activities. Although Ecology is the lead agency for source control activities, this Source Control Evaluation is also being conducted in coordination with the EPA to successfully integrate the source control and forthcoming sediment cleanup activities.

1.3 Scope of Work

The scope of work for this Source Control Evaluation is in accordance with the Statement of Work (Exhibit B of the Agreed Order) and includes the following:

- A detailed description of the historical and current operations at the SIA
- Identification of potential sources of hazardous substances associated with the use, storage, and production of chemicals currently used to support ongoing operations in the SIA
- A description of the physical setting, including the geology, hydrogeology, characteristics of the LDW, and surrounding land use
- A summary of the regulatory history and previous environmental investigations and remedial actions conducted at the SIA
- A comprehensive summary of all existing analytical results of soil, groundwater, surface water and catch basin sediment samples collected on the SIA
- Development of applicable screening levels that are considered protective of sediment quality in the LDW or, where use of sediment screening level values is inappropriate, development of screening level values that are considered protective of surface water quality in the LDW
- An evaluation of the analytical results compared to the applicable screening level to identify potential ongoing sources of chemicals of interest to the LDW
- A conceptual site model (CSM) to evaluate potential complete migration pathways of chemicals of interest that are currently used or have been detected in soil, groundwater, surface water, or catch basin solids at the SIA above the applicable screening levels
- A discussion of identified data gaps in the CSM
- A preliminary scope of work to address data gaps to complete the CSM.

The sources of information used to complete this Evaluation Report include interviews with current facility personnel, environmental investigations conducted by others, a review of agency records, and a review of historical and existing Jorgensen Forge records. Documents reviewed are summarized in Section 8 of this Evaluation Report.

1.4 Data Sources and Quality

The data summarized in this Evaluation Report were reviewed in a variety of sources, including previously prepared environmental reports, raw laboratory analytical data, and available databases, as summarized in Section 8. The primary sources for the data include the following:

- Limited Site Characterization, prepared by Dames and Moore dated 1990 (Dames and Moore 1990b)
- RCRA Facility Investigation Groundwater Investigation Interim Report, prepared by Roy F. Weston, Inc. and dated January 1996 (Roy F Weston 1996)
- Site Inspection Report, Lower Duwamish River, prepared by Weston Solutions, Inc and dated 1999 (Weston 1999)
- Data Report: Survey and Sampling of Lower Duwamish Waterway Seeps – Final, prepared by Windward Environmental, L.L.C. dated November 18, 2004 (Windward 2004)
- Technical Memorandum Regarding Groundwater Data Summary, prepared by Farallon dated June 28, 2005 (Farallon 2005a)
- Technical Memorandum Regarding Storm Drain Line Data Summary, prepared by Farallon dated July 28, 2005 (Farallon 2005b)
- Final Investigation Data Summary Report, prepared by Farallon and Anchor dated February 13, 2006 (Farallon and Anchor 2006)

The data gathered from the above reports have not been independently verified and/or validated as these reports were prepared for EPA and/or Ecology and were therefore assumed to be suitable for reliance in this Evaluation Report. The Evaluation Report includes a summary of data collected by SECOR between 1992 and 1996 (Secor 1992b, 1997), Dames and Moore between 1990 and 1998 (Dames and Moore 1990b, 1997, 1999), and Floyd Snyder and Weston Solutions, Inc. between 1994 and 2007 (Weston 1999); Floyd Snyder 2004; Floyd Snyder and Weston Solutions 2004; Floyd Snyder and Weston Solutions 2005; Floyd Snyder 2007). The work performed by Floyd Snyder and Weston Solutions, Inc., on the SIA is part of the ongoing Boeing investigation and remediation work being conducted under an Administrative Order with EPA. It is assumed that these data have been independently verified and validated in accordance with EPA protocols and are suitable for reliance in this document. All of the data collected by Farallon (2005a, 2005b, 2006) and

Anchor (2005, 2006) have been validated in accordance with EPA protocols and are suitable for use in this Evaluation Report.

1.5 Report Organization

In accordance with the Statement of Work (Exhibit B of the Agreed Order), this Evaluation Report has been organized into the following sections:

- Section 2 – Sediment Investigation Area Information
- Section 3 – Regulatory History
- Section 4 – Summary of SIA Investigations and Remedial Actions
- Section 5 – Summary of Environmental Data
- Section 6 – Conceptual Site Model
- Section 7 – Identified Data Gaps
- Section 8 – References

2 SEDIMENT INVESTIGATION AREA INFORMATION

This section presents a detailed description of the background information for the SIA, including a description, the physical setting, a summary of historical and current operations, a detailed description of current facility operations, and a discussion of surrounding facilities and potential off-site sources of chemicals of interest to the SIA.

2.1 Sediment Investigation Area Description

The SIA occupies approximately 20 acres at 8531 East Marginal Way South in Seattle, Washington located between Slip 4 and Slip 6 on the east bank of the LDW at approximately LDW River Mile (RM) marker 3.6 (Figure 1-2). The SIA is located in Section 42, Township 24 North, Range 4 East, Willamette Meridian in King County, Washington.

The SIA is developed with an approximately 124,000-square foot building of prefabricated steel that houses a Machine Shop Area, Forge Shop Area, Hollowbore Area, Melt Shop Area, Heat Treat Area, and Shipping Area (Figure 1-2). An Aluminum Heat Treating Area, a Former Power House, and a Rectifier Room are located on the southeastern corner of SIA. A wood-frame office building is located on the northeastern side of the SIA. The central portion of the SIA is covered with concrete and is used for parking, storage of finished product, unused equipment, and materials. A wood-frame laboratory used for physical testing of metal products and an office building are located in the central portion of the SIA (Figure 1-2). A scrap, slag stockpile, and chip stockpile storage area is located on the southwestern portion of the SIA.

The majority of the SIA is covered with impermeable surfaces that consist of asphalt, concrete paving, and buildings (Figure 1-2). Portions of the ground surface along the western and northwestern areas of the SIA are covered with gravel that was placed in approximately 1990. The ground surface within the scrap storage bins located along the southeastern portion of the SIA is thought to be concrete. The area surrounding the scrap storage bins in the slag and chip storage areas and further east to the southeastern corner of the main manufacturing building is unpaved, except for a concrete slab surrounding the Billet Grinding Bag House.

The majority of the shoreline along the western boundary of the SIA is composed primarily of riprap, fill, and remnant piles. The shoreline along the southwestern portion of the SIA (i.e., adjacent to the Melt Shop storage area) is composed of an abutted sheet pile/concrete panel bulkhead (Figure 1-2). A more detailed discussion of the shoreline conditions adjacent to the SIA is provided in Section 2.2.4.2.

The SIA is located within the city of Tukwila; however, Jorgensen Forge uses a Seattle mailing address. The SIA is currently zoned for heavy industrial use (M2), the highest intensity use classification by the City of Tukwila Planning Department. Based on the history of industrial uses of the SIA and adjacent properties, the current industrial land use, and the likely continued use of the SIA for industrial purposes, the future land use at the SIA is reasonably expected to remain heavy industrial.

A detailed review of the historical and ongoing operations on the SIA is summarized in Sections 2.3 and 2.4, respectively.

2.2 Physical Setting

This section provides a description of the physical setting of the SIA, including a discussion of the regional and local geology, hydrogeology, and LDW characteristics adjacent to the SIA.

2.2.1 Regional Geology

The SIA is located in the southern part of the Puget Sound Lowland, a broad, relatively level glacial drift plain dissected by a network of deep marine embayments. The SIA is located within the Duwamish Valley on the Duwamish Valley floodplain. The Duwamish Valley is a former marine embayment that has been filled with sediment since the most recent period of glaciation, the Pleistocene Age Vashon Glaciation (Luzier 1969). The Duwamish Valley is bounded to the east and west by glacial drift uplands. The Duwamish River Valley is filled with up to approximately 360 feet of alluvium, consisting of clay, silt, and sand. The alluvial deposits generally overlie the Pleistocene Age Vashon Drift, which ranges in thickness from 0 foot to approximately 200 feet in the Duwamish Valley. The Vashon Drift is composed of sand and gravel glacial outwash deposits overlying a compact silt, clay, sand, and gravel till. In some areas of the

Duwamish Valley, the Vashon Drift is absent, and Pre-Tertiary and Tertiary bedrock (undifferentiated sedimentary, metamorphic, and igneous rock) directly underlies the recent alluvial deposits (Richardson et al. 1968).

The portion of the Duwamish Valley where the SIA is located has undergone extensive excavation and filling since the early 1900s. The fill is reported to be greater than 50 feet thick in some locations. By 1936, the Duwamish Waterway had been channelized. An abandoned meander loop of the LDW was identified in the western portion of the SIA in a 1940 topographic map and is shown in a 1936 aerial photograph (Appendix A). The meander was filled sometime during the late 1930s to early 1940s.

2.2.2 Local Geology

A review of historical photographs for the SIA vicinity indicates that prior to the 1940s, the western portion of the SIA was an embayment of the Duwamish River. Review of available aerial photographs provided in the *Aerial Photographic Analysis of Jorgensen Forge Corporation/Duwamish Waterway* (EPA 2003) indicates that the embayment was filled between May 1942 and 1946. The source of the fill is unknown but is suspected to be the result historical hydraulic dredging conducted in the LDW by ACOE from unknown upland sources. Subsurface investigations conducted at the SIA indicate that the fill material consists of gray and brown sand that ranges from very fine to coarse subrounded grains. The fill appears to extend to a depth of 2 to 10 feet below ground surface (bgs). A pervasive silt layer with organic material is encountered between 8 and 10 feet bgs and represents the uppermost native soil. The uppermost native soil generally consists of a 1- to 3-foot thick, organic-rich, dark gray silt to clayey silt layer.

The geology of the eastern portion of the SIA consists of alluvial silts and sands. Except as described above, fill material is laterally discontinuous, consists of sandy gravel, and ranges in thickness from 4 inches to 2 feet. The uppermost native material consists of sand and silty sand with thinly-laminated layers of interbedded alluvial silt and buried paleosols that indicate historical soil horizons. A layer of silt that contains degrading plant material and woody debris is encountered across the SIA at depths of 10 to 12 feet bgs and ranges in thickness from 2 to 5 feet. Underlying the silt, poorly-graded sands transition to silty sands from east to west and extend to the total depth explored in most areas of the SIA. According to a review of well construction logs for monitoring wells located on the SIA, the deepest soil boring within the SIA was completed for shoreline monitoring well PL2-JF01C in the northwest portion of the SIA (Figure 1-2). This boring PL2-JF01C was completed to a depth of 81.5 feet bgs and indicates that poorly-graded sand with interbedded silt is present to a depth of 51 feet bgs, with layers of sandy silt, sand, and silty sand present to 81.5 feet bgs.

2.2.3 Hydrogeology

The groundwater in the Duwamish Valley occurs in unconfined conditions in a shallow aquifer and under confined conditions in some areas in a deeper aquifer. Recharge to the shallow aquifer is primarily through direct infiltration of precipitation and periodic contributions from streams during high-stage periods. Regional groundwater flow in the unconfined shallow aquifer is typically to the south or southwest, toward the LDW.

The SIA is underlain by heterogeneous lenses and layers of silt and clay with no identified discrete zones, and only a few units can be correlated within the SIA monitoring wells (Figure 1-3). The stratigraphy is further complicated by placement of fill atop the pre-development topography, including placement of fill between 1942 and 1946 into the previously existing embayment (Appendix A). Clay lenses occur throughout the SIA, and perched and locally confined groundwater has been observed at several locations. For purposes of this discussion, the entire unconfined shallow water-bearing zone beneath the SIA is considered a single aquifer system, and is first encountered at depths ranging from 9 to 13 feet bgs.

A summary of all available groundwater monitoring data across the network of SIA monitoring wells is provided on Table 2-1. Figures depicting the groundwater flow direction and gradient, as observed during the May 2006 and January 2007 semi-annual groundwater monitoring events (Farallon 2007), are included on Figures 2-1 and 2-2, and the field collection results are provided in Table 2-2. The observed groundwater conditions during these two monitoring events (Farallon 2007) are consistent with previous monitoring events and indicate that the groundwater flow direction is to the southwest on the eastern half of the SIA with the gradient increasing and the flow direction becoming more westerly near the LDW. The depth to groundwater on the eastern portion of the SIA shows seasonal response, with water levels increasing 1 foot to 2 feet during the rainy season (Farallon and Anchor 2004).

Groundwater flow within the shallow aquifer is influenced by the presence of saline water that has intruded from the LDW (Roy F. Weston 1996). Following the initial dredging and realignment of the waterway in 1918, saltwater extended back into the waterway and, driven by density, intruded downward below the waterway into the aquifer (Roy F. Weston 1996). As a result of this saltwater intrusion, a "saltwater wedge" has formed beneath the waterway. The presence of the saline water in the aquifer has been observed in monitoring wells in the shoreline bank zone adjacent to the LDW and in deep monitoring wells located on the Boeing Plant 2 facility (EPI et al. 2006b). The groundwater in deep monitoring wells is distinctly more saline and electrically conductive than water in monitoring wells screened shallower in the aquifer (EPI et al. 2006b). An isotope study of groundwater composition conducted by Weston on the Boeing Plant 2 facility indicated that saline groundwater detected in deep monitoring wells may be significantly older than the groundwater detected in shallower monitoring wells (Weston 2006). Weston (2006) attributed the apparent stratification of the aquifer to remnant connate water in the deeper portion of the aquifer and discounted the likelihood of saltwater intrusion to groundwater from the LDW.

2.2.4 Lower Duwamish Waterway

An understanding of the physical characteristics of the LDW is required to further understand the fate of chemicals that may enter the LDW from potential sources on the SIA. A summary of the physical characteristics of the LDW are described below.

2.2.4.1 Estuarine Features

The LDW is a well-stratified, salt wedge-type estuary influenced by freshwater flow and tidal effects that are highly seasonally dependent. Typical of salt-wedge estuaries, the LDW has a sharp interface between the freshwater outflow at the surface and the saltwater inflow at depth. A 25 parts per thousand (ppt) salinity layer near the river mouth occupies most of the water depth, but tapers toward the upriver portion of the estuary. Freshwater inflow exerts a strong influence on the relative thicknesses of the two layers. The thickness of the freshwater layer increases with increasing river flow rates throughout the LDW. The upstream location or "toe" of the salt wedge is typically located upstream of the SIA under most flow conditions, but under high flow conditions the river adjacent to the SIA may act as a tidal freshwater river (Windward and QEA 2007). Given the LDW can experience both saline and freshwater conditions adjacent to the SIA dependent on the flow conditions, either saline and freshwater water quality criteria may be applicable. Chapter 173-201A WAC (Ecology 1995) defines the use of freshwater water quality criteria at any point where 95 percent of the salinity values are less than or equal to 1 ppt. Although under most flow conditions it is anticipated that the LDW will contain a salinity above 1 ppt adjacent to the SIA, to be conservative the lowest of the saline and freshwater criteria concentrations will be applied as the screening levels for surface water entering the LDW from the SIA (see Section 5.1). The evaluation will also include considerations of points of exposure to ensure the appropriate screening level is applied.

2.2.4.2 Bathymetry and Shoreline Conditions Adjacent to SIA

Common shoreline features within the LDW include constructed bulkheads, piers, wharves, buildings extending over the water, and steeply sloped banks armored with riprap or other fill materials (Weston 1999). Intertidal habitats are dispersed in relatively small patches (i.e., generally less than 1 acre in size), with the exception of Kellogg Island, which represents the largest contiguous area of intertidal habitat remaining in the LDW (Tanner 1991).

A shoreline reconnaissance survey of the SIA was conducted on May 14, 2003 to document the physical characteristics of the shoreline adjacent to the SIA. The survey was conducted during low tide conditions with the river elevation at approximately -2 feet mean lower low water (MLLW). The majority of the bank adjacent to the SIA is steep (approximately 1H:1V) and covered with riprap, debris, and approximately 50 visible aboveground remnant timber piles of variable length along the middle western portion of the shoreline. Additional remnant piles that were broken off at the mudline and are not currently visible may exist along the shoreline. The southwest corner (approximately 100 linear feet) of the SIA abuts the LDW with a vertical sheet pile bulkhead and concrete panel wall. The physical characteristics of the shoreline adjacent to the SIA during the 2003 survey are shown on Figures 2-3a, 2-3b, and 2-3c.

2.2.4.3 Sediment Characteristics Adjacent to the SIA

Sediment composition in the nearshore areas adjacent to the SIA has been observed to be very coarse (e.g., coarse sand, cobble, and riprap) and armored (Farallon and Anchor 2004), as shown in Figure 2-3a, 2-3b, and 2-3c. A mudflat area is located adjacent to the concrete panel bulkhead wall located off the southwestern corner of the SIA (Figure 2-3c). More detailed grain size information is available for each surface and subsurface sediment sampling station adjacent to the SIA, as summarized in Appendix B (sediment analytical results).

2.2.4.4 Sediment Transport and Deposition

Sediment stability was evaluated as part of the LDW Group (LDWG) Phase I and Phase 2 RI activities (Windward and QEA 2007). The navigational channel and the majority of the transitional zones and intertidal benches in the vicinity of the SIA are subject to erosional events, but exhibit some degree of net sediment accumulation over time (Windward 2003a). Estuarine processes and preliminary modeling results also showed that sediment sources and associated chemicals can migrate in an upstream direction due to tidal forcing during flood tide conditions (Windward 2003a). Current velocities measured within the LDW indicate that bottom water velocity in the vicinity of the SIA facilitates sediment deposition during particular times of the year (Windward 2003a).

The Phase 2 RI investigation gathered additional net sedimentation data from bench areas to supplement the Phase 1 net sedimentation data available for the navigation channel (Windward and QEA 2007). The results showed that a single geochronology core collected offshore of the SIA provided estimated long-term net sedimentation rates of 1.6 to 1.8 centimeter per year (cm/year) and 0.2 to 1.0 cm/year using cesium-137 and lead-210 radioisotopes, respectively. These net depositional rates are much lower than the rates identified within the navigational channel during the Phase 1 RI (20 to 110 cm/year; Windward 2003a) but are consistent with the general intertidal long-term net depositional rates in the LDW (i.e., less than 1 cm/year).

The Phase 2 RI field activities investigated sediment bed scour resulting from both natural and anthropogenic causes to assess whether sediment bed erosion occurs episodically and, if so, over which areas of the navigation channel and benches. A hydrodynamic model was developed to simulate the potential effects of average-flow conditions and high flow events (e.g., 2-, 10-, and 100-year high flow events) on LDW bed stability. This model showed that under most flow conditions the saltwater wedge extends upstream of the SIA; however, under high flow conditions the river adjacent to the SIA may act as a tidal freshwater river. The model showed that the potential for erosion tended to be higher near the navigation channel and tended to decrease toward the shoreline. An additional model was run to evaluate the potential for ship-induced bed scour within the LDW. The ship-induced scour simulations indicated that in the vicinity of the SIA (i.e., RM 3.6) the approximate upper bound estimates of average bed scour along the eastern bench adjacent to the SIA is 0.7 cm with an average range in bed scours of less than 1 to 2.9 cm.

2.2.4.5 Summary of Dredging Activities

The steady accumulation of sediment within the LDW has required ACOE to perform regular maintenance dredging since 1916 to maintain the appropriate depths in the federal navigation channel (Figure 1-2) for commercial vessel traffic (Weston 1999). The maintained depths range from approximately -15 to -30 feet MLLW extending from just upstream of Turning Basin 3 to the southern tip of Harbor Island (Weston 1999). Adjacent to the SIA, the ACOE has maintained the dredged channel at 15.1 feet MLLW, with the most recent dredging event occurring circa 1999. These dredging events have maintained an approximately rectangular channel configuration with steep slope transition zones adjacent to the navigation channel, with shallow intertidal benches in some areas on either side of the transition zones. The dredging events have removed potentially contaminated sediments in the vicinity of the SIA and created short-term effects on sediment transport and deposition in the vicinity of the SIA.

2.3 Historical Operations

The SIA was first developed in 1942, and operated from 1942 to 1965 as a fabricator of structural steel, tractor, and road equipment. On-site operations included forging, heat-treating, and machining by Isaacson Iron Works, which operated as a U.S. naval vessel manufacturer. Bethlehem Steel operated a steel distribution center on the northwestern portion of the SIA from approximately 1951 to 1963. Bethlehem Steel operations consisted of cutting prefabricated steel rods to customers' specifications. The aboveground structures associated with the distribution center were removed shortly following closure of the center. Although there is no historical documentation regarding removal of these structures, there is no evidence that any of the belowground structures (e.g., stormwater conveyance system) were removed, given that the original slab-on-grade concrete foundation for the structures are still present in their original condition. From 1965 to 1992, the SIA property was owned and operated by EMJ. From 1992 to the present, the SIA property has been owned and operated by Jorgensen Forge. The only significant development from 1960 to the present was extension of the westernmost portion of the main manufacturing building adjacent to the sheet pile wall on the southwest corner of the SIA.

Aerial photographs documenting the historical development of the SIA are provided in Appendix A. These photographs include a subset of the photographs provided in the EPA *Aerial Photographic Analysis of Jorgensen Forge Corporation/Duwamish River* (EPA 2003). These photographs provided additional information regarding the use of some of the upland areas within and surrounding the SIA from the period 1936 through 1951.

2.4 Current Operations

The type and nature of operations at the SIA have not changed substantially over the past 60 years. The SIA is currently used as a steel and aluminum forge and mill that produces custom steel and aluminum parts forged and machined to high precision specifications for various industrial clients. The major operations conducted at the SIA include:

- Melting scrap steel and forming the molten steel into ingots
- Forging the steel ingots into billets and/or shape forgings
- Heat-treating the forged steel and purchased aluminum products
- Grinding and machining the steel billets to required specifications
- Ring rolling and/or expanding the aluminum products to required specifications

Scrap metal (both return scrap and purchased scrap) is melted in ladles in the large furnaces in the Melt Shop Area (Figure 1-2). The melting bag house vacuum operation collects dust generated during melting operations through a bag filter system. The captured dust is conveyed through a closed piping system to the melting bag house (Figure 1-2) and deposited into a closed, sealed bin, which is located on a concrete slab within a building. This bin is directly transferred to a collection agency for off-site disposal as a dangerous waste designated as K061.

During the melting process, oxidizing slag material is used to remove unwanted elements, while reducing slag is added to the AOD unit to help reduce the steel to keep particular elements in the matrix. Ferro alloys are also added to the molten steel to meet specifications. Following the melting process, the added slag is removed from the ladles, temporarily stored on the northwest corner of the SIA, and either recycled or disposed of off site.

The molten steel is then poured into molds to cool and harden into ingots. The ingots are then heated as necessary in the forge furnaces and are shaped by large presses into billets. Four hydraulic presses (i.e., 660-ton, 1,250-ton, 2,500-ton, and 5,000-ton presses) are used at the SIA. Each press is operated by hydraulics and each has its own hydraulic oil storage, power, and pump system, as discussed in more detail in Section 2.4.1.2.

The billets may then go through heat treatment, as required, to develop specific properties in the steel. The heat-treatment occurs in horizontal or vertical tanks (see Section 2.4.1.12) to control the cooling of the metal. Following forging and heat-treatment (if necessary), the outer coating of the billets is removed through grinding using a garnet grit (Emerald Creek Garnet and Abrasive Grains and Powders). The billet grinding bag house vacuum operation collects dust and small size swarf generated during the grinding operations through a bag filter system and managed as discussed in Section 2.4.2.3. The captured dust/swarf is conveyed via a closed system to a sealed hopper (Figure 2-4). The resulting grinding "swarf" is transferred from the sealed hopper and stockpiled on site on pavement surrounded by stacked Ecology blocks (Figure 2-4). The swarf is either recycled on site to recover the metal or shipped off site via trucks and/or railcars for recycling by a third party. The captured dust/swarf is conveyed via a closed system to a sealed hopper (Figure 2-4).

The steel and aluminum billets are machined to exact specifications on lathes in the Machine Shop Area. Certain steel pieces are bored along the axis inside of the cylinders on the Hollowbore machines in the Hollowbore Area (Figure 2-4). Certain aluminum products are cut in the ring mill and/or expanded on the ring mill expander in the Forge Shop (Figure 2-4). The steel and aluminum metal chips that result from machining operations are stored in enclosed metal bins outside the main manufacturing building west of the Machine Shop Area or in uncovered area along the southwest corner of the facility. These chips are reused in the manufacturing process. The Hollowbore lathes use petroleum-based cutting oil as part of the lathe process whereas the lathes in the Machine Shop Area use hydraulic oil to operate the lathe machinery (Section 2.4.1). The ring mill machine uses water-based coolant during the cutting operations (Section 2.4.1.3) whereas the ring mill expander uses hydraulic oil to operate the machinery (Section 2.4.1.4).

Once machining is complete, the metal products are cleaned, tested, and stored in the Shipping Area pending shipment off-site. The products are cleaned using a dry cleaning solvent (i.e., P-D-680) and finger print remover/neutralizer (Tectyl 833 or equivalent). These solvents are stored in sealed containers in a fire-safe locker in the Shipping Area (Figure 2-4). The final machined products are thoroughly cleaned by applying the dry cleaning solvent onto a clean rag followed by wiping of the metal surface using the rag. Following cleaning, the used rag is properly disposed and a clean dry rag is used to further wipe the metal surface. The last step in the cleaning process is the application of the fingerprint remover/neutralizer using clean rags.

The SIA also includes a metallurgical laboratory (Figure 2-4). This laboratory performs corrosion and tensile strength testing of the steel produced in the manufacturing process.

A detailed discussion of the ongoing facilities operations and potential source areas in the SIA is provided below.

2.4.1 Facilities Information

There are a number of equipment use areas, operations areas, and storage areas on the SIA associated with current operations that are potential sources of chemicals of interest and require further evaluation. Each of these areas is shown in Figure 2-4. A description of each of these potential source areas is described below.

2.4.1.1 Lathe Equipment

As discussed in Section 2.4, some steel products are bored along the axis inside of the cylinders on horizontal Hollowbore lathes. The Hollowbore lathes include lathes 59 and 60, which are Niles lathes that use a "hollow bore" method to drill out a shaft; that is, the bore cuts out metal in an annular ring and a solid plug of metal is removed from the center of the shaft. The Hollowbore lathes also include lathe 58, which is a solid bore Rhiensthal-Wagner (R/W) lathe that removes the annular portion of the forged cylinder in the form of chips. In addition, both steel, aluminum alloy and titanium products are further machined using the Frenchman 63 vertical lathes in the Hollowbore Area and the west Craven and east Craven lathes in the Machine Shop Area (Figure 2-4). Each of these lathes has belowground vaults that are potential source areas. The characteristics of each of these vaults are discussed further below. Based on a review of the Jorgensen Forge files it is thought that each of the Hollowbore lathes was installed in the late 1940s to early 1950s and the west and east Craven lathes were installed in 1977.

Visual observations of each of the lathes and vaults were conducted by Jorgensen Forge and Anchor personnel in December 2007 to evaluate they are potential ongoing sources of chemicals of interest. Observations of each of these belowground vaults indicated the concrete flooring, walls, and ceiling were intact with minimal signs of cracking. These observations also identified a film (less than 0.25 inches) of oil surrounding the Hollowbore 58, 59, and 60 lathes and on the floor surface adjacent to the lathes. No visible signs of cutting oil or staining were present outside the building adjacent to the Hollowbore Area indicating tracking of oil from the floor to the paved areas outside the building is not occurring. The Hollowbore 59 and 60 cutting oil storage tank vault contained approximately 1 foot of clear water surrounding the steel storage tank. No drains or sump pumps within the Hollowbore Area were identified that lead to the stormwater drainage system.

There was no visual observation of hydraulic oil on the Frenchman 63 lathe, the west Craven lathe, the east Craven lathe, or the concrete floor surface surrounding the lathes. Observations of each of the belowground vaults indicated the concrete flooring, walls, and ceiling were intact with minimal signs of cracking. The west and east Craven lathes contained a visible layer(less than 1 inch) of hydraulic oil on the concrete floor of each of the vaults. Due to access limitations, visual observations of the cutting oil storage tank for the lathes 59 and 60 could not be conducted.

The depth to groundwater in the Hollowbore Area typically ranges from 10 to 12 feet bgs. The lathe vaults extend to depths ranging from 4 to 10 feet below floor surface (bfs), corresponding to depths of approximately 3 to 9 feet bgs. Because of the vertical separation between the vaults and the typical groundwater depths in the Hollowbore Area, there is no infiltration of groundwater into the vaults. Additionally, the visual observation of the lathe vaults did not provide any indication of groundwater infiltration. A summary of each lathe area and associated equipment is provided in the following subsections.

Hollowbore 58 Horizontal Lathe

The Hollowbore R/W 58 lathe is bolted to a quarter-inch steel plate that sits on an approximately 8- to 12-inch concrete slab floor in the Hollowbore Area (SECOR 1993b; Figure 2-4). A belowground vault exists beneath the lathe that is approximately 9 feet bfs by 17 feet wide by 50 feet long. Based on record drawings and visual observations, the vault is enclosed by concrete walls. This vault houses the lathe motors and pumps, the “clean” cutting oil storage tank, and a cutting oil filtration and recycling system. The cutting oil storage tank is steel-walled with an open top and has a capacity of approximately 5,500 gallons. Oil is pumped from this storage tank to the aboveground lathe. The Material Safety Data Sheets (MSDS) for the cutting oil confirms that the material is non-polychlorinated biphenyl (PCB)-containing.

The lathing process results in a waste product consisting of used cutting oil and metal chips, which are collected in a hopper that moves alongside the lathe. The hopper is equipped with a coarse filter to remove the larger metal chips. These larger metals chips are shoveled into a mobile collection bin and transported to the aboveground chip storage bins located on the paved surface west of the Machine Shop Building (Figure 2-4). Oil passing the coarse filter flows into an oil return trench that leads to the 5,000-gallon steel-walled "dirty" cutting oil tank located in the vault. Oil in this tank is then pumped through a series of five filters and into the "clean" cutting oil storage tank.

Hollowbore 59 and 60 Horizontal Lathes

The Hollowbore Niles 59 and 60 lathes are bolted to a quarter-inch steel plate that sits on an approximately 8- to 12-inch concrete slab floor in the Hollowbore Area (SECOR 1993b; Figure 2-4). A belowground vault that is approximately 7 feet bfs by 20 feet wide by 20 feet long is located between the lathes. This vault serves as a pump room for lathes 59 and 60. Based on record drawings and visual observations, the vault is enclosed by concrete walls and flooring and a steel plate roof. This vault is divided by an interior concrete wall into an east and west compartment. The east compartment contains the piping, motors, and pumps to lathe 60. The west compartment contains the piping, motor, and pump for lathe 59 and two auxiliary pumps and motors and final oil filter. The west compartment also contains an intermediate approximately 240 gallon steel cutting oil storage tank that is approximately 32 inches deep by 56 inches wide by 48 inches long. A sump pump within each of the compartments pumps any accumulated residual and/or spilled cutting oil to the intermediate storage tank.

Cutting oil for lathes 59 and 60 is stored in a belowground double-walled steel storage tank just north of the Hollowbore Area outside the building within the zone of contamination known as Area 1 (Section 4.1.1). The storage tank is has a total capacity of approximately 11,000 gallons, but the volume is maintained at approximately 3,500 gallons. The levels in the tank are manually checked using a measurement stick and Jorgensen Forge personnel do not recall the last time additional cutting oil was added to the storage tank. The storage tank is installed in a concrete vault that is approximately 9 feet bgs by 9 feet wide by 37 feet long. The vault walls and slab are reinforced cast-in-place concrete and are 8 inches and 9 inches, respectively (SECOR 1993b). The vault roof is constructed of pre-cast concrete panels with two manholes providing limited access to the vault. There is no sump pump within the vault and any rain water that slowly infiltrates and accumulates in the vault is manually pumped as necessary to mobile storage totes followed by placement in the steam clean area oil-water separator. The MSDS for the cutting oil confirms that the material is non-PCB-containing.

A steel plate below each of lathes 59 and 60 collects the cutting oil after it is used in the lathe. This used oil is conveyed to a return oil tray alongside the lathe which is equipped with a mechanical chain-driven rake to move the used oil and metal cuttings to a collection point above the Niles pump room. The metal cuttings are separated from the cutting oil and dumped into a collection bucket for subsequent on-site recycling. The used cutting oil continues to a steel-walled central collection reservoir that forms the roof of the vault and subsequently to the final oil filter in the west compartment of the vault.

Frenchman 63 Vertical Lathe

The Frenchman 63 lathe is located on top of a concrete slab floor in the Hollowbore Area (Figure 2-4). A belowground vault exists beneath the lathe that ranges from approximately 4 to 10 feet bfs by 28 feet wide by 18 feet long. Review of Jorgensen Forge files did not locate the as-built drawings for the vault construction. Based on visual observations, the vault is fully enclosed by concrete walls that are intact with minimal signs of cracking. This vault houses the lathe motors and gear boxes. No hydraulic oil is used in this machine and there is no storage of oil or other chemicals in the vault. The machine is operated via crank shafts.

West and East Craven Vertical Lathes

The Machine Shop Area contains two vertical lathes: the west Craven lathe and east Craven lathe (Figure 2-4). There are belowground vaults below each of these lathes. Review of Jorgensen Forge files did not locate the as-built drawings for the vaults construction. Based on visual observations, each vault is fully enclosed by concrete walls that are intact with minimal signs of cracking. The west Craven vault ranges from approximately 3 to 5 feet bfs by 26 feet wide by 11 feet long. The east Craven vault ranges from approximately 3 to 8 feet bfs by 22 feet wide by 18 feet long. Each vault includes a shallower equipment level and a deeper level which houses a sump pump and/or hydraulic oil storage tank. The deeper level of the west Craven vault contains an approximately 30 gallon capacity steel tank used for the storage of hydraulic oil, associated pumping equipment, and a sump pump. The sump pump was installed in case a spill of oil occurs and is plumbed to flexible hosing that extends to an aboveground mobile tote. The deeper level in the east Craven vault contains an approximately 100-gallon capacity steel tank used for the storage of hydraulic oil and associated pumping equipment. There are no sump pumps in this vault.

2.4.1.2 Presses

There are five forge presses located within the Forge Shop Area: the 660, 1,250, 2,500, and 5,000 ton presses, and the L&F straightening press (Figure 2-4). The 660-ton, 1,250-ton, and 2,500-ton press each has an associated belowground press pit and an associated belowground pump room. The 5,000-ton press has an associated belowground press pit and press vault. The characteristics of each of the belowground equipment areas are summarized in Table 2-3 and discussed in further detail below.

Visual observations of each of the press vaults, pits and associated pump rooms were conducted by Jorgensen Forge and Anchor personnel in December 2007 to evaluate whether they are potential ongoing sources of chemicals of interest. A visible film (less than 0.25 inches) of hydraulic oil was observed on the concrete reservoir floor under the pump rooms and oil staining was observed on the concrete flooring and walls within each of the press pits. The concrete flooring, walls, and ceiling within each of the press pits and concrete flooring in the associated pump rooms were intact with minimal signs of cracking. Groundwater infiltration was not observed in any of the press pits and there were no observed drains and/or sump pumps within the press pits and pump rooms.

The depth to groundwater in the Forge Shop Area is approximately 12 feet bgs. The 660-, 1,250-, and 2,500-ton press pits extend to depths ranging from 6 to 10 feet bfs, corresponding to depths of approximately 3 to 9 feet bgs. Because of the vertical separation between the vaults and the typical groundwater depths in the Forge Shop Area, there is no infiltration of groundwater into the pits. Additionally, the visual observation of the press pits did not provide any indication of groundwater infiltration.

The press vault for the 5,000-ton press extends to a total depth of approximately 34 feet bgs. Because of the depth of the press vault, it is possible that there is groundwater infiltration into the vault or release of chemicals from the vault to groundwater. However, the vault is surrounded by a sheet pile wall and reinforced with concrete. A visual inspection did not indicate that there is any groundwater infiltration into the press vault. A summary of each press pit, vault, and pump room associated with the presses is provided in the following subsections.

660-Ton Press

The 660-ton press pit is approximately 6 feet bfs by 6 feet wide by 9 feet long. Review of Jorgensen Forge files did not locate the as-built drawings for the press or pit construction. Based on visual observations, the pit is enclosed by concrete walls. The pit is used for access for maintenance of the press; no equipment or hydraulic oil is stored within the pit. Directly adjacent to the press is a pump room that houses the hydraulic pumps and lines, power unit and an approximately 700-gallon steel tank used for the storage of hydraulic oil. The equipment and steel tank within the pump room are located at floor level and are completely surrounded by an approximately 1-foot-thick concrete containment area that functions as a spill protection reservoir.

1,250-Ton Press

The 1,250-ton press pit is approximately 8 feet bfs by 15 feet wide by 10 feet long. Review of Jorgensen Forge files did not locate the as-built drawings for the press or pit construction. Based on visual observations, the pit is enclosed by concrete walls. The pit is used for access for maintenance of the press; no equipment or hydraulic oil is stored within the pit. Directly adjacent to the press is a pump room that houses the hydraulic pumps and lines, power unit, and an approximately 1,000-gallon steel tank used for the storage of hydraulic oil (Figure 2-4). The equipment and steel tank within the pump room are located at floor level and are completely surrounded by an approximately 1-foot-thick concrete containment area that functions as a spill protection reservoir. A dual-intake pump is located in the press pit. If residual oil accumulates in the pit or a spill occurs, this pump conveys the hydraulic oil through piping directly to the oil-water separator (Section 2.4.17). This piping (as well as the underground piping for the 2,500-ton and 5,000-ton press pits discussed below) is contained within a historically used steam pipe tunnel. This pipe tunnel contains a single sump pump that is plumbed to the oil-water separator just west of the Aluminum Heat Treat Building (Figure 2-4) and functions as an emergency containment if a pipe break occurs.

<u>2,500-Ton Press</u>

The 2,500-ton press pit is approximately 10 feet bfs by 15 feet wide by 20 feet long. Review of Jorgensen Forge files did not locate the as-built drawings for the press or pit construction. Based on visual observations, the pit is enclosed by concrete walls. The pit is used for access for maintenance of the press; no equipment or hydraulic oil is stored within the pit. Approximately 75 feet northwest of the press pit (Figure 2-4) is a pump room that that houses the hydraulic pumps and lines, power unit, and an approximately 1,500-gallon steel tank used for the storage of hydraulic oil. The equipment and steel tank within the pump room are located at floor level and are completely surrounded by an approximately 1-foot-thick concrete containment area that functions as a spill protection reservoir. A dual-intake pump is located in the pit. If residual oil accumulates in the pit or a spill occurs, this pump conveys the hydraulic oil through underground piping directly to the oil-water separator.

<u>5,000-Ton Press</u>

The 5,000-ton press pit is approximately 35 feet bfs by 50 feet long by 30 feet wide. Review of Jorgensen Forge files did not locate the as-built drawings for the press or pit construction. Based on visual observations, the pit is enclosed by concrete walls. The press pit is connected to a dual-level underground vault (Figure 2-4). The vault is double-walled with an internal sheet piling surrounded by concrete. The first level is approximately 12 feet bfs and houses the hydraulic conduit for the press. The second level is directly below the first level at approximately 35 feet bfs. The lower level houses the pump room, power station, hydraulic lines, and an approximately 4,000-gallon steel tank used for the storage of hydraulic oil. The hydraulic oil storage tank is contained within a concrete berm to function as a spill control reservoir.

Separate sump pumps service each level of the underground vault. If a spill occurs or residual oil accumulates on either level of the vault, these pumps convey the hydraulic oil through underground piping to the oil-water separator.

L&F Straightening Press

The L&F straightening press is a horizontal straightening press. The press pit is a shallow pit located approximately 2.5 feet bfs by 9.5 feet long by 22.5 feet wide. Review of Jorgensen Forge files did not locate the as-built drawings for the press or pit construction. The press equipment nearly fills the shallow belowground pit limiting visual observations of the integrity of the concrete walls and floor. The pit is used for access for maintenance of the press; no equipment or hydraulic oil is stored within the pit. Directly adjacent to the press pit (Figure 2-4) is an elevated concrete platform that is 1 foot above floor surface and holds an approximately 700-gallon hydraulic oil storage steel tank for operation of the press, press pumps, and non-contact cooling water heat exchanger. The heat exchanger uses tap water and the heat exchange discharge is monitored via a thermostatic control and discharged as necessary directly to the oil-water separator directly west of the Aluminum Heat Treat Area (Section 2.4.1.8). There are no sumps within the pit or drains connected to the stormwater conveyance system.

2.4.1.3 Ring Mill

The ring mill is located in the southeastern corner of the Forge Shop Area (Figure 2-4) and is used to cut aluminum forgings to precise specifications. The ring mill equipment and power unit are located at ground level. A machine pit is located directly below the ring mill equipment and is approximately 8 feet bfs by 50 feet long by 15 feet wide. This pit is enclosed by concrete walls, is used for maintenance access only, and houses no equipment. There are no pumps in this pit and no connection from the pit to the stormwater conveyance system. Any residual coolant that accumulates in the pit or spills that may occur into the pit is drained to the adjacent coolant storage vault (see below) and/or manually pumped directly to mobile totes, if necessary.

The ring mill coolant storage tank vault is located adjacent to the ring mill machine pit and measures approximately 6 feet bfs by 9 feet long by 12 feet wide. The vault has concrete walls and ceiling and houses two approximately 500-gallon steel open top tanks that extend approximately 6 feet below the lower elevation of the concrete vault walls. It is unknown if the steel tanks below the vault walls are encased in concrete. Excess coolant from the machine pit is conveyed to the east tank via gravity with subsequently flows via gravity to the west tank. The coolant is pumped from the west tank to the ring mill equipment. The coolant within these tanks is water with the following additives:

- 5 gallons of Aqua-Sol 20/20 Industry
- 5 gallons of Cut Through VC
- 5 gallons of Longlife 20/20 Plus

The additives are added approximately every 3 months based on clarity of the coolant and the odor. The vault and tanks are pumped out and the sludge is removed and disposed offsite approximately every 2 to 3 years based on visual observations and equipment usage.

There are no pumps in this vault and no direct connection from the vault to the stormwater conveyance system. Any residual coolant that accumulates in the vault or spills that may occur into the vault are pumped directly to mobile totes.

Visual observations of the machine pit and underground coolant storage vault were conducted by Jorgensen Forge and Anchor personnel in December 2007. The observations identified spots of coolant on the ring mill equipment and visible staining on the concrete walls within the machine pit and coolant storage vault. The observations indicated the concrete flooring and walls within the machine pit and coolant storage vault was intact with minimal signs of cracking. No signs of groundwater infiltration were observed in the machine pit or coolant storage vault and no drains and/or sump pumps were identified within the machine pit or vault.

2.4.1.4 Ring Expander

The ring expander is located in the southeastern corner of the Forge Shop Area (Figure 2-4) and is used to expand the diameter of forged aluminum products. The ring expander machine and power unit are co-located within the machine pit. The machine pit sits directly below the equipment and is approximately 12 feet bfs by 10 feet long by 10 feet wide. The pit is enclosed by concrete walls and houses the hydraulic pumps and lines, lubrication grease system, sump pump, and an approximately 300-gallon hydraulic oil storage steel tank for operation of the ring expander. Any residual hydraulic oil that accumulate in the pit or spills that may occur into the pit are pumped directly to mobile totes via the sump pump. Excess grease on the machine pit and floor are manually scraped off and placed into empty grease kegs and disposed off site.

Visual observations of the machine pit were conducted by Jorgensen Forge and Anchor personnel in December 2007. The observations identified spots of hydraulic oil on the ring expander equipment and visible oil staining on the concrete walls within the machine pit. The observations indicated the concrete flooring and walls within the machine pit was intact with minimal signs of cracking. No signs of groundwater infiltration were observed in the machine pit and no drains and/or sump pumps were identified within the machine pit.

2.4.1.5 Outdoor Scale Vaults

There are underground vaults below the railroad scale and scrap metal scale located outside the main manufacturing building along the southern portion of the SIA (Figure 2-4). The railroad scale is used to weigh bulk railcars that carry purchased scrap metals. This scrap metal is transferred into the scrap storage bins via overhead cranes located west of the scale. The scrap metal in the scrap storage bins is weighed on the scrap metal scale prior to melting in the Melt Shop Area. Both vaults are composed of concrete, reach a depth of approximately 8 feet bgs, and are covered by a weighing platform. These vaults provide underground access for maintenance of the scales; no equipment is stored within the vaults.

Visual observations of both scale vaults were performed by Jorgensen Forge and Anchor personnel in December 2007. The observations indicated that the concrete was intact with minimal signs of cracking and that stormwater infiltration can occur through the cracks in the weighing platforms. The railroad scale vault has a sump that conveys collected stormwater to Outfall 001 (Figure 2-5). The scrap metal scale vault does not have a drain or sump and any accumulated stormwater ponds in the vault and evaporates.

The quality of stormwater that accumulates in each of these vaults has not been evaluated. Potential sources of chemicals to stormwater that infiltrates into the vaults include hydraulic oil from passing railcars and dust or debris that falls through the cracks into the vault. No visible indications of oil staining were observed within the vaults. Discussions with Jorgensen Forge personnel indicate that there has been no observed flooding of either of the vaults in the past.

The Jorgensen Forge personnel indicate that maintenance of the scales occurs approximately annually and includes removal of dust or debris that has collected within the concrete vaults. In addition, the sump pump in the railroad scale vault is surrounded by a fine screen which limits the introduction of solids into the discharge.

2.4.1.6 Melt Shop Area Below Ground Features

The Melt Shop Area includes five areas that extend below the concrete floor slab. These include the arc furnace pit, the AOD pit, the vacuum de-gassing pit, the AOD scale vault, and the ingot mold pit (Figure 2-4). Each of these pits is enclosed by concrete floor and walls with minimal visible cracks. The arc furnace pit houses the two arc furnace units and the ladle used to transfer the molten steel to the ingot pour area. The AOD pit houses the AOD vessel and the adjacent vacuum de-gassing pit houses the vacuum de-gassing vessels, both of which are used to refine the elements within the molten steel. Discussions with Jorgenson Forge personnel indicated that groundwater has not accumulated in the arc furnace or AOD pits and there are no drains or sumps to the stormwater conveyance system in these pits.

The vacuum de-gassing pit is adjacent to the vacuum de-gassing vessels (Figure 2-4) and is approximately 11 feet bgs. Groundwater continuously infiltrates into the vacuum de-gassing pit during periods of high groundwater elevations, collects within a constructed concrete sump, and is conveyed to stormwater Outfall 002 via an underground sump pump (Figure 2-5). Visual observations of the vacuum de-gassing pit sump by Jorgenson Forge personnel in December 2007 identified that the groundwater infiltration into the pit can come into contact with dust fallout from the aboveground operations in the vicinity. The floor area in the groundwater infiltration area is routinely swept to minimize the accumulation of dust and introduction into the pit. The quality of water that accumulates in the vacuum de-gassing pit has not been evaluated.

The AOD scale vault is adjacent to the AOD vessel (Figure 2-4), is approximately 8 feet belowground, and provides underground access to the scale for maintenance. The vault is covered with a steel plate that significantly limits the introduction of solid material into the vault. Visual observation of the vault by Jorgenson Forge and Anchor personnel in December 2007 indicates that it is enclosed by a concrete floor, walls, and ceiling that are intact and show minimal signs of cracking. The vault includes a single sump pump that is piped to Outfall 003. Routine investigations of the vault by Jorgensen Forge personnel indicate that accumulation of water or particulates has not been observed, and that the sump pump has not been maintained in several years due to lack of use. No water was present in the vault during the December 2007 visual observations. It is likely that the sump was designed for emergency purposes to ensure drainage of any fluids that may enter the pit prior to damaging the scale electronics.

The ingot mold area is located on the northern edge of the Melt Shop Area in a belowground pit (Figure 2-4). Following melting, the ladles pour the molten steel into the ingot molds stored in the pit. The pit is approximately 8 feet deep by 75 feet long by 16 feet wide. Visual observation of the pit by Jorgenson Forge and Anchor personnel in December 2007 indicates that it is enclosed by a concrete floor, walls, and ceiling that are intact and show minimal signs of cracking. No signs of water were observed in the pit or sump pumps or drains that are connected to the stormwater conveyance system. Jorgenson Forge personnel indicated that groundwater has not accumulated in the pit.

2.4.1.7 Steam Clean Area

The Steam Clean Area (also known as the "wash rack") is located in the central portion of the SIA (Figure 2-4). The Steam Clean Area is used to steam clean mobile equipment and small equipment that is scheduled for repair. Jorgensen Forge personnel also use the Steam Clean Area to dispose of water that was separated from oil-water mixtures contained in mobile oil storage totes. The Steam Clean Area consists of a steel grate at ground surface underlain by a concrete reservoir that is approximately 1 foot bgs. The concrete reservoir is graded such that fluids are gravity fed to the connected oil-water separator on the north end of the Steam Clean Area.

As discussed in Section 2.4.1.8 and shown in Figure 2-5, the effluent water from the oil-water separator is gravity fed directly to the Metro King County sewer system (Metro). The oil-water separator is inspected approximately monthly by Jorgensen Forge personnel and cleaned as necessary by removing the steel grate, shoveling out the contents into sealable containers , and disposing of the material appropriately offsite. Visual observation of the Steam Clean Area by Jorgenson Forge and Anchor personnel in December 2007 indicated that the steel-grate surface is not bermed, and therefore, potential offspray during cleaning of equipment and/or spills during transfer of oil-water mixtures could reach the pavement and migrate to the nearby stormwater catch basins and subsequently the LDW. However, no evidence of spills was documented in the Jorgensen Forge files.

Visual observations of the Steam Clean Area were conducted by Jorgensen Forge personnel in December 2007. The observations indicated the concrete flooring underlying the steel grate was intact with minimal visible cracks. There were signs of oil staining on the pavement surrounding the Steam Clean Area but no visible sheen in stormwater migration from the vicinity of this area. There were several mobile totes stored on top of the steel grate pending transfer to the oil-water separator.

2.4.1.8 Oil-Water Separators

There are three oil-water separators located on the SIA: one in the central-western portion of the SIA adjacent to the Steam Clean Area, one within the Decommissioned Oil Storage Area just east of the Machine Shop Area, and one just west of the Aluminum Heat Treat Building (Figure 2-4). All three separators function to passively separate the oil-water mixtures based on density differences between the oil and water (i.e., oil floats to the surface of the water and is manually removed by Jorgensen Forge personnel) and the separated water fraction is discharged to Metro as shown in Figure 2-5.

As discussed in Section 2.4.1.7, the oil-water separator located in the central-western portion of the SIA (Figure 2-4) is used to separate oil-water mixtures introduced in the Steam Clean Area. The separator is connected to the Steam Clean Area at approximately 1 foot bgs and is overlain by a steel grate at the ground surface. The separator is composed of two hydraulically connected tanks separated by a concrete baffle to increase the efficiency of the oil separation. The two tanks have a footprint that is approximately 6.5 feet bgs by 2 feet long by 2 feet wide and is encased in concrete. The tank is visually inspected periodically by Jorgensen Forge personnel and separated oil is manually pumped into mobile totes pending off-site disposal. Visual observations of the concrete vault by Jorgensen Forge and Anchor personnel in December 2007 indicated the concrete was intact with minimal cracks. The separated water from the downgradient tank is gravity fed directly to Metro via an inverted pipe that extends to the lower portion of the downgradient tank.

The oil-water separator located in the Decommissioned Oil Storage Area (Figure 2-4) is used for separation of hydraulic oil/water mixtures conveyed via underground pipes from the 1,250-, 2,500-, and 5,000-ton presses. This oil-water separator is one of ten 15,000-gallon capacity steel tanks that were historically used for heating oil storage and diesel fuel as backup fuel supply. The tanks are contained within a concrete vault with walls extending several feet above and below ground surface. The tanks were installed in 1974, reportedly using the floor of an old building as the underlayment for the tanks (SECOR 1992). Based on discussions with Jorgenson Forge personnel there is no access to the concrete vault as the entire vault area surrounding the tanks was historically filled, and nine of the tanks were decommissioned by closure in place.

Currently, access to the oil-water separator tank is limited to the surface of the eastern most edge of the tank. This access point allows Jorgensen Forge personnel to manually check the level of the oil and water in the tank. As necessary, employees manually pump the separated oil to the adjacent covered and concrete bermed centrifugation unit. The centrifugation removes coarse particulates from the hydraulic oil and the "clean" fraction is pumped to an adjacent covered and bermed steel tank for subsequent reuse in the presses. To increase the efficiency of the oil-water separation, the water from the bottom of the separator is pumped via underground piping directly to the oil-water separator located adjacent to the Aluminum Heat Treat Building (further discussed below) to remove any remaining residual hydraulic oils from the water.

The oil-water separator located west of the Aluminum Heat Treat Area within the Area 2 Plume (Figure 2-4) is used to separate hydraulic oil-water mixtures from the following sources: water from the oil-water separator in the Decommissioned Oil Storage Area (discussed above); aboveground Q4, portable, and Q8 quench tanks process water (Section 2.4.1.12); water from the compressed air condensate traps and tunnel sump pump (Section 2.4.1.2); and, non-contact cooling water from the L&F press cooling water unit. The construction of the oil-water separator was described in as-built drawings located in the Jorgensen Forge files. The separator tank is composed of two hydraulically connected chambers separated by a concrete baffle. The tank is encased in concrete, is approximately 6 inches bgs and has dimensions of 5 feet deep by 5 feet long by 8 feet wide. The tank is located just beneath (approximately 8 inches) the roadway pavement and structural concrete and access to the tank is limited to two manholes in the pavement. The separated water from the downgradient tank is gravity fed directly to Metro via an inverted pipe that extends to the lower portion of the tank. The tank is visually inspected periodically by Jorgensen Forge personnel and separated oil is manually pumped into mobile totes pending off-site disposal. During previous cleaning of the tank, Jorgensen Forge personnel noted that the concrete vault foundation was intact with minimal cracks.

2.4.1.9 Underground Storage Tanks

There is currently one 600-gallon double-walled steel underground storage tank (UST) located below the west end of the main office building (Figure 2-4) that is used for storage and distribution of heating oil fuel for the main office building. As discussed in Section 3.1, this UST is not regulated by Ecology due to its size and use. The UST has a fuel gauge monitor installed to monitor liquid levels. Frequent monitoring of the current fuel gauge indicates that the UST is not leaking. Tightness testing of the UST was last conducted in January 1991 and indicated the tank was tight (SECOR 1992). Review of Jorgensen Forge files showed no reported spills or overfilling of the UST. Selected soil samples from borings collected within the direct vicinity of the UST were tested for total petroleum hydrocarbon (TPH) in 1990 and showed no detections of TPH concentrations above the laboratory detection limits (Dames and Moore 1990b).

2.4.1.10 Chemical Storage Areas and Containment

A detailed summary of each of the storage area contents, containment, operating processes, and best management practices (BMPs) for preventing and minimizing impacts from potential releases in each of the chemical storage areas is detailed in Table 2-4 and briefly summarized below. A complete inventory of the chemicals stored on the SIA (last updated in 2005) is summarized in Attachment E of Appendix C. The primary chemical storage areas (i.e., over 100 gallons of storage) located on the SIA are shown on Figure 2-4 and briefly summarized below:

- Liquid gas storage – three variable volume tanks of liquid gas (i.e., oxygen, argon, and nitrogen) and a 6,000-gallon propane tank are stored on aboveground bermed, concrete platforms.

- Clean hydraulic oil storage – 4,000-gallon steel tank in aboveground bermed, covered area with concrete floor just south of the Decommissioned Oil Storage Area.
- Cutting oil and variable capacity hydraulic oil storage tanks located in vaults or pump houses associated with each piece of machinery as summarized in detail in Sections 2.4.1.2, 2.4.1.4, and 2.4.1.6.
- Used hydraulic oil storage – 1,200-gallon steel tank in aboveground, bermed, covered area with concrete floor just south of the Decommissioned Oil Storage Area and mobile totes in a bermed, covered area with concrete floor south of the Melt Bag House.
- Clean/dirty soluble cleaning oil – two adjacent 750-gallon aboveground, high density polyethylene (HDPE) tanks in bermed, covered area with concrete floor just south of the Decommissioned Oil Storage Area.
- Petroleum oil storage area – storage/distribution of petroleum oil from 55-gallon drums stored within a bermed, covered building with concrete floor.
- Ring mill coolant storage – coolant is stored belowground within two 500-gallon belowground, open top, steel storage tanks contained within a concrete vault.
- Gasoline AST – 300-gallon steel tank in a bermed area on a concrete pad just west of the laboratory.
- Diesel fuel AST – 3,000-gallon steel tank that is located on a bermed, concrete pad in a covered storage building on the northwest corner of the SIA.
- Used solvent storage – on concrete pad within the covered storage building on the northwest corner of the SIA.
- Diesel fuel UST – 600-gallon steel tank located just west of the office building.

Smaller quantities of frequently used chemical solutions (e.g., machine oils, degreaser, etc.) are stored in containers inside the buildings. Each of the chemical storage areas is clearly marked and contains spill response information posted in the immediate vicinity. There are no drains within the storage areas and/or containment structures. The Spill Control Plan for the facility provides response information for a chemical release from any of these chemical storage areas. A copy of the Spill Control Plan is included in Appendix C.

2.4.1.11 Waste Product Storage Areas and Containment

There are a number of waste products generated by operations on the SIA. A detailed summary of the solid waste storage areas, containment, operating processes and BMPs for preventing and minimizing impacts from potential releases in each of the waste product storage areas is detailed in Table 2-5. Smaller quantities of used chemicals (e.g., used petroleum oil, solvents, etc.) are stored in appropriate containers within the interior of buildings. The waste product storage areas located on the SIA are shown on Figure 2-4 and briefly summarized below:

- Used petroleum oil – 2,000-gallon steel tank in aboveground, bermed, covered area with concrete floor just south of the Decommissioned Oil Storage Area
- Used hydraulic oil – used hydraulic oil is pumped into mobile totes over the Steam Clean Area stormwater grate (Section 2.4.1.7) and transported to the covered, bermed, concrete floored storage shed formerly referred to as the Acid House. The Acid House formerly (i.e., until the early 1990s) contained three aboveground tanks that stored 50 percent hydrochloric acid. The acid was used to etch and clean forged metal samples prior to laboratory testing. A drain line constructed of unknown material and unknown integrity led from the Acid House to an underground neutralization pit (Figure 2-4) that contained concrete sidewalls and an unlined bottom with a layer limestone rocks.
- Billet grinding swarf – dust/swarf is collected through a vacuum and filter system and conveyed to the Billet Grinding Bag House located on a concrete pad along the southern portion of the SIA and subsequently transported to an uncovered, paved area just west of the Melt Bag House (Figure2-4; Section 2.4.2.3).
- Melt Bag House dust – dust generated during melting operations is collected by the melting bag house vacuum conveyed through a closed piping system to the Melt Bag House (Figure 2-4) and deposited into a closed, sealed bin, on a concrete slab within a building (Section 2.4.2.1).
- Chip storage – chips from the various lathes (Section 2.4.1) are stored on uncovered, unpaved ground in the southwestern portion of the SIA or within the steel aboveground storage bins just west of the Machine Shop Area

(Figure 2-4). Jorgensen Forge is currently evaluating reconfiguration and paving within the scrap storage bins along the southern property line for chip storage.

- Slag storage – Slag from the Melt Shop Area furnaces (Section 2.4.2.2) are stored on uncovered, unpaved ground in the southwestern portion of the SIA (Figure 2-4).

2.4.1.12 Quench Tanks

There are three aboveground (Q4, Q7, and portable) and three belowground (Q1, Q2, and Q3) quench tanks located in the Heat Treat Area and one aboveground quench tank (Q8) located in the Aluminum Heat Treat Area building (Figure 2-5). Quenching is the process of quickly cooling steel directly following heat-treatment in the forge furnaces. The extreme heat in the forge furnaces removes potential chemicals that may have been on the forged product minimizing the potential introduction of chemicals into the quench solution during the quenching process.

The Q1, Q2, and Q3 quench tanks (Figure 2-5) are adjoining (yet separate) belowground vertical steel tanks that extend approximately 30 feet bfs and are used for quenching steel products. The three quench tanks are located within a three-level belowground vault that is approximately 30 feet bgs by 24 feet long by 30 feet wide and was installed in approximately 1970. The vault is double-walled with an internal sheet piling surrounded by concrete. Access to the vault is via a stairwell. In addition to the quench tanks, the vault also contains one vertical heat treating furnace and support equipment for the tanks and furnace. Visual observations of the concrete vault by Jorgensen Forge and Anchor personnel in December 2007 indicated the concrete was intact with minimal cracks. A single sump pump serves to remove any accumulated fluids on the bottom of the vault to an aboveground mobile tote. There is no current connection between any of the quench tanks or the vault and the stormwater conveyance system.

The Q1 quench tank currently uses Martemp oil. Jorgensen Forge personnel indicated the last known removal of this oil for maintenance was approximately in the mid-1990s. During this maintenance event, the Martemp oil was pumped from the quench tank and temporarily stored in a portable tanker trailer. Repairs were made and the oil was pumped back into the quench tank. Additional Martemp oil was added to the quench tank at that time and no additional oil has been added since. The Q2 tank historically used Quench "K" oil. Although this tank remains full of Quench "K" oil, the tank is currently not used and Jorgensen Forge personnel do not recall the last time this tank was used. The Q3 tank historically used water. This tank is currently empty and the last known use was approximately 1994.

The Q4 quench tank (Figure 2-5) is an aboveground steel tank used for the quenching of steel products using water as the quench fluid. The tank is connected to a cooling tower that functions to continuously recirculate the quench water to increase the efficiency of the quenching process. If there is any overflow water from the tank during placement of the steel, the overflow volume enters a drain line that is plumbed directly to the oil-water separator located west of the Aluminum Heat Treat Area building (Section 2.4.1.8) and subsequently discharged to Metro. The Q4 quench tank is drained approximately every 6 months for maintenance. During these maintenance activities, the full volume in the tank is removed and piped directly to the oil-water separator and subsequently to the Metro system.

Facility personnel indicate that although portable, the aboveground steel portable quench tank has been maintained in its current location for many years (Figure 2-5). This quench tank is used for quenching smaller steel loads using water as the quench solution. The tank has no external piping and is manually filled as necessary to replace the contents due to evaporation. During placement of loads into the quench tank, facility personnel monitor the water level in the tank to minimize the potential for overflow from the tank. The tank is gravity drained at least 2 or 3 times a week to support quenching activities. The removed volume is piped directly to the oil-water separator located west of the Aluminum Heat Treat Area building and subsequently discharged to Metro (Section 2.4.1.8).

The Q7 quench tank (Figure 2-5) is an aboveground steel tank that is used for quenching steel products. Q7 uses a mixture of UCON Quenchant RL polymer and water. The tank is contained within a second steel tank of slightly larger size that functions as containment in case of a spill. Any overflow that occurs in the main quench tank enters the outer tank and is pumped back into the main quench tank. The quench tank is not emptied or pumped out. When maintenance is required on the tank (Jorgensen Forge personnel recalled a single maintenance event in approximately the last 15 years), the polymer-water mixture was pumped to a rented Baker tank, the repairs were conducted, and the mixture was pumped back into the main reservoir. When additional polymer needs to be added, approximately every 3 years, barrels are suspended from overhanging cranes and carefully drained directly into the main reservoir.

The Q8 quench tank (Figure 2-5) is a belowground vertical tank used for quenching aluminum products using water as the quench fluid. The tank is manually filled using tap water and monitored to ensure that placement of loads into the tank does not cause overflow. The tank is drained once or twice per month directly to the oil-water separator located west of the Aluminum Heat Treat Area building (Section 2.4.1.8) using a dedicated pump attached to the tank.

2.4.1.13 Metallurgical Laboratory

The metallurgical laboratory (Figure 2-4) performs chemical and physical testing of the steel produced in the manufacturing process. Based on discussions with laboratory personnel, only small quantities of acids (i.e., hydrochloric acid, sulfuric acid, and oxalic acid) and a base (i.e., sodium hydroxide) are used to evaluate the corrosion properties of the forged steel. The etching is conducted in a single hood. All spent acids and bases are stored in water tight containers, and disposed of by Safety-Kleen as hazardous waste. Physical testing is limited to tensile strength testing. There are no catch basins within the laboratory and no laboratory discharges enter the stormwater drainage system.

2.4.2 Manufacturing Waste Products

The current operations on the SIA include the production, handling, and off-site disposal of the following manufacturing waste products: dust from the Melt Bag House, dust/swarf from the Billet Bag House, and furnace slag. A detailed summary of operations on the SIA, including the processes by which the manufacturing waste products are generated, is provided in Section 2.4. The following subsections present a summary of the composition of waste products on the SIA.

2.4.2.1 Melt Bag House Dust

The melting bag house vacuum operation collects dust generated during melting operations through a bag filter system. The captured dust is conveyed through a closed piping system to the Melt Bag House (Figure 2-4) and deposited into a closed, sealed bin, which is located on a concrete slab within a building. Disposal of the Melt Bag House dust is regulated by RCRA and tracked by EPA under the Toxics Release Inventory (TRI), which monitors toxic chemical releases and other waste management activities conducted annually by certain covered industry groups and federal facilities. The TRI indicates that the waste products generated by operations at the SIA are by-products, indicating that they are produced coincidentally during the manufacture, process, or other use of another chemical substance or mixture and, following its production, are separated from that other chemical substance or mixture.

To support waste disposal characterization of the Melt Bag House dust, Jorgensen Forge sampled the material in 2001, 2004, and 2007. According to Mr. Ron Altier, Vice President of Operations at Jorgensen Forge, the operations that result in generation of melt bag house dust have changed since 2004 due to the production of different products (Altier 2007). Therefore, the laboratory analytical results (Appendix D) of the dust samples collected in May 2007 are representative of the waste that is currently generated by operations on the SIA. The laboratory analytical results indicate that the dust is composed primarily of iron and manganese and contains concentrations of chromium, copper, lead, nickel, silver, and zinc. A summary of the laboratory analytical results for the chemicals of interest on the SIA is summarized on Table 2-6.

2.4.2.2 Furnace Slag

Slag is generated by the AOD furnace and by the electric arc furnace (EAF), as described in Section 2.4. According to Mr. Ron Altier, the slag is a product of an oxidation process that is conducted to reclaim chromium (Altier 2007). The oxidation is conducted by adding a reductant consisting of silicon and a lime flux. The by-product is a dicalcium silicate. The AOD and EAF slag were sampled and analyzed in 2001, 2004, and 2007 (Altier 2007). A complete summary of the laboratory analytical results is provided in Appendix D and a summary of the results for the chemicals of interest on the SIA is provided in Table 2-6.

The laboratory analytical results indicate that the AOD slag consists primarily of calcium and magnesium and also contains concentrations of arsenic, chromium, copper, nickel, and zinc. The laboratory analytical results indicate that the EAF slag is composed primarily of calcium, iron, manganese, and magnesium and also contains concentrations of arsenic, chromium, copper, nickel, silver, and zinc.

2.4.2.3 Billet Grinding Bag House Swarf

The Billet Grinding Bag House vacuum operation collects dust and small size swarf generated during the grinding operations through a bag filter system. The grinding garnet MSDS indicates the garnet is composed of aluminum oxide, zirconium oxide, silicon carbide, calcium oxide, iron disulfide, cured resin, silicon dioxide, and refined oil. Some small fraction of the swarf is anticipated to be composed of this garnet. The captured dust/swarf/garnet is conveyed via a closed system to a sealed hopper and the resulting grinding “swarf” is transferred from the sealed hopper and stockpiled on site on pavement surrounded by stacked Ecology blocks (Figure 2-4). The swarf has not been sampled for chemical composition. Jorgensen Forge is currently evaluating a process where the swarf is transferred from the sealed hopper directly into sealed bins for off-site recycling.

2.4.3 On-Site Stormwater Conveyance System

Stormwater runoff from the SIA discharges to the LDW under Ecology’s National Pollutant Discharge Elimination System (NPDES) Industrial Stormwater General Permit (No. SO3-001196; prior permit #WA 003078-3; Baseline Permit). Discharge under this Baseline Permit is in compliance with the provisions of the State of Washington Water Pollution Control Law, Chapter 90.48 RCW, and the Clean Water Act, Title 33 of the U.S. Code, Section 1251, et seq.

In compliance with the requirements of the Baseline Permit, Jorgensen Forge implemented a Stormwater Pollution Prevention Plan (SWPPP), with periodic updates (Anchor 2006 is the most recent update) and has conducted quarterly monitoring of stormwater discharges since April 2003. The Baseline Permit requires water sampling for the following analytes during the defined rainfall conditions: total suspended solids (TSS), turbidity, pH, hardness, oil and grease, and total metals (i.e., copper, lead, and zinc). Each of these analytes has associated benchmark values, except TSS. These benchmark values are not water quality standards and are not permit limits. Rather, they serve as indicator values for screening stormwater quality against potential water quality violations. Values at or below the benchmark values are considered unlikely to cause a water quality violation. A summary of the quarterly stormwater analytical results is provided in Section 5.6.1.

Outfalls identified as Outfalls 001 through 009 existed on the SIA and discharged stormwater to the LDW (Figure 2-5). The SIA maintained an Industrial NPDES Permit from 1985 to 1996 for Outfalls 001, 002, and 003. These outfalls are currently active and operate under the Baseline Permit, as detailed below. Jorgensen Forge formally terminated the Industrial NPDES Permit in May 1998, through written notification to Ecology documenting that the industrial discharges at the SIA had been eliminated. In the mid-1980s, Outfalls 005 to 009 were plugged using concrete, and a dye tracer study was used to confirm complete enclosure of each outfall (Linne 2003). There is no documentation regarding the origins of stormwater that discharged through Outfalls 005 to 009. Attempts to trace the stormwater lines to identify the origins have been unsuccessful, given that the lines are plugged in close proximity to the shoreline discharge locations.

The SIA contains a stormwater conveyance system that consists of 17 catch basins and underground piping that currently discharges to the LDW through permitted outfalls and four catch basins that discharge to Metro on the eastern portion of the SIA (Figure 2-5). The stormwater conveyance system captures stormwater runoff from impermeable surfaces, including paved areas outside the existing buildings and the building roof drains. No surface water within the interior of the buildings is captured or plumbed to the stormwater collection and conveyance system. Stormwater runoff from a portion of the eastern side of the SIA discharges to the Metro system (Figure 2-5). There are currently no direct discharges of process wastewater or effluent to the LDW.

Stormwater runoff from the SIA currently discharges to the LDW through Outfalls 001, 002, and 003 (Figure 2-5). Outfall 004 does not appear to be affected by rainfall events, although it is permitted under the Baseline Permit. A summary description of each of these active outfalls is provided below and shown on Figures 2-3a to 2-3c:

- Outfall 001 is an active outfall located on the south side of the SIA that consists of a 12-inch-diameter pipe discharging stormwater from impermeable surfaces and roof drains on the southern portion of the SIA. Stormwater that infiltrates through the railroad scale weighing platform and groundwater that infiltrates into the vacuum de-gassing pit is pumped to this outfall (see Section 2.4.1.5). The outfall discharge location is below the mean higher high water (MHHW) elevation, at an elevation of 12.42 feet MLLW, and is exposed through a concrete panel in the concrete bulkhead wall. The terminus of the outfall is recessed into the concrete bulkhead wall a short distance.
- Outfall 002 is an active outfall located on the south side of the SIA that consists of a 12-inch-diameter corrugated metal pipe discharging stormwater from impermeable surfaces, including roof drains on the southern portion of the SIA. The outfall discharge location is located below the MHHW elevation, at an elevation of 9.04 feet MLLW and is exposed through the sheet pile bulkhead wall. The terminus of the outfall extends approximately 6 inches beyond the edge of the sheet pile bulkhead wall.
- Outfall 003 is an active outfall located on the south side of the SIA that consists of an 18-inch-diameter reinforced concrete pipe discharging stormwater collected from impermeable surfaces, including roof drains, from the majority of the SIA (Figure 2-5). A sump pump in the AOD scale vault is plumbed to this outfall (see Section 2.4.1.5). The outfall discharge location is located below the MHHW elevation, at an elevation of 8.91 feet MLLW, and is exposed through the sheet pile bulkhead wall. The terminus of the outfall extends approximately 1 foot beyond the sheet pile bulkhead wall.
- Outfall 004 is a permitted outfall that is only used on rare occasions when the cooling-tower pump station malfunctions or a pipe breaks, leading to flooding in

the cooling-tower pump station belowground basin. The outfall discharge location consists of a 12-inch-diameter ductile iron pipe located below the MHHW elevation, at an elevation of 6.99 feet MLLW, and is exposed through riprap rock on the bank face. The terminus of the outfalls extends several feet beyond the shoreline bank.

2.4.4 Current Stormwater Best Management Practices

Jorgensen Forge completed a SWPPP (Anchor 2006) in compliance with the requirements of the Baseline Permit to reduce pollutants entering storm water discharges. This is accomplished by implementing stormwater BMPs, which are activities, prohibitions of practices, maintenance procedures, and other physical, structural, and/or managerial practices to prevent or reduce pollutant loading into surface waters of Washington State. BMPs include treatment systems, operating procedures, and practices to control the potential for significant amounts of pollutants to enter the stormwater system.

Operational BMPs address daily operations and establish procedures, guidelines, and schedules for activities intended to reduce pollutants to the stormwater system. To ensure the appropriate operational BMPs were identified and adequately implemented, maintained, and modified as necessary, Jorgensen Forge identified a Pollution Prevention Team. The responsibilities of this team are to:

- Oversee implementation of the SWPPP, including BMPs
- Comply with implementation schedule
- Reports/records: ensure that results and observations of quarterly inspections are recorded and made part of the SWPPP
- Inspections: oversee dry season/wet season/quarterly stormwater monitoring inspections
- Training: conduct environmental training, as necessary, in order to identify Jorgensen personnel who are responsible for developing the SWPPP and assisting in its implementation, maintenance, and modification.

Jorgensen Forge conducts housekeeping activities to minimize the potential for SIA operations to affect surface water, groundwater, and soil quality. These activities include ongoing maintenance and cleanup of areas that are most likely to contribute chemicals to stormwater, including outside paved areas adjacent to catch basins, the melt and billet bag houses, and equipment adjacent to sumps that collect groundwater (see Section 2.1.1 above). Specifically, at a minimum, the following housekeeping practices are implemented:

- Melt and billet bag house concrete floors are swept regularly.
- All outside catch basins are clearly identified as storm drains (e.g., they are labeled "no dumping – drains to river"), and contain heavy duty filter fabric and oil-absorbent booms that are replaced as necessary.
- All paved surfaces are swept regularly (i.e., currently monthly to bi-monthly).
- Stormwater catch basins are monitored for solids accumulation and cleaned as necessary.
- Accumulation of wastes, both within and outside of buildings, is avoided.
- Lids to liquids stored in cans and drums are tightly covered when not in use.
- Drip pans or other protective devices to catch incidental spillage and drips are required for all equipment above sumps that collect groundwater.
- Grease and oil rags are placed immediately into drums for appropriate disposal.
- All equipment and support equipment used at the SIA is inspected regularly for leaks or drips.

Training of Jorgensen Forge employees is conducted to educate all applicable employees on stormwater management issues. Training related to stormwater management includes the following:

- Review of the SWPPP and in particular, the BMPs and the Spill Control Plan (Appendix C), with current employees and new employees as part of their orientation
- Annual review and update of the SWPPP, as necessary
- Participation in the Dangerous Waste Management Training Program
- Participation in the Environmental Emission and Prevention Program
- Appropriate training of the individual(s) responsible for overseeing the SWPPP (Anchor 2006) and BMPs

2.5 Surrounding Facilities and Potential Off-Site Sources

The SIA is bordered to the north by Boeing's Plant 2 Facility, to the south by vacant land owned by Boeing (commonly referred to as the Boeing-Isaacson property), to the west by the LDW, and to the east by East Marginal Way South followed by King County International Airport (KCIA) (Figure 1-2). The SIA is located in a predominantly industrial area (Figure 1-1). The adjacent LDW is an EPA Superfund Site.

2.5.1.1 Boeing Plant 2 Facility

The Boeing Plant 2 facility (Plant 2) occupies approximately 109 acres of developed, topographically flat land, covered by buildings and paved yards. Plant 2 is bounded on the east by East Marginal Way, on the south by the SIA, on the north by Slip 4 and Emerald Services, Inc., and on the west by the LDW. Plant 2 is divided into northern and southern sections by the 16th Ave South arterial, which services the 16th Ave South Bridge over the LDW.

The Plant 2 facility was built on farmland in the late 1930s, and became a significant manufacturing facility during World War II. Since 1936, Boeing has specialized in manufacturing aluminum alloy, steel alloy, and titanium alloy parts for airplanes, using a wide range of hazardous chemicals including heavy metals (i.e., chromium, zinc, copper, cadmium, and silver), cyanide, mineral acids and bases, petroleum products, PCBs, and chlorinated solvents such as trichloroethene (TCE). Current operations at Plant 2 are limited to vehicle maintenance, vehicle traffic between buildings, and operation/support of research and development activity (Ecology and Environment 2007).

Plant 2 is listed in Ecology's online Confirmed and Suspected Contaminated Site List (CSCSL) database (Facility Site ID No. 2100; Ecology 2007b). Plant 2 is listed as having confirmed groundwater, surface water, soil, air, and sediment contamination. The contaminants are listed as halogenated organic compounds, EPA priority pollutants, metals and cyanide, PCBs, petroleum products, non-halogenated solvents, and polycyclic aromatic hydrocarbons (PAHs). According to this database, Plant 2 was listed as a hazard site on February 25, 1992.

Boeing is investigating and cleaning up hazardous waste contamination at Plant 2, under RCRA (Identification No. WAD009256819). In 1994, EPA and Boeing signed an Administrative Order on Consent, which required Boeing to perform corrective actions at Plant 2 in a manner acceptable to the EPA. The facility initially developed a RCRA Facility Investigation (RFI) followed by development of an Uplands Corrective Measure Study (CMS). Plant 2 has been divided into seven "CMS Study Areas" to facilitate the development and screening of RCRA corrective measures.

The CMS Study Areas that are a potential source of chemicals of interest via groundwater to the SIA include the South Yard Area and the 2-66 Area, given their proximity to the SIA and the prevailing groundwater migration from Plant 2. The direction of groundwater flow at Plant 2 is to the south-southwest, toward the SIA in some areas.

A description of the environmental conditions in each of these areas is summarized below (Ecology 2007a).

South Yard Area

The southeastern portion of Plant 2 is referred to as the South Yard Area and consists of approximately 13 acres (Figure 1-2). Within the South Yard Area, there are 18 RCRA units that fall in the following categories (Ecology 2007a):

- Two Stormwater Management Units (SWMUs) are RCRA-regulated treatment, storage, and disposal (TSD) facilities
- Ten SWMUs are not TSD facilities, but defined as "any discernable unit at which solid wastes have been placed at any time"
- Three Areas of Concern
- Three Other Areas (OAs)

Ecology and Environment (2007) noted that contaminants of concern (COCs) within the South Yard Area groundwater and soils include: metals, volatile organic compounds (VOCs), SVOCs, PCB aroclors, and TPH. Given the prevailing groundwater flow direction from a portion of the South Yard Area is to the southwest (i.e., from Plant 2 to the SIA), there exists a potential for these COCs to impact environmental quality on the SIA. The migration pathway evaluation presented in Section 6.8 accounts for this potential off-site source of groundwater contamination.

2-66 Area

The 2-66 Area is bordered to the east by the 2-60 Area and the South Yard Area, to the southeast by the SIA, and to the northwest by the LDW and the 2-40 Area. This area includes the Southwest Bank CMS Study Area and the Transformer PCB Investigation Area (also referred to as OA-11; Floyd Snider 2007). There are 10 identified RCRA units within the 2-66 Area, including four Areas of Concern and six OAs. COCs within the 2-66 Area groundwater and soils include: metals, VOCs, SVOCs, PCB aroclors, and TPH. Documented migration of a portion of these COCs from the 2-66 Area to the SIA has occurred from two areas, as discussed below.

A UST used to store TCE and piping system located outside the southwestern corner of former Building 2-66 (Figure 2-4) was, and continues to be, a source of TCE in groundwater to the SIA. Soil and groundwater impacts from releases from the tank and piping were noted during environmental investigations and this tank and piping system was removed (Floyd Snider 2007). In 1993, an Interim Measure (IM) consisting of interlocking steel sheet piles was installed around approximately 90 percent of the mass of TCE contamination. The remaining mass exists in a halo around the sheet pile wall. Two density-driven convection (DDC) wells were installed in the area to facilitate product recovery and destruction of VOCs. Quarterly groundwater monitoring is conducted by Boeing, including monitoring wells located along the northwestern corner of the SIA shoreline (PL2-JF01AR, PL2-JF01B, PL2-JF01C, PL2-JF02A, and PL2-03A) (Figure 1-2). As discussed in Section 5.3.5, these monitoring wells have consistently shown detections of elevated HVOCs (i.e., dichloroethene [DCE] and vinyl chloride) due to the deflection of groundwater around the 2-66 sheet pile enclosure and onto the SIA. In addition, sediment porewater monitoring (Windward 2006) adjacent to the Southwest Bank Area identified detections of HVOCs (Section 5.7.3) documenting that the TCE plume has a complete pathway to the LDW sediments adjacent to the northwest portion of the SIA.

Boeing discovered high concentrations of PCBs in the soil underlying the area by the West Bank electrical substation, within OA-11, termed the Area of Discovery, located directly adjacent to the SIA northern property line (Figure 2-4). Soils in the vicinity were excavated in an attempt to define the extent of the PCBs in soil. Subsequent to the excavation, Boeing conducted a Phase I and a Phase II investigation to further define the nature and extent of the PCB contamination in and around the Area of Discovery (Floyd Snider McCarthy 2004; Floyd Snider and Weston Solutions 2005). This investigation included a number of soil borings located on Plant 2 and the northwestern portion of the SIA, retrofitting and sampling of groundwater monitoring wells, and sampling of catch basin solids from the drainage system on Plant 2 and the outfalls that transit the northern portion of the SIA (termed the Property Line outfalls).

The Phase I and Phase II investigations indicated that PCBs, arsenic, benzene, and TPH have been released to soil in the OA-11 area, and that a single soil location (SB-07250) on the SIA within the vicinity of the area of discovery contained PCBs at 3 milligram per kilogram (mg/kg), which is above the 1 mg/kg Model Toxics Control Act (MTCA) A residential soil PCB cleanup level. The investigations detected elevated concentrations of PCB in solids located within the Property Line outfalls. These solids have not been removed from the active 24-inch Property Line outfall and therefore have the ongoing potential to cause impacts to sediment quality adjacent to the northwest corner of the SIA. A detailed discussion of the Property Line outfall findings is provided in Section 5.6.2.

The Southwest Bank Area is composed of riprap and a significant amount of debris fill containing concrete rubble, metal scraps, and brick. Soil samples were collected from the Southwest Bank Area for the Southwest Bank IM. Six metals and several PCBs were detected at concentrations exceeding Sediment Management Standards (SMS) Sediment Quality Standards (SQS; Ecology 2007a). Erosion of the bank into the LDW has the potential to create ongoing impacts to sediment quality adjacent to the northwest corner of the SIA. Previous investigations of sediment quality adjacent to the Southwest Bank Area showed elevated concentrations of PCBs, phthalates, PAHs, and some metals (Windward 2003b).

2.5.1.2 Boeing-Isaacson Property

The Boeing-Isaacson Property is a 9.7-acre rectangular parcel bounded to the east by East Marginal Way South, north by the SIA, to the west by the LDW and the south by the Thompson property (Figure 2-4). A review of Ecology's files on the Boeing-Isaacson property located directly south of the SIA indicated the most comprehensive review of available information was detailed in ERM and Exponent (2000). The information provided below was obtained from this report.

Available information indicates that a meander of the pre-straightened Duwamish River once flowed in an east-west direction between the current Boeing-Isaacson and Thompson properties, and that extensive dredge and fill efforts in the early 1900s placed the LDW channel in its current configuration west of the Boeing-Isaacson property. A portion of the former river channel formed Slip 5 near the southern limits of the Boeing-Isaacson property (Appendix A). In the 1920s, a lumber mill was constructed on a portion of the property and was operated until 1949. The 1945 Pollution Control Board Report entitled *Sources of Pollution in the Duwamish-Green River Drainage Area* (Foster 1945) stated that the Mineralized Cell Wood Preserving Company existed to the south of Isaacson Works. The aerial photographs provided in Appendix A clearly show that historical site development did not include structures on the SIA that would support wood preserving activities. The report stated that "This company employs a process whereby a solution containing arsenic and also sulfate salts of copper and zinc is heated and applied to the base of logs under pressure…The storage tanks in which the solution is heated are washed twice daily. Any sludge or remaining chemicals drain into the ground." Available information also shows that as early as 1941, a portion of the property was occupied by a steel foundry that was later acquired and enlarged by Isaacson Iron Works in the early 1950s through the 1960s (ERM and Ecology 2000). Isaacson Iron Works used that portion of the site for galvanizing, steel fabrication, and storage.

Investigations of the nature of the material identified in Slip 5 indicate that portions of Slip 5 were filled from 1935 to mid-1960s. The fill material consisted of silty sand with significant amounts of slag, fire bricks, and miscellaneous construction materials. The entire slip was filled by the end of 1966. A figure showing the location of the Isaacson Iron Works facilities on the Boeing-Isaacson property in relation to Slip 5 is depicted in Appendix A.

The property was the subject of a series of environmental investigations and subsequent interim remedial actions from 1983 to 1991 to address elevated concentrations of arsenic detected in soil and groundwater. Several phases of arsenic-contaminated soil removal and on-site encapsulation were completed during this period. Groundwater monitoring completed since 2001 indicates that dissolved arsenic is present in the site's groundwater at concentrations greater than area background and that groundwater in general flows from the site onto the Boeing-Isaacson property (ERM and Exponent 2000) (Appendix E).

The sediments adjacent to the Boeing-Isaacson property were sampled during two investigations in 1997 and one in 1998 (Windward 2003a). Sediment samples were collected east of the navigation channel, adjacent to the property and just offshore of a combined sewer overflow (CSO) outfall that jointly serves as a City of Seattle emergency overflow and a storm drain that appears to drain upland areas east of the LDW. Sediment quality exceedences of the SMS Cleanup Screening Level (CSL) criteria for PCBs, PAHs, and benzylethylhexlphthalate (BEHP) were found at three locations in close proximity to each other in this area. Due to these exceedences the sediments adjacent to the outfall discharge location have been identified by EPA as Early Action Area 6 – RM 3.8.

2.5.1.3 King County International Airport

KCIA, also known as Boeing Field, is located east of East Marginal Way South and the SIA (Figure 1-2). The KCIA is a general aviation airport, owned and operated by King County as a public utility. The KCIA consists of approximately 615 acres, 435 acres of which are impervious surface that includes buildings and paved surfacing. The 180 acres of pervious surfaces consist of grass and landscape area.

Construction of the airport began in 1928 and served as the community's aviation center until December 6, 1941, when the U.S. Army took over for strategic and production reasons. The airport remained under military jurisdiction through the end of World War II. In the late 1940s, the airport was reopened for passenger and other commercial traffic. After Seattle-Tacoma International Airport opened in 1947, KCIA usage evolved to general aviation, serving industrial, business, and recreational purposes (Ecology 2007a). The KCIA currently averages more than 300,000 operations (takeoffs and landings) each year and serves small commercial passenger airlines, cargo carriers, private aircraft owners, helicopters, corporate jets, and military and other aircraft.

There are approximately 15 miles of pipe in the KCIA stormwater drainage system that conveys stormwater runoff from approximately 26 areas of impervious surface to the LDW. According to Ecology (2007a), runoff from the 26-acre area is conveyed through the 24-inch diameter Property Line outfall that transits the north side of the SIA (Figure 2-5) (Ecology 2007a). As discussed in Section 5.6.2, the analytical results of solids collected by Boeing from the Property Line outfalls detected PCB concentrations. These results, coupled with the documented concentrations of PCBs detected in the caulking used on the runways (see below), provides evidence that the stormwater discharge from the KCIA is an ongoing source of PCBs to the LDW.

KCIA collected samples in the 26-acre drainage area in 1996, 1997, 2001, and 2005. The 1996 and 2001 sampling events included the collection of solids from four co-located catch basins and analysis for PCB aroclors. The observed total PCB concentrations ranged from 131 to 36,000 μg/kg in 1996 and 50 to 213,000 μg/kg in 2001, with the highest concentration consistently observed in the farthest downgradient catch basin. Only a single solids sample was collected from the most downgradient catch basin in 1997 and it contained 51,000 μg/kg total PCBs. The 2005 investigation included the collection of catch basin solids and pavement joint caulk. Solid samples were collected from three stormwater catch basins, two trenches, and solid pavement joint caulk samples from three concrete joint areas. The analytical results detected concentrations of PCBs in one trench sample and one pavement joint caulk sample. The results detected Aroclor 1260 concentrations of 2.67 mg/kg and 1.69 mg/kg in the trench and joint caulk, respectively, exceeding the 1 mg/kg Method A cleanup level for PCBs (Ecology 2007a). The PCB-containing solids likely convey through the 24-inch diameter Property Line outfall; therefore, KCIA is an ongoing source of PCBs to the LDW adjacent to the northwestern corner of the SIA.

3 REGULATORY HISTORY

3.1 Regulated Underground Storage Tanks

As discussed in Section 2.4.1.9, there is currently one 600-gallon double-walled steel UST located below the west end of the main office building (Figure 3-1) that is used for storage of diesel fuel for heating the main office building. This UST is not regulated due to its size and use. All other former USTs have been properly decommissioned by removal and/or closure in place.

3.2 Hazardous Waste and Chemical Management Practices

3.2.1 Resource Conservation and Recovery Act Generator Status

Jorgensen Forge is an RCRA large quantity generator (LQG) due to the generation of Melt Bag House dust. Jorgensen's toxic reduction inventory (TRI) facility identification number is #98108RLMJR8531E. The volume of bag house dust generated circa 2005 and 2006 was 258,150 and 414,400 pounds, respectively.

3.2.2 Inspections

Inspections have been performed on the SIA both as part of routine inspections by Jorgenson Forge personnel and outside agencies to monitor chemical handling and management procedures, and prevent the release of hazardous substances to the environment. A summary of the inspections is provided below.

3.2.2.1 Routine Inspections by Jorgensen Personnel

Inspections are conducted regularly by Jorgensen Forge personnel to confirm that hazardous waste and chemical management handling practices are conducted in accordance with the Site-Specific Dangerous Waste Management Training Program (Appendix D of the SWPPP; Anchor 2006) and are effectively preventing chemical releases to the environment.

In accordance with the stormwater Baseline Permit compliance monitoring (Section 2.4.3) requirements, Jorgensen Forge personnel have conducted both wet weather and dry weather stormwater inspections since implementation of the revised Baseline Permit in January 2005. These inspections allow Jorgensen Forge to proactively modify the BMPs to more effectively maintain stormwater quality and to identify the potential presence of non-stormwater discharges in the stormwater conveyance system. A qualified Jorgensen Forge employee named in the SWPPP conducts quarterly visual inspections of the stormwater sampling location during each quarterly sampling event. This includes observations for the presence of parameters such as floating materials, visible sheen, discoloration, and turbidity in the stormwater discharge. Discharge locations that are not sampled are also visually inspected at least annually during a storm event. In addition to the quarterly stormwater sampling visual inspections, Jorgensen Forge conducts at least one dry season inspection annually following 7 days of no measurable precipitation. In accordance with the Baseline Permit, copies of the visual inspections are maintained on file at Jorgensen Forge.

3.2.2.2 Stormwater Inspections

The Jorgensen Forge files were reviewed by Anchor to obtain information on previous stormwater inspections conducted on the SIA. Ecology reports were identified for stormwater-related inspections conducted on May 12, 1992, June 17, 1992, January 5, 1994, September 20, 1994, and January 13, 2006. The 1992 inspection was conducted to assist Ecology in the reissuing the facility's NPDES permit. Violations of the permit were not noted in the inspection reports. The January 5, 1994 Ecology performed an unannounced inspection to discuss the recently issued NPDES permit and conduct a compliance inspection. The facility was in compliance with the permit and areas evaluated during the inspection were rated as satisfactory. The September 20, 1994 inspection was conducted to investigate a reported discharge from the SIA to the LDW. The discharge was not identified on the SIA.

Ecology and Seattle Public Utilities (SPU) conducted a stormwater-related SIA inspection on January 13, 2006. A copy of the February 7, 2006 SPU and June 20, 2006 Ecology inspection summary letters are attached as Appendix F. The inspection involved a full site walk-through to monitor the stormwater catch basins, raw materials storage, the stormwater discharge location, the SWPPP, wet and dry season inspections, and the effectiveness of housekeeping practices and implemented BMPs. The letters indicated the following corrective actions needed to be implemented:

- Posting a copy of the Spill Control Plan at all chemical and fuel storage areas, at all repair shops, and near the steam cleaning rack so that employees and visitors are able to easily refer to the plan in case of an emergency.
- Providing additional spill cleanup materials at the used oil storage and at the vehicle maintenance shop.
- Storing totes and other containers with waste liquids away from the steam cleaning rack and away from vehicular traffic under cover and over secondary containment.
- Providing secondary containment and cover for all liquid storage on site.
- Ensuring that all containers are labeled with their contents (at a minimum) and labeling all hazardous materials such, including information about health risks, flammability, reactivity, and required personal protection.

Following receipt of the SPU inspection summary letter (SPU 2006a), Jorgensen implemented the identified corrective actions. A follow up inspection was conducted by SPU and the reinspection findings were summarized in a letter from SPU dated April 6, 2006. The letter stated that "During the re-inspection I did not observe any environmental compliance problems at your facility. Areas of environmental compliance inspected included verification of spill plan posting, secondary containment installation, labeling and proper storage of chemicals" (SPU 2006b).

3.2.2.3 EPA TSCA PCB Inspection

EPA conducted a Toxic Substance Control Act (TSCA) inspection of the SIA on April 24, 2002 to identify potential sources of PCBs to the LDW. EPA visually inspected all liquid-filled transformers on the SIA and concluded that all of the transformers appeared to be in good condition, with no evidence of any leaks. EPA observed three liquid-filled pad mounted transformers on the roof of the main production building. Seattle City Light owns these transformers and provided a written statement stating that these transformers are assumed to contain less than 1 part per million (ppm) PCBs (SCL 2002). EPA did not observe obvious sources of PCBs other than in transformers that have been retrofitted and tested at levels below 50 ppm (EPA 2002b). EPA stated that the environmental site manager, an employee for approximately 30 years, had no knowledge that the SIA ever stored PCB containing liquids, ever used PCBs in its manufacturing process, or has any equipment on the SIA that contain PCBs except the inspected transformers (EPA 2002b).

3.2.2.4 Ecology RCRA Inspection

Ecology conducted a RCRA inspection of the SIA on February 22, 1984 (SECOR 1992) The RCRA Inspection Report identified several minor non-compliance issues associated with health and safety and labeling procedures. No mention of spills or releases was noted in the report (SECOR 1992). A RCRA inspection was also conducted in February 2007. There were two identified violations: 1) the return-dumpster for Melt Bag House dust was not properly labeled and the annual employee retraining records for the dangerous waste program were not accessible at the time of the inspection. The Jorgensen Forge environmental manager had moved into an office/trailer and due to lack of space, records of this type had been archived in a different location. Jorgensen properly labeled each dumpster with a magnetic sign. Training records and a photo of the new sign/label for the Melt Bag House dust dumpster were subsequently provided to the inspector within the abatement period and are within compliance.

3.3 Permit Violations

Based on a review of records maintained by Jorgensen Forge and of regulatory records, no permit violations have occurred on the SIA.

3.4 Spills/Discharges

Based on a review of Ecology's and Jorgensen Forge's records, there are only two documented releases from the facility that reached the LDW. The documented spills include:

- Jorgensen notified the Ecology Spill Response on June 19, 1998 that an oily substance of unknown volume migrated into the stormwater outfall and discharged to the LDW through stormwater Outfall 003. The source of the discharge or the duration of the discharge was not identified nor were the response actions summarized.
- Jorgenson Forge employees noted an unidentified source of water discharging from permitted stormwater Outfall 003 under dry weather conditions on August 27, 2004. This discharge created a slight sheen adjacent and a short distance downstream of

the outfall. The employees immediately notified the Site Environmental Manager and Jorgensen's environmental consultant (Anchor) of the discharge. Ecology was notified on the day the discharge was identified. Anchor and Jorgenson Forge personnel immediately inspected all available manhole access points contributing to the outfall to determine the source of the spill. The flow discharging into the LDW appeared to be larger than the flow present at any of the individual access points. The discharge and resulting sheen was only visible for several hours. The source of the discharge was not identified and follow-up visual inspections did not identify any additional discharge. Additional site investigations of the stormwater drainage system following the unidentified discharge indicated the Q4 and portable quench tanks were connected to the Outfall 003. These connections were removed in late 2005, as shown in Figure 2-5.

3.5 Spill Response

As discussed in Section 2.1.2, all Jorgensen Forge employees are trained in BMPs and spill response actions and notifications as described in the Spill Control Plan (Appendix C).

4 SUMMARY OF SIA INVESTIGATIONS AND REMEDIAL ACTIONS

Previous investigations and remedial actions conducted within the SIA by prior owner and operator EMJ, Jorgensen Forge, and/or Boeing are summarized below. The purpose of this summary is to provide background on the scope and results of the previous investigations and interim remedial actions and use the results in the Source Control Evaluation.

4.1 SIA MTCA Investigations and Remedial Actions

The first documented comprehensive environmental investigation on the property was conducted by Dames and Moore in 1990. The investigation included a preliminary site assessment to evaluate the environmental conditions at specific areas on the SIA that were suspected of contributing chemicals of interest to the environment. A site reconnaissance conducted during the preliminary site assessment identified a number of potential environmental concerns. To evaluate these concerns, Dames and Moore conducted a limited site characterization in February and March 1990. This characterization documented environmental impacts in a number of areas on the SIA. Subsequently, as part of the property transaction between EMJ and Jorgensen Forge, EMJ agreed to address environmental issues in five areas with known environmental impacts, commonly referred to as Area 1, 2, 3, 4, and the Diesel Fuel Area. A summary of the investigation findings and/or corrective actions taken on the SIA is summarized below.

4.1.1 Preliminary Site Assessment

The Preliminary Site Assessment (Dames and Moore 1990a) included a summary of available information regarding physiography and geologic and hydrogeologic setting, as well as a site reconnaissance survey conducted on February 8, 1990. The physiography and geologic and hydrogeologic setting information is presented in Section 2.2.2 and 2.2.3. The site reconnaissance included visual observations of existing conditions, types of land use, and the nature of neighboring property development. The results of the Preliminary Site Assessment identified the following potential environmental concerns:

- Unknown integrity of the heating oil UST located west of the office building
- Unknown integrity of the Hollowbore 59/60 hydraulic oil storage tank and vault
- Unknown integrity of the former Acid House neutralization pit and surrounding soil conditions

- Unknown surface soil/dust quality near slag storage area located on the southwest corner of SIA, south of the Melt Bag House, and throughout the main manufacturing building
- Unknown integrity of the north and south bank of decommissioned storage tanks
- Unknown soil conditions near the oil-water separator located west of the Aluminum Heat Treat Area
- Unknown soil conditions near the three gasoline USTs located in the vicinity of the guard shack near the main entrance

4.1.2 Limited Site Characterization

Dames and Moore completed a Limited Site Characterization to provide a preliminary evaluation of the potential environmental concerns identified in the Preliminary Site Assessment (Dames and Moore 1990a). The evaluation included the collection and laboratory analysis of samples for select parameters based on the nature of the potential environmental concern. The sample locations are depicted on Figure 5-1. The Limited Site Characterization included the following:

- Collection of eleven surface soil/solids samples (SS-5-1, SS-9-1 to SS-9-4, SS-16-1 and SS-16-2, and SS-17-1 to SS-17-4) in locations where surface stains or accumulated dusts or debris were observed.
- Advancement of 16 soil borings (DM-B-1 to DM-B-16) to total depths ranging from 10 to 15 feet bgs near liquid containment areas and underground pits and tanks.
- Collection of two shallow soil samples (DM-SB-1 and DM-SB-2) from a drum storage area near the northwest corner of the SIA.
- Installation and sampling of three groundwater monitoring wells (MW-1 to MW-3) to characterize groundwater quality. These monitoring wells are numbered differently than the existing monitoring well network at the SIA and appear to have been installed in locations similar to existing monitoring wells MW-5, MW-6 and MW-7. However, since the monitoring well locations can not be verified, the analytical data is not considered further in the Evaluation Report.

- Collection and laboratory analysis of stormwater samples from four stormwater discharges (E-1 to E-4) to assist with evaluated stormwater compliance with the NPDES permit.

The analytical results are discussed in Section 5. In summary, the Limited Site Characterization identified the following areas of environmental concern:

- Elevated concentrations of TPH in soil near the Hollowbore 59/60 hydraulic oil storage tank and vault (DM-B-4 and DM-B-5) and near the oil-water separator just west of the Aluminum Heat Treat Building (DM-B-12).
- Detectable concentrations of BTEX near the three gasoline USTs (DM-B-6).
- Low pH values in subsurface soil down gradient from the former Acid House neutralization pit (DM-B-15 and DM-B-16).
- Elevated concentrations of chromium above the then-current MTCA Method A cleanup level in several surface soil samples.
- Visible sheen discharging from what is now called Outfall 003.
- Elevated concentrations of several chlorinated and non-chlorinated VOCs in groundwater along the northwestern corner of the site (MW-1; discussed further in Section 4.3.2), including concentrations of benzene exceeding the MTCA Method A cleanup level. As discussed above, given the location of these monitoring wells could not be verified the analytical data is not considered further in the Evaluation Report.
- Elevated concentrations of cadmium, chromium, and arsenic in groundwater exceeding the then-current MTCA Method A cleanup levels in MW-2 and MW-3.

4.1.3 SECOR Site Assessment and Remedial Actions

Additional environmental investigation was conducted by SECOR (also historically known as SEACOR) in each of the identified areas of environmental concern based on the results of the Limited Site Characterization. The findings for each of the areas of environmental concern, as well as any remedial actions conducted, are summarized in Sections 4.1.3.1 to 4.1.3.5.

4.1.3.1 Area 1 – Hollowbore Location

Area 1 is located adjacent to and north of the Machine Shop Area, between the main manufacturing building and the office building (Figure 2-4). As discussed in Section 2.4.1.1, there are three horizontal Hollowbore lathes (i.e., Hollowbore 58, 59, and 60) and one vertical lathe (i.e., Frenchman 63) located adjacent to Area 1. Each of these lathes has belowground cutting oil storage tanks. The investigation conducted by Dames and Moore (Dames and Moore 1990a) documented the presence of TPH as oil-range organics (ORO) in soil in Area 1. The subsequent investigation conducted by SECOR in late 1990 and early 1991 further assessed the lateral and vertical extent of petroleum impacted soils in Area 1 (SECOR 1991). Based on these investigation findings, SECOR initiated a focused RI/FS in Area 1 to further define the nature and extent of contamination and to support the selection of remedial alternatives consistent with MTCA (SECOR 1993a). The analytical results from these investigations are summarized in Section 5.

The RI/FS identified cutting oil as LNAPL plume on groundwater, in subsurface soil and dissolved-phase TPH in groundwater (SECOR 1993a). The presence of the oil was attributed to a number of short duration larger episodic releases (e.g., oil supply line breakage in the R/W 58 lathe) and longer duration smaller gradual releases (SECOR 1993a). EMJ attempted to remediate the identified contamination in Area 1 by installing product recovery wells and a groundwater recovery and reinjection system in 1993 (Dames and Moore 1997). The product recovery system consisted of a horizontal recovery well system with pneumatic pumps for recovering the LNAPL. Monitoring data provided by SECOR indicates that approximately 15,106 gallons of cutting oil were recovered and more than 120,500 gallons of groundwater were extracted in Area 1 through November 25, 1996 (Dames and Moore 1997).

There is limited access to the subsurface in Area 1 due to the presence of machinery and operations within the Hollowbore Area. Based on the rate of recovery and type of oil found in Area 1, continued extraction of the LNAPL by pumping was not deemed cost-effective, would not help meet the Ecology MTCA cleanup levels without more invasive measures (which are precluded by the current SIA configuration), and has no apparent effect on the groundwater in downgradient monitoring wells located outside of the plume (URS 2002). Therefore, the LNAPL extraction system was removed. Remediation in Area 1 cannot feasibly be resumed until operations are terminated and the machinery and subsurface foundations in the Hollowbore Area are removed. Based on the data, the LNAPL does not appear to be an immediate threat to human health and the environment (URS 2002).

Jorgensen Forge is currently conducting approximately bi-annual monitoring of the Area 1 LNAPL plume. This monitoring continues to show several feet of cutting oil as LNAPL in the monitoring wells located in Area 1 (Farallon 2005a). Dissolved-phase concentrations of ORO and BTEX have decreased over time to below the MTCA Method A cleanup level in groundwater samples collected from downgradient monitoring wells. The LNAPL measured on the groundwater table is immiscible and dissolved-phase petroleum hydrocarbons do not appear to be migrating in groundwater (Farallon 2005a).

4.1.3.2 Area 2 – Oil/Water Separator Location

Area 2 is located in the east/central portion of the SIA between the main Forge Shop Area building and the Aluminum Heat Treat Area south of the oil-water separator (Figure 1-2). The oil-water separator was installed in 1968 to separate residual or spilled hydraulic oil that collected in a sump in the 3,000-ton (currently a 5,000-ton) hydraulic press pit area (Figure 2-4; SECOR 1993b). Based on discussions with long-time Jorgensen Forge personnel, SECOR (1993b) identified that the capacity of the oil-water separator was exceeded on several occasions, during which overflows of hydraulic oil-water mixtures occurred and these mixtures migrated into the subsurface. Due to these overflow events, the sump pump plumbing was later redesigned to its current condition whereby the sump discharges to the oil-water separator located in the Decommissioned Oil Storage Area (Section 2.4.1.2).

Dames and Moore conducted a preliminary site assessment in 1990 that included the collection of a single soil sample in the vicinity of the oil-water separator located in Area 2 to initially assess the extent of subsurface hydrocarbon impacts. A single soil sample (DM-B-12) from 13 feet bgs was analyzed and shown to have an elevated (870 mg/kg) ORO concentration. A follow up investigation by SECOR in late 1990 and early 1991 was conducted to further assess the lateral and vertical extent of petroleum impacted soils and groundwater in Area 2 (SECOR 1991). This investigation identified the presence of up to a few feet of petroleum as LNAPL on groundwater which was equivalent in composition to the hydraulic oil used in the 3,000 ton press (SECOR 1993b). Based on these investigation findings, SECOR initiated a focused RI/FS in Area 2 to further define the nature and extent of contamination and to support the selection of remedial alternatives consistent with MTCA (SECOR 1993b). The analytical results from these investigations are summarized in Section 5.

The RI/FS (URS 2002) identified an interim remediation system consisting of a hydraulic control system using a series of groundwater extraction wells perpendicular to and downgradient of the LNAPL layer. This system initiated operation in January 1995. Over 414,000 gallons of water were extracted by June 1996, but the system was taken offline so as not to co-mingle the oil with the subsurface diesel fuel contamination identified just south of the oil-water separator discussed further in Section 4.1.5 (Dames and Moore 1997). During the extraction system operation, significant changes in the thickness of hydraulic oil as LNAPL or dissolved concentrations of ORO in groundwater in Area 2 were not observed. Therefore, continued operation of the system was not deemed cost-effective, would not help meet the Ecology MTCA cleanup levels without more invasive measures, which are precluded by the current configuration and operations on the SIA, and would have no apparent beneficial effect on the groundwater in downgradient monitoring wells located outside of the plume (URS 2002).

4.1.3.3 Former Area 3 – Former Underground Storage Tank Location

Area 3 is located in the eastern portion of the SIA near the main entrance (Figure 1-2). Three gasoline USTs located in the vicinity of the guard shack near the main entrance were decommissioned by removal in 1991. Approximately 65 cubic yards of soil with concentrations of TPH above the then-current MTCA cleanup levels were removed from beneath the USTs. An air sparge/vapor extraction system was installed in Area 3 (SECOR 1997b). The analytical results of groundwater samples collected from approximately 1993 to 1997 indicated that the air sparge/vapor extraction system was effective. A No Further Action determination was issued by Ecology for Area 3 in 1999 (Ecology 1999).

4.1.3.4 Area 4 – West of Decommissioned Oil Storage Area

Area 4 consists of the area directly west of the Decommissioned Oil Storage Area (Figure 1-2). The historical use of this area included the storage of heating oil and diesel fuel in 10 tanks (Section 2.4.1.8). The southernmost tank is now used as an oil-water separator. In 1991, SECOR (as referenced in Dames and Moore 1997) detected concentrations of ORO in soils in this area above the MTCA Method A cleanup level. Subsequent investigations by SECOR (1993c) concluded that the concentrations of TPH in soil in this area were isolated in extent and relatively immobile.

Jorgensen Forge currently conducts routine groundwater monitoring of groundwater quality in Area 4, as represented by monitoring wells MW-8, MW-10, MW-11, and MW-14 (Figure 1-2). The laboratory analytical results of groundwater samples collected from monitoring wells located in Area 4 in 2007 detected concentrations of DRO and ORO exceeding the MTCA Method A Cleanup Levels for Groundwater (WAC 173-340-900).

4.1.3.5 Diesel Fuel Area – West of Aluminum Heat Treat Building

The Diesel Fuel Area is located just south of Area 2 in the vicinity of the Aluminum Heat Treat Area (Figure 1-2). There are eight aboveground storage tanks located in a concrete vault to the east of the Aluminum Heat Treat Area building. The storage tanks are located in belowground concrete vaults and were historically used to store diesel fuel as a backup for furnaces in the main building. In 1996, SECOR (as referenced in Dames and Moore 1999) detected concentrations of DRO in soil and groundwater above the MTCA Method A cleanup level. Dames and Moore (1999) completed an investigation to assess the lateral extent of DRO in soil and groundwater in this area and to assess the extent of the plume of DRO in groundwater. The results indicated that the plume of dissolved-phase DRO is similar to the plume identified in 1996 by SECOR (as referenced in Dames and Moore 1999), which indicates that the DRO plume was not migrating. Dames and Moore (1999) concluded that there is limited DRO dissolving from the LNAPL into the groundwater and that the dissolved DRO is attenuating naturally over a lateral distance of approximately 40 feet.

Jorgensen Forge currently conducts routine groundwater monitoring of groundwater quality in the Diesel Fuel Area, as represented by monitoring wells MW-12, MW-32, MW-33, MW-34, and MW-36 (Figure 1-2). The most recent investigation activities conducted in the Diesel Fuel Area include groundwater monitoring and sampling conducted in 2007. The results of the 2007 sampling events indicate that LNAPL is present in monitoring wells MW-12 and MW-33 at thicknesses ranging from 0.60 to 1.59 feet. The results of the 2007 groundwater monitoring and sampling events indicate that the hydraulic oil LNAPL plume within the Diesel Fuel Area is confined to a small area on the west side of the Aluminum Heat Treat Area building. Dissolved-phase concentrations of DRO and ORO were detected in 2007 exceeding the MTCA Method A Cleanup Levels for Ground Water. The dissolved-phase concentrations of DRO and ORO in groundwater in the Diesel-Fuel Area are similar to concentrations detected in the area since 1995. The downgradient extent of LNAPL and dissolved-phase TPH in groundwater from the Diesel Fuel Area are delineated by observations and results from monitoring wells MW-32 and MW-36, in which no LNAPL has been measured and concentrations of DRO and ORO are below the MTCA Method A Cleanup Levels for Ground Water.

Between December 1990 and January 1991, SECOR conducted tightness testing of 19 petroleum product storage tanks on the SIA, including:

- The north bank of 10 tanks in the Decommissioned Oil Storage Area
- The south bank of eight tanks in the Decommissioned Diesel Storage Area
- The heating oil UST located west of the office building

The tank testing indicated that all tanks were tight except for tanks 1, 3, and 6 (from north to south) in the north bank of 10 tanks. Tanks 1 and 3 could not be tested because the fluid level would not stabilize, and tank 6 failed the tightness testing. In April 1991, tanks 1, 3, and 6 were closed by filling with an inert material (SECOR 1992a). Prior to filling the tanks, two holes were cut in each tank and samples of material. The analytical results for these samples detected concentrations of TPH exceeding the MTCA Method A cleanup levels in the backfill surrounding tanks 1 and 3. Results of the tank inspection showed the tanks to be in good condition, and no obvious holes or leaks were observed. Reportedly, the tanks were placed on the concrete floor of a former building, and therefore are essentially in a vault.

4.2 EPA Superfund Investigations

EMJ, the prior owner and operator on the SIA from 1965 to 1992, entered into an AOC with EPA on July 10, 2003 (U.S. EPA Docket No. CERCLA 10-2003-0111). The statement of work in the AOC includes an investigation to determine whether the current and/or former operations on the Jorgensen Forge property are, or have been, a source of PCBs and/or metals to the sediment in the LDW; to determine the nature and extent of hazardous substances that may have been released at or from the Jorgensen Forge property; and to determine the threat to public health, welfare, or the environment from any such release or threatened release of hazardous substances at or from the Jorgensen Forge property.

The scope of work for the investigation was developed in accordance with the requirements of the AOC-related Statement of Work, and was conducted in three phases in coordination with EPA oversight and approval. The phases of the investigation focused on determining whether the following migration pathways potentially contributed PCBs and/or metals from the Jorgensen Forge property to sediment in the LDW adjacent to the property:

- Direct migration of groundwater to surface water or sediment
- Stormwater discharge to surface water and sediment
- Erosion of shoreline fill to sediment
- Transport and deposition of sediments to areas adjacent to the property

The first phase included review, evaluation, and compilation of available information to identify potential sources of PCBs from current or historical operations at the property, to define potential contaminant pathways from the property to sediments in the adjacent LDW, and to define data gaps in the information necessary to determine whether migration of contaminants from the property has resulted in impacts to sediment quality in the LDW adjacent to the property. The results of the first phase of the investigation included a scope of work for investigating the identified data gaps in a second phase of investigation (Farallon 2004).

The second phase of the investigation included sampling of debris piles on the shoreline, shoreline bank-face fill, soil/fill from borings located near the top of the shoreline bank, and solids in the stormwater catch basins. The analysis included PCBs, arsenic, cadmium, chromium, copper, lead, mercury, nickel, silver, and zinc. The analytical results detected concentrations of PCBs and metals above the screening levels in the fill located along the shoreline, and in solids collected from four catch basins located on the western, central, and eastern portions of the property. To further evaluate the source of the PCBs and metals detected in the fill and in the solids in the catch basins, a third phase of investigation was conducted to meet the requirements of the AOC (Anchor and Farallon 2005).

The third phase of the investigation included collection and analysis of nearshore surface and subsurface sediment samples in the LDW adjacent to the property and stormwater outfall discharge samples for metals and PCBs. The results of the investigation fulfill all remaining data gaps and no further phases of investigation were required to meet the requirements of the AOC.

The results of the investigation were submitted to EPA (Farallon and Anchor 2006) and approved by EPA as complete (2006). EPA (2006) also identified that the following additional actions will be required as part of an amended AOC: "Based on the results of analyses of bank and sediment samples conducted as part of the Jorgensen Forge investigative studies, EPA will be requiring cleanup of portions of the Jorgensen Forge bank and adjacent sediment. In order to continue with the agreed-upon approach to the cleanup, EPA and Earle M. Jorgensen entered into an Amended AOC in May 2008 to complete an EE/CA and associated work under the existing AOC for a future non-time-critical removal action for contaminated bank material and sediment." Jorgensen is not a signatory to the amended AOC.

4.3 On-Property Boeing-Related RCRA Investigations

As discussed in Section 2.5.1.1, documented releases from the Boeing property in the 2-66 Area of Plant 2 have led to Boeing-related investigations on the SIA under the EPA RCRA process to further delineate the nature and extent of the releases from Boeing operations. These investigations and findings are briefly summarized below.

4.3.1 Other Area 11 – PCB and TPH Release

Following the discovery of elevated concentrations of PCBs in the soil underlying the West Bank electrical substation within OA-11 (termed the Area of Discovery), Boeing completed a number of soil borings on the SIA to further define the nature and extent of the PCB contamination that may have impacted the SIA from the release on Boeing property. The analytical results indicated that a single soil location (SB-07250) on the SIA within the vicinity of the area of discovery contained PCBs at 3 mg/kg which is above 1 mg/kg (the MTCA A residential soil cleanup level). Boeing is currently proposing to excavate to a depth of 4 feet bgs on the portion of the SIA that was potentially impacted by the release (Floyd Snider 2007).

As part of this investigation, Boeing conducted an investigation of the 12- and 24-inch Property Line outfalls located on the SIA in accordance with the EPA approved *Phase II Transformer Investigation Work Plan* (Floyd Snider and Weston Solutions 2004). The Property Line outfalls transit the SIA parallel to the Jorgensen Forge -Plant 2 property boundary, as shown in Figure 2-5. The investigation included collecting and analyzing solids material within the Property Line outfalls and conducting a video survey of the outfalls to document any cross connections to the outfalls (Floyd Snider and Weston Solutions 2005). Solids samples were collected from three manhole locations (MN 37-2, SDMH-24B, and SDMH-24A) along the 24-inch Property Line outfall pipe, a manhole location on the previously unidentified Boeing 15-inch diameter pipe (MH37-7), and two manhole locations along the 12-inch Property Line outfall pipe (SDMH-15B and SDMH-15A).

The video survey of the Property Line pipes identified two drainage lines connected to the 24-inch Property Line outfall, including a 15-inch diameter pipe extending from Plant 2, and a historical 12-inch diameter pipe extending from the SIA. The video survey showed no cross connections to the 12-inch Property Line outfall and that Boeing was the only source of stormwater to this outfall, and also that the 24-inch Property Line outfall extended east of the SIA and under East Marginal Way South. A subsequent dye test study by Ecology confirmed that the 24-inch line was connected to the KCIA stormwater drainage system. A detailed discussion of the Property Line outfall analytical results is provided in the *Technical Memorandum Regarding Storm Drain Line Data Summary* (Farallon 2005b) and is summarized in Section 5.6.2.

In 2007, Jorgensen Forge engaged a title insurance company to conduct a review of all current beneficiaries of easements on the SIA, which specifically include the property line outfalls. This research identified a single easement (No. 4582029, Appendix G) granted by the former Bethlehem Pacific Coast Steel Corporation to the Boeing Airplane Company. The easement was provided "for the construction, connection, operation, maintenance, repair, alteration, improvement and reconstruction" of the 15-inch storm drain line extending from Boeing Plant 2 and connecting to the 24-inch line property line outfall located within the SIA. The easement contained an area of approximately 176 square feet as shown in Figure 2-5. The research did not identify any easements for either the 12-inch or 24-inch property line outfalls. However, as noted above and in Section 4.3.1, Boeing Plant 2 is the only known historical source of discharge to the 12-inch line and KCIA is the only known current source of discharges to the 24-inch line.

4.3.2 2-66 Sheet Pile Interim Measure

Previous environmental investigations on the Plant 2 2-66 Area showed impacts created by a historical underground TCE tank and piping system outside the southwest corner of former Building 2-66. Following identification of the impacts, the tank and piping system was removed. In 1993, an IM consisting of interlocking steel sheet piles was installed around approximately 90 percent of the mass of TCE contamination. Quarterly groundwater monitoring of the delineated TCE plume is conducted by Boeing, including monitoring wells located along the northwestern corner of the SIA shoreline (PL2-JF01AR, PL2-JF01B, PL2-JF01C, PL2-JF02A, and PL2-03A). As discussed in Section 5.3.5, these SIA wells have consistently shown detections of elevated TCE and its degradation byproducts (i.e., DCE and vinyl chloride) due to the deflection of groundwater around the 2-66 sheet pile enclosure and onto the SIA.

4.4 Phase 2 RI Shoreline Seep Investigation

The LDWG conducted seep surveys and sampling as part of the Phase 2 RI for the LDW. The study was designed to conduct a reconnaissance survey of all LDW seeps and to collect seep water from a subset of these seeps for chemical analysis. Data from this study was to be used to evaluate whether 1) shoreline seep discharges may significantly contribute to chemical inputs to the LDW, either through dissolved phase, colloidal phase, or product phase inputs and 2) determine if additional seeps should be selected for sampling in the future either as part of the Phase 2 RI, site-specific source evaluations, or as part of the source control work being conducted by the Lower Duwamish Source Control Work Group (Windward 2004).

During the reconnaissance survey from May 5 to May 10, 2004, the general shoreline area adjacent to the SIA was identified as an area with general lower seepage level based on field observations. Based on a light sheen observed in the water in the vicinity of SIA, but not in the seep or its intertidal vicinity, it was decided that chemical samples would be collected from station LDW-SP-20 directly adjacent to the concrete panel bulkhead wall on the southwest shoreline of the SIA. Seep water samples were collected on July 1, 2004 using stainless steel PushPoint mini-piezometers and analyzed for the following: filtered and unfiltered metals, SVOCs, PCBs, and organo-chlorine pesticides; and VOCs total organic carbon (TOC), dissolved organic carbon (DOC) and TSS. In addition, conventional water quality parameters (i.e., conductivity, temperature, dissolved oxygen, pH, and oxidation-reduction potential) were measured and seep flow rate was calculated. The seep analytical results are summarized in Section 5.5.

5 SUMMARY OF ENVIRONMENTAL DATA AND COMPARISON TO SCREENING LEVELS

The purpose of the Source Control Evaluation is to evaluate whether the SIA is a potential ongoing source of chemicals of interest to the adjacent LDW at concentrations that may cause adverse effects to sediment quality. This section defines the screening levels to assess impacts to the LDW sediment and surface water quality, presents a summary of the environmental data that have been collected to date at the SIA (including soil, groundwater, stormwater, catch basin solids, and sediment), and screens the environmental data against the defined screening levels. A discussion of the contents of waste products generated by operations at the SIA is also provided. The screening evaluation includes available data for each media on the SIA for both the SMS chemicals (Ecology 1995) and other selected non-SMS chemicals that have been identified as chemicals of interest based on the knowledge of historical and existing operations and other existing information for the SIA.

It is important to note that the screening level evaluation presented herein is conservative and therefore any media that exceeds one of more of the screening levels does not necessarily mean that source control is required. Rather, exceedences of the screening levels indicate that further evaluation is required using additional lines of evidence such as those identified in Section 5.1.1.

5.1 Screening Levels

In accordance with the Lower Duwamish Waterway Source Control Strategy (Ecology 2004) and the AOC, the Source Control Evaluation utilizes existing environmental data to evaluate potential migration pathways for chemicals of interest known or suspected to be present in the SIA that have the potential to migrate to the LDW and result in adverse sediment and/or surface water quality impacts.

Screening levels have been developed for the Source Control Evaluation for solids, including soil and catch basin solids; and water, including groundwater, stormwater, and surface water. Screening levels were developed by reviewing potentially applicable laws and regulations to define concentrations for the chemicals of interest that are considered protective of sediment quality in the LDW or, where use of sediment screening level values is inappropriate, screening level values that are protective of surface water quality in the

LDW. The potentially applicable criteria for the Source Control Evaluation include the following:

- Natural Background Soil Metals Concentrations for the Puget Sound Region (Ecology 1994)
- Ecology SMS Puget Sound Marine Sediment SQS (Ecology 1995)
- Ecology SMS Puget Sound Marine Sediment CSL (Ecology 1995)
- Groundwater screening levels calculated by Science Applications International Corporation (SAIC) that are considered protective of the SQS (SAIC 2007)
- Ecology Toxic Substances Criteria (TSC) for Marine Water, Chronic Toxicity (Ecology 2006)
- Ecology TSC for Freshwater, Chronic Toxicity (Ecology 2006)
- Ecology Cleanup Levels and Risk Calculations under MTCA, Standard Method B Formula Values for Surface Water (Ecology 2001).

The screening level criteria include applicable values for sediment quality and surface water quality. The screening levels that are protective of sediment quality were preferentially selected as primary screening levels for the Source Control Evaluation over secondary screening levels that are protective of surface water quality given the focus of the Agreed Order is on impacts to LDW sediment quality. Screening levels were established for soil and catch basin solids, groundwater, surface water, and stormwater, where an applicable screening level exists. Chemical compounds with no applicable screening level are discussed but could not be compared to applicable screening levels. The selected screening levels for each environmental media are summarized on Table 5-1 and discussed further below. Each of the selected screening levels for each media is color-coded to aid with the data screening process. The environmental data presented in Tables 5-2 to 5-23 are shaded the appropriate color for concentrations above the defined screening level.

It is important to note that the screening level evaluation was designed to be protective, as technically appropriate. The Ecology SMS establishes both SQS and CSL sediment criteria; however, the SQS is more conservative than the CSL and is therefore considered more appropriate to evaluate potential ongoing impacts to the LDW sediments. The CSL is not considered further in the definition of applicable screening level criteria. The Ecology Freshwater and Marine TSC include criteria for both chronic and acute toxicity. The criteria for chronic toxicity are more conservative than those for acute toxicity, and therefore are considered more appropriate to evaluate potential ongoing impacts to the LDW surface water quality. The acute criteria are not considered further in the definition of applicable screening level criteria. Finally, as discussed in Section 2.2.4.1, although under most flow conditions it is anticipated that the LDW will contain a salinity above 1 ppt adjacent to the SIA (the threshold for application of marine water quality criteria per Chapter 173-201A-260 WAC), to be conservative the lowest of the saline and freshwater criteria concentrations will be applied as the screening levels for surface water entering the LDW from the SIA.

It is also important to note that as part of the Draft RI for the LDW, sediment risk-based threshold concentrations (RBTCs), defined as risk driver chemical concentrations that equate to specific risk thresholds, have been defined for the LDW (Windward 2007). The Draft LDW RI notes that RBTCs are an important consideration in the derivation of preliminary remediation goals for the FS, so they are useful benchmark values to consider during cleanup and source control investigations. Theoretically, sediments that are remediated to levels at or below RBTCs would result in post-cleanup conditions with acceptable levels of risk. Given the RBTCs presented in the Draft LDW RI are subject to change and will require additional consideration of spatial issues, current and future use, and cumulative and aggregate risk prior to future application, the RBTCs were not considered appropriate for use as screening levels in this Evaluation Report. Nevertheless, review of the RBTCs provides a useful screening endpoint relative to the SMS SQS criteria and is summarized below.

Draft sediment RBTCs were calculated for each of the risk driver chemicals, including arsenic, carcinogenic PAHs, dioxin and furan toxic equivalents, and total PCBs. A summary of the draft RBTCs and natural and urban background concentrations derived for the Draft LDW RI are provided in Appendix H. Comparison of the RBTCs to background concentrations is important because future cleanup levels for the LDW cannot be established or maintained below background concentrations due to the potential for recontamination unrelated to site sources (Windward 2007). Sediment RBTCs for the 1 in 1 million human health risk threshold for direct sediment contact are well below both preliminary natural (12 mg/kg) and urban background (6 to 37 mg/kg) arsenic concentrations, indicating the 1 in 100,000 risk level (13 to 37 mg/kg) may be more appropriate for arsenic. The arsenic RBTC at this risk level would be below the arsenic SMS SQS criteria (57 mg/kg). The PCB RBTC risk level (500 to 1,700 μg/kg) for the 1 in 1 million human health risk threshold for direct contact are higher than the preliminary natural background (31 μg/kg), urban background (21 to 135 μg/kg), and SMS SQS (130 μg/kg) concentrations.

5.1.1 Screening Level Application

An exceedence of a screening level does not necessarily indicate the upland source of contamination poses an unacceptable risk to sediment or surface water quality, but indicates further consideration for source control using a weight-of-evidence evaluation. The weight-of-evidence evaluation may include, but is not limited to, consideration of the following site-specific factors:

- Chemical concentrations (magnitude of exceedence above the screening level)
- Regional background concentrations for naturally occurring chemicals
- Extent and distribution of contaminated media in the SIA above the screening level
- Proximity of SIA source area to the LDW
- LDW sediment data in proximity to SIA source area
- Site surface conditions (e.g., exposed soil, paved, slope)
- Riverbank stability (e.g., potential for erosion under extreme rainfall events, potential for erosion under flood conditions, bank erosion rates);
- Chemical, soil, and groundwater properties
- Storm water conveyance system, BMPs, and management
- Potential hydraulic connection between groundwater and surface water and sediments
- Type of migration pathway to the LDW
- Estimate of potential chemical loading to the river for the media of concern

5.1.2 Soil and Catch Basin Solids

Chemicals in soil may migrate from the SIA to the LDW sediments via erosion of the shoreline bank and/or discharge of solids from the stormwater conveyance system. Soil and accumulated catch basin solids with the potential to migrate via these pathways will be screened against the SMS SQS summarized in Table 5-1. The SQS provides numerical criteria for metals, PCBs, PAHs, and a short list of SVOCs. The Natural Background Soil

Metals Concentrations for the Puget Sound Region (Ecology 1994) have been used as the screening level value for metals that do not have SMS SQS criteria.

5.1.3 Groundwater

Groundwater has the potential to migrate through sediments and the shoreline bank adjacent to the SIA and impact sediment and/or surface water quality. Given the focus of this Source Control Evaluation is on sediment quality impacts, potential groundwater impacts are assessed by comparing existing groundwater concentrations against derived groundwater screening levels that are considered highly protective of sediment quality. Chemicals of interest that do not have criteria for groundwater protective of sediment (i.e., those chemicals without SMS SQS criteria) are evaluated against established surface water quality criteria. A summary of the groundwater screening levels is summarized in Table 5-1 and further discussed below.

Ecology contracted with SAIC to assist with the development of conservative groundwater screening levels that could be used to directly screen potential groundwater impacts to sediment quality. This approach was based on the tendency of some chemicals to partition from groundwater into sediments under equilibrium conditions. Based on the definition of the partitioning coefficient and rearrangement of the applicable equations and adjustment of units as necessary, a simplified relationship between a chemical concentration in sediment and a chemical contaminant in groundwater was calculated (SAIC 2007). A wide range of both measured and modeled partitioning coefficients were used by SAIC (2007) to determine an appropriate value to use in the assessment. SAIC used the SMS SQS values identified in Table III of WAC 173-204-520 (Ecology 1995) as the threshold protective value for sediment quality. A summary of the derived groundwater screening levels relative to the applicable surface water quality standards is provided in Table 5-1.

The derived groundwater screening levels are considered highly simplified and protective given that the modeled approach assumes no dilution of groundwater, assumes that sediment is in direct contact with groundwater at the modeled concentration for a sufficient period of time to achieve system equilibrium, and does not take into consideration site-specific conditions, including distance of contaminants from discharge point, pH, temperature, grain size, and geochemical characteristics of the groundwater and sediment. SAIC (2007) concluded that if chemical concentrations in upland groundwater are below the screening levels, then it is unlikely that the chemicals will exceed the SQS values. Alternatively, upland groundwater concentrations that exceed the screening levels require further weight-of-evidence evaluation to determine if the observed impacts will adversely affect sediment quality (SAIC 2007).

As discussed above, established surface water quality criteria are used as the screening levels for chemicals of interest that do not have a groundwater screening level that is protective of sediment quality. The surface water quality criteria used include the Ecology TSC for Marine Water and Freshwater, Chronic Toxicity and the Ecology MTCA Standard Method B Formula Values for Surface Water. The Ecology TSC are protective of biological populations and are therefore preferentially used as the surface water screening level, where available, over the MTCA surface water quality criteria.

5.1.4 Surface Water and Stormwater

Surface water and stormwater discharges from the SIA have the potential to migrate to the LDW sediments via direct stormwater discharges and/or sheet flow runoff. These discharges have the potential to affect surface water quality within the LDW. Therefore, existing analytical data for these media will be compared to: Ecology TSC for Marine Water and Freshwater, Chronic Toxicity water quality standards listed under Chapter 173-201A WAC and the Ecology MTCA Standard Method B Formula Values for Surface Water. A summary of the surface water screening levels is provided in Table 5-1. The Ecology TSCs are preferentially selected over the MTCA surface water quality criteria in consideration of biological populations.

The Freshwater Ecology TSC screening level for total PCBs in stormwater is 0.014 μg/L. A preliminary survey of Ecology-accredited analytical laboratories in Washington State indicates that the practical detection limit for PCBs in water ranges from 0.05 μg/L to 0.057 μg/L. The analytical laboratories can typically detect concentrations of PCBs in water to 0.02 μg/L; however, the accuracy of the detection is extremely decreased at concentrations below 0.05 μg/L . Therefore, the screening level for PCBs in stormwater is set at the laboratory achievable average quantitation limit of 0.05 μg/L.

The Freshwater Ecology TSC for some metals (i.e., cadmium, copper, lead, nickel, and zinc) is dependent upon water hardness as defined in Chapter 173-201A WAC. The hardness used should be that of the receiving water or point of potential impact, which in this case is the LDW. As discussed in Section 2.2.4.1, the LDW can experience both saline and freshwater conditions adjacent to the SIA dependent on the flow conditions. Therefore, given this mixed flow regime a hardness of 100 mg/L as calcium carbonate was assumed for the hardness dependent metals calculations. The Ecology TSC for both Freshwater and Marine Water for dissolved mercury are below the practical laboratory detection limit of 0.125 μg/L. Therefore, the screening level for dissolved mercury in stormwater is the practical laboratory detection limit of 0.125 μg/L.

5.2 Soil

This section presents a summary of the soil data that have been collected on the SIA. The soil data include surface soil samples collected in the chip storage and slag storage areas on the southwest portion of the SIA and subsurface soil samples collected from the surface to a maximum depth of 16 feet bgs across the SIA. Soil samples collected on the SIA have been analyzed for PCBs, TPH, metals, SVOCs, and VOCs. The following sections provide a narrative for each of the analytes analyzed from collected soils and compare the detected concentrations to the applicable screening levels.

5.2.1 Polychlorinated Biphenyls

A summary of the existing PCB soil data is provided in Table 5-2. Review of the data indicates that environmental investigations conducted on the SIA since 1994 detected concentrations of PCBs in soil on the western portion of the SIA. Anchor (2006) noted there are no known current or historical sources of PCBs on the SIA, with the exception of dielectric fluid contained in some of the transformers that are owned and operated by Seattle City Light. Nor is there evidence that a release of dielectric fluid has ever occurred at the SIA. The fill material that was placed on the SIA between 1942 and 1946 to fill in the former embayment is a suspected source of PCBs. The source of the fill may have been historical hydraulic dredging conducted in the LDW by the ACOE or from unknown upland sources.

Concentrations of PCBs have been detected in soil from the ground surface to the total depth explored of 16 feet bgs on the SIA. The detected concentrations of total PCBs in soil on the SIA range from 0.0057 to 17.77 mg/kg (Table 5-2). The majority of the data available for PCBs in soil are limited to the western portion of the SIA along the shoreline (Figure 5-2). Data collected from the interior portion of the SIA have not detected concentrations of PCBs in soil, with the exception of a shallow subsurface soil sample collected at a depth of 2 feet bgs from boring SB-09106 (Figure 5-1).

The screening level for PCBs in soil for the Source Control Evaluation is 0.130 mg/kg. Figure 5-1 depicts the extent of PCBs detected in soil exceeding the screening level.

5.2.2 Total Petroleum Hydrocarbons

A summary of the existing TPH soil data is provided in Table 5-3. Review of the data indicates that concentrations of TPH have been detected in soil on the SIA in three general areas. Screening levels for the Source Control Evaluation have not been defined for TPH in soil because there are no applicable criteria for protection of sediment or surface water quality. A discussion of the presence of TPH in soil on the SIA is provided below.

An area of undifferentiated TPH with a chemical signature similar to cutting oil has been detected in soil on the northeast portion of the SIA in the northern portion of the Machine Shop Area (Figure 5-3). The extent of TPH detected in soil in this area is similar to the extent of the cutting oil plume of LNAPL in the same location (Figure 5-3). The extent of TPH in soil in this area is bounded by soil samples with concentrations of TPH below the laboratory practical quantitation limits (PQLs) (Figure 5-3).

A release of petroleum as hydraulic fluid and diesel fuel has been identified on the southeast portion of the SIA (Figure 5-3). The laboratory analytical results of soil samples collected on the northwestern-most portion of the SIA have detected concentrations of TPH as gasoline range organics (GRO) in soil. These areas are depicted on Figure 5-3.

Concentrations of GRO, DRO, and ORO have been detected in soil collected from borings completed on the northwest portion of the SIA (Figure 5-3). The source of the TPH is unknown but is suspected to be attributable to historical chemical storage and operations activities in this area of the SIA and may include historical and/or ongoing contributions from documented releases of TPH on Plant 2.

5.2.3 Metals

A summary of the existing metals soil data is provided in Tables 5-4 and 5-5. Review of the data indicates that soil samples collected on the SIA have detected concentrations of arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc exceeding the natural background concentrations for the Puget Sound region (Ecology 1994). Detected concentrations of aluminum and beryllium in soil on the SIA are below the natural background concentrations for the region (Table 5-4). Laboratory analyses have included reporting for the presence of antimony and thallium, which have not been detected in soil on the SIA above the laboratory PQLs (Table 5-4).

Metals detected on the SIA for which there are no established natural background concentrations for the Puget Sound Region include barium, cobalt, selenium, and vanadium. The concentrations of barium detected in soil on the SIA range from 20.6 to 162 mg/kg for surface soil samples and 14.8 to 97.5 for subsurface soil samples (Table 5-4). Cobalt has been detected in soil on the SIA at concentrations ranging from 3.7 to 15.5 mg/kg (Table 5-4). The concentrations of selenium detected in soil on the SIA range from 0.02 to 6 mg/kg (Table 5-4). Vanadium has been detected in soil at concentrations ranging from 35.8 to 61.6 mg/kg (Table 5-4).

The laboratory analytical results for metals in soil that have an SMS screening level are summarized on Table 5-5 with a comparison of the detected concentrations of metals to the natural background concentrations, where available, and the screening levels defined for the Source Control Evaluation. The laboratory analytical results for the metals that do not have an SMS screening level are summarized on Table 5-5. The following sections provide a brief description of the laboratory analytical results for the metals that have been detected on the SIA exceeding the natural background concentrations for the Puget Sound region.

5.2.3.1 Arsenic

The natural background soil arsenic concentration in the Puget Sound Basin is 7 mg/kg (Ecology 1994). Arsenic has been detected in both surface soil and subsurface soil at concentrations exceeding the natural background soil arsenic concentration (Table 5-5). Figure 5-4 depicts the lateral extent of concentrations of arsenic detected in soil on the SIA exceeding the natural background concentration.

Concentrations of arsenic detected in soil samples collected from borings completed on the central portion of the SIA do not exceed the natural background concentration for the region. The concentrations of arsenic detected in soil on the central portion of the SIA along the northern property boundary only slightly exceed the natural background soil arsenic concentration of 7 mg/kg, with concentrations detected ranging from 7 mg/kg to 13 mg/kg (Figure 5-4). These concentrations of arsenic are interpreted to be naturally occurring, even though they are slightly above the published value for natural background concentrations of arsenic in the Puget Sound region.

The laboratory analytical results have detected arsenic at concentrations exceeding the screening level in subsurface soil collected along the western portion of the SIA from the ground surface to a depth of 4 feet bgs (Figure 5-4). A comparison of the concentrations of arsenic detected in soil to the screening level of 57 mg/kg indicates that only two soil samples contain arsenic at concentrations exceeding the screening level (Table 5-5). The concentrations of arsenic detected exceeding the screening level range from 61.7 to 62.7 mg/kg and are detected in subsurface soil collected from borings SB3 and SB6 (Figure 5-4).

Section 2.5.1.2 and Appendix E provide a summary of the conditions on the south-adjacent Boeing-Isaacson property, on which elevated concentrations of arsenic have been detected in soil, resulting in several phases of arsenic-contaminated soil removal and on-site encapsulation. There is no data along the southern boundary of the SIA to evaluate whether arsenic attributable to releases on the south-adjacent property may be present in soil on the SIA.

5.2.3.2 Cadmium

The natural background soil cadmium concentration in the Puget Sound Basin is 1 mg/kg (Ecology 1994). The screening level for cadmium in soil is 5.1 mg/kg. Concentrations of cadmium have been detected in surface soil on the SIA, including surface soil samples collected on the interior portion of the SIA, and surface sample intervals of borings completed along the western portion of the SIA (Figure 5-5).

The laboratory analytical results detected cadmium in soil at two locations exceeding the screening level of 5.1 mg/kg. Two surface soil samples collected in the metal storage and slag loading area at concentrations of 5.13 and 7.02 mg/kg, both of which exceed the screening level of 5.1 mg/kg (Table 5-5).

5.2.3.3 Chromium

Concentrations of chromium detected in soil exceeding the natural background soil concentration for the Puget Sound Basin of 48 mg/kg were detected in surface soil on the western and southwestern portions of the SIA and subsurface soil along the western portion of the SIA. The extent of chromium detected in soil exceeding the natural background soil concentration is depicted on Figure 5-6.

The screening level for chromium in soil is 260 mg/kg. The extent of concentrations of chromium detected in soil on the SIA exceeding the screening level is depicted on Figure 5-6. The extent of chromium exceeding the screening level includes nearly the entire western boundary of the SIA and the southwest corner of the SIA in the metal storage and slag loading area. The concentrations of chromium in soil exceeding the screening level are present in surface soil and subsurface soil maximum depth explored of 8 feet bgs (Table 5-5).

5.2.3.4 Copper

The natural background soil copper concentration in the Puget Sound Basin is 36 mg/kg (Ecology 1994). Copper has been detected in soil above the natural background concentration detected along the western portion of the SIA (Figure 5-7). There is limited soil data for copper on the SIA, except for the shoreline area and an area along the northern property boundary. The concentrations of copper detected in soil along the northern property boundary are below the natural background concentration.

The screening level for copper in soil is 390 mg/kg. The laboratory analytical results have detected concentrations of copper in three subsurface soil samples collected from borings SB3 and SB6 at depths of 2 to 6 feet bgs exceeding the screening level (Table 5-5).

5.2.3.5 Lead

Lead has been detected exceeding the natural background soil concentration of 24 mg/kg in surface soil in the metal storage and slag loading area on the southwest corner of the SIA, and in subsurface soil on the western portion of the SIA, and subsurface soil collected from one boring on the central portion of the SIA. None of the other soil samples analyzed for lead from the interior portion of the SIA contained lead at concentrations above the natural background concentration. Figure 5-8 depicts the extent of lead detected in soil exceeding the natural background soil concentration.

Lead has been detected at concentrations exceeding the screening level of 450 mg/kg on the westernmost portion of the SIA (Figure 5-9). Concentrations of lead exceeding the screening level have been detected in subsurface soil collected from borings SB-3, SB-4, and SB-7 collected between the ground surface and the total depth explored of 8 feet bgs (Figure 5-8).

5.2.3.6 Mercury

Mercury has been detected in soil exceeding the natural background soil concentration of 0.07 mg/kg for the Puget Sound region (Ecology 1994). One soil sample collected from the surface interval of boring SB-4 contains concentrations of mercury at a concentration of 0.694 mg/kg, which exceeds the screening level of 0.4 mg/kg (Figure 5-9).

5.2.3.7 Nickel

The natural background concentration for nickel in soil in the Puget Sound region is 48 mg/kg (Ecology 1994). The natural background concentration for nickel is also the screening level for the Source Control Evaluation. The laboratory analytical results of subsurface soil samples collected between depths of 2 feet and 12.5 feet bgs from the central portion of the SIA have detected concentrations of nickel typically ranging from 9 to 19 mg/kg, which are below the screening level.

Nickel has been detected in subsurface soil collected along the western portion of the SIA, adjacent to the shoreline, at concentrations ranging from 28.6 to 5,560 mg/kg, between the ground surface and a depth of 8 feet bgs (Table 5-5). The laboratory analytical results of all of the soil samples collected from borings SB-1 through SB-7 contain nickel at concentrations exceeding the screening level (Figure 5-10).

5.2.3.8 Silver

There is no defined natural background concentration for silver in soil in the Puget Sound Region. Silver has been detected in soil at the SIA at concentrations that range from 0.274 to 3.62 mg/kg (Table 5-5). The detected concentrations of silver do not exceed the screening level of 6.1 mg/kg (Figure 5-11).

5.2.3.9 Zinc

Concentrations of zinc exceeding the natural background concentration of 85 mg/kg for the Puget Sound region (Ecology 1994) have been detected in surface soil and subsurface soil along the western portion of the SIA (Figure 5-12). Two subsurface soil samples collected from the eastern portion of the SIA also contained concentrations of zinc above the natural background concentration.

The screening level for zinc is 410 mg/kg. Concentrations of zinc exceeding the screening level have been detected in subsurface soil samples. With the exception of concentrations of zinc detected in soil collected from boring SB-7 between depths of 2 and 8 feet bgs, the subsurface soil samples with concentrations of zinc exceeding the screening level are surface sample intervals (Table 5-5).

5.2.4 Semivolatile Organic Compounds

The data for SVOCs in soil on the SIA is limited. The laboratory analytical results for SVOCs in soil are summarized on Tables 5-6 and 5-7. A discussion of the analytical results for PAHs and other SVOCs that are chemicals of interest for the Source Control Evaluation is provided in the following sections.

5.2.4.1 Polycyclic Aromatic Hydrocarbons

Three soil samples collected by Dames & Moore in 1990 (DM-B-1, DM-SB-1, and DM-SB-2) were submitted for laboratory analysis of naphthalene. Additionally, three soil samples collected from soil boring SB-08918, conducted by Boeing in 1994, were submitted for laboratory analysis of PAHs. Concentrations of PAHs and naphthalene were not detected above the laboratory PQLs in the soil samples collected from the SIA (Table 5-6).

5.2.4.2 Other Organic Compounds

The laboratory analytical data for the other organic compounds that are chemicals of interest for the Source Control Evaluation is summarized on Table 5-7. A total of 11 soil samples collected from seven borings completed on the SIA were analyzed for chlorinated benzenes. The laboratory analytical results did not detect concentrations of chlorinated benzenes in soil above the laboratory PQLs.

Three soil samples collected from boring SB-08918 were analyzed for SVOCs, including phthalate esters, phenolic compounds and the other organic compounds that are chemicals of interest for the Source Control Evaluation. The laboratory analyses are summarized on Table 5-7. The laboratory analytical results did not detect concentrations of any of the compounds in soil above the laboratory PQLs.

5.2.5 Volatile Organic Compounds

The sample locations for halogenated volatile organic compounds (HVOC) data in soil are depicted on Figure 5-13. Concentrations of HVOCs, including tetrachloroethene, trichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, and vinyl chloride have been detected in soil on the SIA above the laboratory PQLs (Table 5-8). With one exception, all of the HVOCs detected in soil were identified along the northern property boundary (Figure 5-13). One sample collected from a soil boring completed on the western portion of the SIA contained a low concentration of cis-1,2-dichloroethene (Table 5-8). Other VOCs have not been detected in soil on the SIA above the laboratory PQLs.

5.3 Groundwater

This section presents a summary of the groundwater data that has been collected to date at the SIA. The groundwater data includes laboratory analytical results of groundwater samples collected from monitoring wells and reconnaissance groundwater samples collected from borings. Groundwater sampling was first conducted at the SIA in 1991 and is currently being conducted quarterly by Boeing at shoreline monitoring wells on the SIA to monitor the Area 2-66 groundwater plume that originates on the Plant 2 facility and semi-annually by Jorgensen Forge to monitor the Area 1, Area 2, and Diesel Fuel Area plumes.

5.3.1 Polychlorinated Biphenyls

A total of 41 groundwater samples have been collected from 14 monitoring wells and 17 borings on the SIA and analyzed for PCBs. The laboratory analytical results of groundwater samples analyzed for PCBs are presented on Table 5-9.

PCBs have not been detected in groundwater, with the exception of a June 2003 groundwater sample collected from monitoring well MW-6. Total PCBs, consisting of a combination of Aroclor 1254 and Aroclor 1260, were detected at a concentration of 0.41 micrograms per liter (μg/L), which exceeds the screening level of 0.27 μg/L. PCBs were not detected in a groundwater sample collected from monitoring well MW-6 in April 2003. The isolated detection of PCBs is likely a false detection. Monitoring well MW-6 has not been sampled for PCBs since June 2003.

5.3.2 Petroleum Hydrocarbons

The data collected to date indicates that dissolved-phase concentrations of TPH have been detected in groundwater on the SIA in two areas (Table 5-10; Figure 5-14). The laboratory analytical results of groundwater samples collected from the southeast portion of the SIA indicate that there is a plume of dissolved-phase DRO and ORO in groundwater. Figure 5-14 depicts the lateral extent of concentrations of DRO and ORO that have been detected in groundwater.

A plume of LNAPL is also present on the southeast portion of the SIA within the plume of dissolved-phase DRO and ORO. A second plume of LNAPL is present on the northeast portion of the SIA. The laboratory analytical results from monitoring wells located around this LNAPL plume have not detected dissolved-phase concentrations of TPH, indicating that there is no dissolution from the LNAPL into the groundwater. The contents and characteristics of the LNAPL plumes are discussed further in Section 5.4.

A dissolved-phase plume of TPH is identified in reconnaissance groundwater samples collected from temporary borings and in shallow-screened monitoring wells on the northwest corner of the SIA (Figure 5-14). The TPH consists of benzene, toluene, ethylbenzene, and xylene (BTEX) detected in reconnaissance groundwater samples. Concentrations of benzene have been detected exceeding the screening level. The concentrations of benzene are likely associated with the detected concentrations of GRO in soil in borings completed in this area of the SIA. Groundwater samples from monitoring wells in this area have not been sampled for GRO since 1996, but there have been continued detections of benzene into 2007; however, the detected concentrations of benzene are below the screening level.

5.3.3 Metals

Concentrations of total and dissolved metals have been detected in groundwater collected from borings and monitoring wells on the SIA. The laboratory analytical results for total and dissolved SMS metals, including arsenic, cadmium, chromium, copper, lead, mercury, silver and zinc are summarized on Table 5-11. The laboratory analytical results for total and dissolved non-SMS metals are summarized on Table 5-12. The screening levels that have been defined for metals in groundwater are for dissolved metals; therefore, only the detected concentrations of dissolved metals are evaluated with respect to the screening levels.

5.3.3.1 Arsenic

The majority of the groundwater data for arsenic is reconnaissance groundwater data that has been collected from borings (Figure 5-14). The concentrations of dissolved arsenic in groundwater in both reconnaissance groundwater samples and in samples collected from monitoring wells are similar to the detected concentrations of total arsenic in the same samples. The concentrations of dissolved arsenic detected in reconnaissance groundwater samples range from 1 to 72 μg/L (Table 5-11). The concentrations of dissolved arsenic detected in groundwater samples collected from monitoring wells on the SIA range from 0.174 to 6 μg/L (Table 5-11). All of the concentrations of dissolved arsenic detected in groundwater at the SIA are below the screening level of 227 μg/L.

5.3.3.2 Cadmium

Dissolved cadmium has only been detected above the laboratory PQL in one reconnaissance groundwater sample collected at the SIA (Table 5-11). The laboratory analytical results also detected a concentration of total cadmium in one reconnaissance groundwater sample collected at the SIA (Table 5-11). The concentration of dissolved cadmium detected in the reconnaissance groundwater sample collected from boring GP-08905 is below the screening level of 2.6 μg/L (Table 5-11). Cadmium has not been detected above the laboratory PQLs in groundwater samples collected from monitoring wells on the SIA (Figure 5-15).

5.3.3.3 Chromium

Concentrations of total chromium were detected in reconnaissance groundwater samples ranging from 5 to 307 μg/L and in groundwater samples collected from monitoring wells ranging from 5 to 90 μg/L (Table 5-11). The detected concentrations of dissolved chromium in the reconnaissance groundwater samples ranged from 6 to 23 μg/L (Table 5-11), and there is little difference between detected concentrations of total chromium and dissolved chromium in the groundwater samples collected from monitoring wells on the SIA. The detected concentrations of dissolved chromium in groundwater on the SIA are all below the screening level of 306 μg/L.

5.3.3.4 Copper

The concentrations of total copper detected in reconnaissance groundwater samples range from 3 µg/L to 517 µg/L (Table 5-11). In comparison, the concentrations of dissolved copper in the same reconnaissance groundwater samples range from 2 µg/L to 7 µg/L, with one exception in which dissolved copper was detected at a concentration of 43 µg/L (Table 5-11). The concentrations of total and dissolved copper in groundwater samples collected from monitoring wells on the SIA ranges from 0.5 µg/L to 8 µg/L, except for groundwater samples collected from monitoring well PL2-JF01C (Table 5-11). The laboratory analytical results of groundwater samples collected from monitoring well PL2-JF01C have detected concentrations of total copper ranging from 3 µg/L to 36 µg/L. None of the detected concentrations of dissolved copper in groundwater exceed the screening level.

5.3.3.5 Lead

Concentrations of total lead ranging from 1 µg/L to 23 µg/L have been detected in reconnaissance groundwater samples collected from borings on the SIA (Table 5-11). Dissolved lead has been detected in reconnaissance groundwater samples collected on the SIA at concentrations ranging from 1 to 8 µg/L, all of which are below the screening level of 11 µg/L (Table 5-11). The laboratory analytical results of groundwater samples collected from monitoring wells on the SIA have detected total lead ranging from 1 µg/L to 30 µg/L, but have not detected concentrations of dissolved lead above the laboratory PQLs (Table 5-11). None of the detected concentrations of dissolved lead in groundwater exceed the screening level.

5.3.3.6 Mercury

The screening level value set for mercury in groundwater for the Source Control Evaluation is 0.0052 µg/L (Table 5-1). The majority of the laboratory PQLs for total and dissolved mercury are higher than the screening level value. Concentrations of total mercury ranging from 0.0114 to 0.9 have been detected in reconnaissance groundwater samples collected from borings and in monitoring wells on the SIA (Table 5-11). The laboratory analytical results of reconnaissance groundwater samples collected from borings on the SIA did not detect concentrations of dissolved mercury above the laboratory PQLs. The laboratory PQLs for groundwater samples collected from monitoring wells on the SIA are generally lower than those for reconnaissance groundwater samples. Because of this, concentrations of dissolved mercury ranging from 0.000234 to 0.00103 μg/L have been identified in groundwater samples collected from monitoring wells on the northwest portion of the SIA. None of the detected concentrations of dissolved mercury in groundwater exceed the screening level of 0.0052 μg/L.

5.3.3.7 Nickel

The laboratory analytical results have detected concentrations of total and dissolved nickel in groundwater on the SIA. The concentrations of total nickel are generally higher than the concentrations of dissolved nickel in any one sample and the concentrations of total and dissolved nickel are generally higher in reconnaissance groundwater samples collected from borings than those collected from monitoring wells.

Concentrations of total nickel have been detected ranging from 0.5 to 210 μg/L in groundwater on the SIA (Table 5-11). Concentrations of dissolved nickel ranging from 10 to 60 μg/L have been detected in reconnaissance groundwater samples collected from borings and from 0.5 to 10 μg/L in groundwater samples collected from monitoring wells (Table 5-11). The laboratory analytical results have detected concentrations of dissolved nickel exceeding the screening level in groundwater samples collected from both borings and monitoring wells at the SIA (Table 5-11).

5.3.3.8 Silver

Concentrations of total silver have been detected in groundwater samples collected from monitoring wells on the SIA ranging from 0.2 to 2 μg/L (Table 5-11). The laboratory analytical results have not detected concentrations of dissolved silver above the PQLs in groundwater on the SIA.

5.3.3.9 Zinc

Concentrations of total and dissolved zinc have been detected in groundwater collected on the SIA. The concentrations of dissolved zinc are significantly lower than the detected concentrations of total zinc in the same sample. The screening level for zinc is 33 μg/L. Concentrations of dissolved zinc exceeding the screening level have been detected in reconnaissance groundwater samples collected from five borings completed on the SIA and historically in groundwater collected from monitoring well PL2-JF01C (Figure 5-15).

5.3.3.10 Metals Summary

The groundwater data for metals include reconnaissance groundwater samples and samples from monitoring wells. The only metals that have been detected exceeding the screening levels in the groundwater samples collected from monitoring wells on the SIA, which provide the most representative indication of groundwater quality, include dissolved nickel and zinc in monitoring well PL2-JF01C. All concentrations of dissolved arsenic, cadmium, chromium, copper, lead, mercury, and silver in groundwater are below the screening levels. Monitoring well PL2-JF01C was installed and is monitored by Boeing as part of their ongoing investigation for the Plant 2 facility. The screened interval for monitoring well PL2-JF01C is 74 to 78 feet bgs. The laboratory analytical results of groundwater samples collected from shallower monitoring wells in the vicinity of monitoring well PL2-JF01C, including monitoring wells PL2-JF01AR, screened from 23 to 27 feet bgs, and PL2-JF01B, screened from 40 to 50 feet bgs, indicate that concentrations of dissolved nickel and zinc are significantly lower in the upper portion of the water-bearing zone in this vicinity. Based on these observations, the concentrations of nickel and zinc in groundwater samples collected from monitoring well PL2-JF01C are likely attributable to naturally occurring metals in groundwater and are not associated with releases on the SIA or Plant 2.

5.3.4 Semivolatile Organic Compounds

The data for SVOCs in groundwater on the SIA is limited. The following sections summarize the results of laboratory analysis for PAHs and the other organic compounds that are chemicals of interest for the Source Control Evaluation based on the SMS. The laboratory analytical results for SVOCs in groundwater are summarized on Tables 5-13 and 5-14.

5.3.4.1 Polycyclic Aromatic Hydrocarbons

There is limited data available for PAHs in groundwater on the SIA. Eight reconnaissance groundwater samples collected on the SIA were submitted for laboratory analysis of PAHs. The groundwater samples were collected from borings completed by Weston or Boeing in 1994 on the northern portion of the SIA (Figure 5-1). The laboratory analytical results for PAHs in groundwater are summarized on Table 5-13. The laboratory analytical results did not detect concentrations of PAHs above the laboratory PQLs in any of the reconnaissance groundwater samples collected from the borings, with the exception of a detection of acenapthene at 1.5 μg/L in the sample collected from boring GP-09103 (Figure 5-1). The screening level for acenapthene in groundwater is 2.6 μg/L.

Groundwater samples collected from monitoring wells MW-25 and MW-31 in December 2004 were submitted for laboratory analysis of naphthalene. The laboratory analytical results detected low concentrations of naphthalene, but were qualified because naphthalene was also detected in the associated method blank. The detected concentrations of naphthalene are well below the screening level.

5.3.4.2 Other Organic Compounds

There is limited groundwater data available for the other organic compounds that are chemicals of interest for the Source Control Evaluation. Groundwater samples collected from monitoring wells on the SIA in 1992 and 1993 were submitted for laboratory analysis of chlorinated benzenes. The laboratory analytical results did not detect concentrations of chlorinated benzenes above the laboratory PQLs (Table 5-14).

Eight reconnaissance groundwater samples collected on the SIA in 1994 were submitted for laboratory analysis of SVOCs. The laboratory analytical results are summarized on Table 5-14. The laboratory analytical results did not detect concentrations of any of the organic compounds above the laboratory PQLs, except for one detection of bis(2-ethylhexyl)phthalate at 12 μg/L in the sample collected from boring GP-08901 (Figure 5-1). The detected concentration of bis(2-ethylhexyl)phthalate exceeds the screening level of 0.28 μg/L.

5.3.5 Volatile Organic Compounds

The data for VOCs in groundwater includes reconnaissance groundwater data on the northern portion of the SIA, and data from the Boeing shoreline monitoring wells located on the northwest corner of the SIA. Figure 5-16 depicts the sample locations for VOCs in groundwater. The laboratory analytical results for HVOCs in groundwater are summarized on Table 5-15. Table 5-16 summarizes the laboratory analytical results for all other VOCs that have been detected in groundwater on the SIA.

Concentrations of HVOCs that have been detected in groundwater on the SIA regularly include cis-1,2-dichloroethene and vinyl chloride. There have been sporadic detections of other HVOCs in groundwater on the SIA, as summarized in Table 5-15 and discussed below. As summarized in the groundwater memorandum (Farallon 2005a), the source of the HVOCs detected in groundwater on the SIA is attributed to releases on Plant 2.

The reconnaissance groundwater sample collected at a depth of 14 feet bgs from boring GP-08905 contained tetrachloroethene (PCE) at a concentration exceeding the screening level (Table 5-15). The suspected source of PCE to this location is downgradient migration from the documented releases on Plant 2. Groundwater reconnaissance samples collected from four borings advanced surrounding boring GP-08905 did not contain concentrations of PCE above the laboratory PQL. Additionally, the most recent groundwater sample collected from monitoring well MW-23, located approximately 38 feet from boring GP-08905 and screened in the shallow portion of the water-bearing zone, did not contain PCE at a concentration above the laboratory PQL.

A concentration of TCE exceeding the screening level value was detected in the reconnaissance groundwater sample collected from boring GP-06637 at a depth of 14 feet bgs in 1995 (Table 5-15). The suspected source of TCE to this location is downgradient migration from the documented releases on Plant 2. The reconnaissance groundwater samples collected from four borings completed at the same time around GP-06337 did not contain concentrations of TCE above the laboratory PQLs. The nearest monitoring well to boring GP-06337 that is screened within the shallow portion of the water-bearing zone is monitoring well PL2-JF01AR (Figure 5-16). Concentrations of TCE have never been detected in groundwater samples collected from monitoring well PL2-JF01AR above the laboratory PQLs (Table 5-15).

The laboratory analytical results of a reconnaissance groundwater sample collected from boring GP-06633 at a depth of 25 feet bgs in 1995 and a groundwater sample collected in 2002 from monitoring well PL2-JF01AR, screened from 23 to 27 feet bgs, detected concentrations of 1,1-DCE exceeding the screening level. The concentration of 1,1-DCE detected at this location is attributable to downgradient migration and degradation of documented releases of HVOCs on Plant 2. A total of 17 subsequent sampling events have been conducted at monitoring well PL2-JF01AR since 2002 and concentrations of 1,1-DCE have not been detected above the laboratory PQLs.

There have also been detections of other VOCs in groundwater on the SIA, including acetone, chloroform, carbon disulfide, chlorobenzene, chloromethane, and chloroethane (Table 5-16). Of these chemicals, only chloroform has been detected above the screening level. Chloroform was detected in a groundwater sample collected from monitoring well MW-24 in 1992 exceeding the screening level (Table 5-16). Chloroform is a compound that is commonly associated with a chlorinated drinking water supply. Subsequent sampling of monitoring well MW-24 did not detect chloroform at a concentration above the screening level or laboratory PQL. Based on the suspected source of the chloroform, and the subsequent groundwater data, chloroform does not represent a potential risk to the LDW and will not be discussed further.

5.4 Light Non-Aqueous Phase Liquid

Two separate plumes of TPH as LNAPL are present on the SIA, indicated as Area 1 and Area 2 on Figure 1-2. An LNAPL plume of undifferentiated TPH with a chemical signature similar to cutting oil has been identified on groundwater on the northeast portion of the SIA in Area 1 (Figure 5-17). This plume of LNAPL will herein be referred to as the cutting oil plume. The second LNAPL plume consists of DRO that have been identified as diesel fuel and hydraulic oil located on groundwater in the southeast portion of the SIA in Area 2 (Figure 1-2). The plume of LNAPL will herein be referred to as the hydraulic oil plume. Figure 5-19 shows the approximate extent of the two LNAPL plumes. A discussion of each of these LNAPL plumes is provided in the following sections.

5.4.1 Cutting Oil Plume

The lateral extent of the cutting oil plume has changed little since monitoring of the plume began in 1992. Figure 5-17 depicts the extent of the cutting oil plume since monitoring began in this portion of the SIA. A comparison of the LNAPL measured in 1992 indicates that there has been migration of the LNAPL in the downgradient direction on the west end of the cutting oil plume. The cutting oil plume has not changed geometry significantly since 2002, indicating that it is stable and is not migrating or expanding. Laboratory analytical results of groundwater samples collected around the cutting oil LNAPL indicate that there is no dissolution of cutting oil into the groundwater. During the most recent monitoring event, conducted in August 2007 the thickness of cutting oil as LNAPL was measured in monitoring wells ranging in thickness from 1.1 (monitoring well MW-18) feet to 9.68 feet (monitoring well MW-27) (Table 2.1).

Samples of LNAPL have been collected periodically from monitoring wells located within the cutting oil plume since 1992. Samples of LNAPL have been submitted for laboratory analysis of BTEX, HVOCs, PCBs, PAHs, and SVOCs, as summarized on Tables 5-17 through 5-21. The laboratory analytical results detected toluene and xylenes in the LNAPL, but did not detect benzene or ethylbenzene (Table 5-17). The laboratory analytical results for PCBs and HVOCs in LNAPL in the cutting oil plume were presented and discussed in the *Technical Memorandum regarding Groundwater Data Summary*, which was prepared by Farallon and dated June 28, 2005. Concentrations of HVOCs were detected above the laboratory detection limits in samples of LNAPL collected from monitoring wells MW-20 and MW-21 in 1992, but not in samples collected in 2004 (Table 5-18). The detections of HVOCs are likely attributable to sequestration by the LNAPL of HVOCs that migrated onto the SIA from the adjacent Plant 2, which has documented HVOCs in groundwater. The analytical results for samples of LNAPL in the cutting oil plume collected from monitoring wells MW-19, MW-20, and MW-21 in 1992; and samples of LNAPL collected from monitoring wells MW-19 and MW-33 in 2003 did not detect concentrations of PCBs above the laboratory PQLs (Table 5-19). Naphthalene was detected in samples of LNAPL collected in 2004 (Table 5-20). The laboratory analytical results did not detect concentrations of other PAHs or SVOCs in the LNAPL (Tables 5-20 and 5-21).

5.4.2 Hydraulic Oil Plume

The extent of the hydraulic oil plume is limited to monitoring wells MW-12, MW-13, and MW-33 (Figure 5-17). The thickness of LNAPL in the hydraulic oil plume, as measured in monitoring wells MW-12, MW-13, and MW-33 on July 31, 2007, ranges from 0.60 feet (monitoring well MW-12) to 2.91 feet (monitoring well MW-13) (Table 2-2). A sample of the LNAPL from this area was collected in 2003 and submitted for laboratory of PCBs. The laboratory analytical results did not detect concentrations of PCBs in the LNAPL above the laboratory PQLs (Table 5-19).

Measurable thicknesses of LNAPL have been observed in monitoring well MW-35; however, because of problems accessing the well, monitoring well MW-35 has not been monitored or sampled since 2000. The source of LNAPL to groundwater in the area of monitoring well MW-35 is unknown, although it is likely related to the hydraulic oil plume or oil storage in the press vaults.

5.5 Surface Water

Windward Environmental, L.L.C. (Windward) conducted a seep survey and sampling investigation of seeps along the LDW on behalf of the LDWG. As part of the investigation, a single shoreline seep sample was collected adjacent to the SIA on July 1, 2004 and submitted for laboratory analysis of both conventional parameters and chemical analysis. The results of the investigation are summarized in the *Data Report: Survey and Sampling of Lower Duwamish Waterway Seeps - Final*, prepared by Windward and dated November 18, 2004. The results of the seep sampling are summarized below. Additional details should be referenced in the summary report.

Seep 20 was identified along the base of the concrete panel bulkhead adjacent to the SIA. A filtered and an unfiltered seep sample were submitted for laboratory analysis of metals, VOCs, SVOCs, PCBs, and organochlorine pesticides. Additionally, the unfiltered seep sample was submitted for laboratory analysis of TSS and TOC, and the filtered seep sample was submitted for laboratory analysis of DOC. Concentrations of TOC and DOC were not detected above the laboratory PQLs. TSS was estimated at 4.3 mg/L.

The analytical laboratory did not detect seep water concentrations of SVOCs, VOCs, organochlorine pesticides, or PCBs above the laboratory PQLs. The laboratory analytical results detected concentrations of arsenic, cadmium, copper, lead, mercury, nickel, silver, and zinc. The laboratory analytical results for metals are summarized with the groundwater results on Table 5-11. The laboratory analytical results did not detect concentrations of metals exceeding the screening levels (Table 5-11).

5.6 Stormwater Discharge and Solids

This section provides a summary of the investigations and laboratory analytical results for samples collected at the SIA associated with the stormwater system. The samples collected include stormwater samples collected from the four stormwater outfalls, solids collected from the Property Line outfall lines, and solids collected from catch basins located on the SIA.

5.6.1 Stormwater

Stormwater samples associated with four outfalls at the SIA have been sampled for metals periodically since 1990 whenever sufficient discharge volumes permit. They were sampled once in 2005 for PCBs. The laboratory analytical results were collected during a single storm event in 1990 (Dames and Moore 1990b), a single storm event on May 9, 2005 (Farallon and Anchor 2006), and quarterly from October 2003 to the present. The gaps in quarterly data are attributable to low precipitation and periods with no stormwater discharge from the SIA preventing the collection of stormwater samples. The laboratory analytical results are summarized on Tables 5-22 and 5-23

Concentrations of metals, including arsenic, cadmium, chromium, copper, lead, nickel, silver, and zinc, have been detected in stormwater associated with Outfalls 001, 002, and 003 (Table 5-22). A sample of stormwater from Outfall 004 collected in 1990 did not contain concentrations of metals above the laboratory PQLs. Of the metals detected in stormwater samples associated with Outfalls 001, 002, and 003, only dissolved copper and nickel were detected at concentrations exceeding the screening levels (Table 5-22).

The laboratory analytical results of stormwater samples collected from catch basins located upgradient of Outfalls 002 and 003 in May 2005 did not detect concentrations of PCBs above the laboratory PQLs.

5.6.2 Property Line Outfall Solids

Solids samples were collected from three manhole locations (MN 37-2, SDMH-24B, and SDMH-24A) along the 24-inch Property Line outfall pipe, a manhole location on the previously unidentified Boeing 15-inch diameter pipe (MH37-7), and two manhole locations along Boeing's 12-inch Property Line outfall pipe (SDMH-15B and SDMH-15A) (Figure 5-18). The sampling was conducted as part of the EPA-approved *Phase II Transformer Investigation Work Plan* (Floyd Snider McCarthy 2004). The laboratory analytical results are summarized on Table 5-2.

The solids sampled from Boeing's 12-inch Property Line outfall pipe consisted of several inches of silty sand and/or gravel overlying approximately 0.5-inch of oily sludge in SDMH-15B to a bottom layer of silty sand sludge with a grey-black, oily appearance and a hydrocarbon odor in SDMH-15A. The concentrations of PCBs (entirely Aroclor 1254) identified at SDMH-15B at the junction of the 15-inch pipe leading from Plant 2 into the 12-inch Property Line outfall pipe was 1,400 mg/kg. The concentrations further downgradient at SDMH-15A ranged from 7.2 to 350 mg/kg, depending on the sample interval depth (increased in the material with oily appearance and hydrocarbon odor). To Jorgensen Forge's knowledge, Boeing has not removed the solids from within the pipe, but has installed an expansion plug at the SDMH 15A location to prevent the migration of solids upgradient from this location into the LDW.

The solids sampled from the 24-inch diameter pipe consisted of several inches of silty sand and/or gravel overlying approximately 0.5-inch of oily sludge in MN 37-2, MN 37-7, and SDMH-24B, to very little accumulated granular material and the presence of oily sludge along the bottom surface in SDMH-24A. The concentrations of PCBs detected in the granular samples from the 24-inch Property Line outfall (samples SD004 and SD001), upgradient from the historical 12-inch diameter stormwater outfall that extends from the SIA, ranged up to 2,600 mg/kg. The analytical results of a sample collected from the 15-inch diameter stormwater pipe connecting Plant 2 to the 24-inch diameter stormwater outfall, upstream of the cross-connection of the historical 12-inch diameter pipe from the SIA, detected a concentration of PCBs of 731 mg/kg. A PCB concentration of 10,000 mg/kg was detected in the sample of oily sludge collected downstream of the connection with the historical 12-inch diameter pipe extending from the SIA. The analytical results of the solids samples are illustrated on Figure 5-18. Neither Boeing nor King County have removed the solids from within the pipe, so these solids continue to be a potential ongoing source of elevated PCBs to the LDW sediments adjacent to the northwest corner of the SIA. The Boeing 15-inch outfall connection to the 24-inch was inactivated in the mid-1990s (pers. comm. Ernst 2008), but the KCIA continues to discharge to the 24-inch line from a 26-acre drainage area.

Farallon collected a sample of solids material in the historical 12-inch diameter pipe that extends from the SIA to the 24-inch Property Line outfall at a distance of approximately 6 inches from the junction. The historical 12-inch diameter pipe was also traced by Farallon as far as possible onto the SIA, and a sample of solids material was collected at a distance of approximately 40 feet from the junction by excavating vertically, cutting the pipe, and collecting an undisturbed sample of the black silty sand. The concentration of PCBs detected in the solids sample collected from the historical 12-inch diameter pipe was 1,100 mg/kg in the sample collected at 6 inches. The concentration of PCBs detected in the sample collected at a distance of 40 feet from the junction of the historical 12-inch pipe and 24-inch Property Line pipe was 6.5 mg/kg. As discussed by Farallon (2005b), the elevations of both sampling locations within the 12-inch pipe are within the documented range of tidal variations within the LDW. Therefore, the 12-inch line is subject to backflushing and redistribution of elevated PCBs identified within the 24-inch line. The large decrease in identified PCB concentrations proceeding up the 12-inch line provides evidence that backflushing is the source of the identified PCB concentrations.

5.6.3 Catch Basin Solids

Solids were collected from stormwater catch basins CB1 through CB4, located on the western, central, and eastern portions of the SIA on August 31, 2004 and submitted for laboratory analysis of PCBs and metals. The results of the catch basin solids sample were presented in the *Final Investigation Data Summary Report* (Farallon and Anchor

2006) and are summarized on Tables 5-2, 5-4, and 5-5 and on Figure 5-19. A summary of the results is presented herein. The screening levels for catch basin solids are the same as those established for soil, as discussed in Section 5-1 and summarized on Table 5-1.

The concentrations of PCBs detected in the solids samples collected from the catch basins ranged from 0.129 mg/kg (catch basin CB4) to 0.302 mg/kg (catch basin CB2) (Figure 5-19). The concentrations of PCBs detected in the solids samples collected from catch basins CB1, CB2, and CB3 exceeded the screening level of 0.13 mg/kg (Table 5-2).

The laboratory analytical results of the solids samples collected from the catch basins detected concentrations of chromium, copper, nickel, and zinc exceeding the screening levels (Table 5-3). Chromium was detected in all four of the catch basin samples, at concentrations ranging from 3,110 mg/kg (catch basin CB4) to 10,100 mg/kg (catch basin CB2), all of which exceed the screening level of 260 mg/kg (Figure 5-19). Concentrations of copper ranging from 1,060 mg/kg (catch basin CB3) to 2,090 mg/kg (catch basin CB1) exceed the screening level of 390 mg/kg in all four samples collected (Figure 5-19). Concentrations of nickel were detected in all four of the catch basin samples exceeding the screening level, which is the natural background soil metals concentration for the Puget Sound Region (Table 5-5). Zinc exceeded the screening level of (410 mg/kg in the samples collected from catch basins CB1, CB2, and CB3 with detected concentrations ranging from 1,030 mg/kg (catch basin CB2) to 1,090 mg/kg (catch basin CB1) (Figure 5-19). The laboratory analytical results detected concentrations of arsenic, cadmium, lead, mercury, and silver in one or more of the samples collected, all of which were below the screening level (Table 5-5).

5.7 Sediment

A brief description of the surface and subsurface physical and chemical results in the vicinity of the SIA are provided below. A comprehensive summary of the LDW river-wide sediment analytical results, including all of the sediment analytical results compiled in the LDWG database; the Boeing Upriver Area I Sediment Characterization (Floyd Snider McCarthy 2004); the cooperative Boeing, EPA, and ACOE Lower Duwamish Triad Sampling (report pending); the LDWG Phase 2 Round 1; the RI surface sediment sampling (Windward 2005b) and the SIA EPA AOC-related sediment sampling (Farallon and Anchor

2006) are provided in Appendix B. Figures displaying the results in the form of concentration contours which were calculated using an inverse distance weighting technique are provided in the *Final Investigation Data Summary Report* (Farallon and Anchor 2006).

5.7.1 Surface Sediment

A high density of surface sediment samples have been collected adjacent to the SIA, as shown in Figure 5-20. The analytical results for each of these surface sediment samples relative to the SMS SQS and CSL criteria is provided in Appendix B.

5.7.1.1 Physical Results

The currently available (as available in the LDWG river-wide sediment database) surface sediment TOC concentrations adjacent to the shoreline ranged from 1.16 to 3.4 percent. TOC concentrations were relatively higher near the northwestern corner adjacent to the SIA and in scattered areas in the vicinity of the northern portion of the sheet pile wall, and SIA Outfalls 004 and 005. The surface sediment percent fines adjacent to the SIA were less than 20 percent along the shoreline above the 0 feet MLLW elevation, ranged between 60 and 80 percent along the northwestern corner of shoreline, and ranged between 20 and 60 percent along the middle/southern portion of the SIA. The fines content increases with distance from the shoreline bank, indicating a lack of accretion along the mid-upper shoreline bank.

5.7.1.2 Polychlorinated Biphenyls

The surface sediment PCB concentrations were organic carbon (OC-) normalized to facilitate comparison with the SMS criteria. The PCB concentration contours for surface sediments showed that the majority of the surface sediment PCB concentrations in the reach of the LDW (i.e., shoreward of the federal navigation channel) near the SIA were above the SQS criterion of 12 mg/kg OC. Surface sediment total PCBs concentrations were greater than two times the CSL criterion in three general areas in the vicinity of the SIA: adjacent to the cluster of Boeing outfalls with documented historical and potentially ongoing releases (Farallon 2004), adjacent to the northwestern corner of the SIA, and just north of the sheet pile wall along the southeastern portion of the SIA. An evaluation of the potential historical and current migration pathways and sources of PCBs to the surface sediments from the SIA is presented in Section 6.

5.7.1.3 Metals

No SQS exceedences for arsenic, cadmium, or silver were detected in the surface sediments adjacent to the SIA. Cadmium, chromium, lead, mercury, nickel, silver, and zinc concentrations in the upper bank area near the cluster of Boeing outfalls were greater than two times the CSL criteria. The zinc concentrations detected in surface sediments adjacent to the northwestern corner of the SIA were greater than two times the CSL concentration. Concentrations of chromium, lead, and zinc detected in surface sediment samples in the vicinity of the northern boundary of the sheet pile wall also were detected at concentrations greater than two times the CSL criteria. An evaluation of the potential historical and current migration pathways and sources of metals to the surface sediment from the SIA is discussed in Section 6.

5.7.1.4 Semivolatile Organic Compounds

In contrast to the subsurface sediments, there are a number of surface sediment sampling locations analyzed for SVOCs. The majority of the sampling stations showed SVOC concentrations below the SQS criteria except those depicted in Figure 5-21. SVOC analytes detected above the SMS SQS criterion includes the following: benzo(a)anthracene, bis(2-ethylhexyl)phthalate, butylbenzylphthalate, chrysene, dibenzofuran, fluoranthene, fluorene, phenanthrene, total benzofluoranthenes, total LPAHs, and total HPAHs. The SMS SQS exceedence factors (identified concentration divided by applicable SQS criteria) for these SVOCs were generally low ranging from 1 to 3. An evaluation of the potential historical and current migration pathways and sources of SVOCs to the surface sediment from the SIA is discussed in Section 6.

5.7.2 Subsurface Sediment

A high density of subsurface sediment samples have been collected adjacent to the SIA, as shown in Figure 5-22. The analytical results for each of these surface sediment samples relative to the SMS SQS and CSL criteria is provided in Appendix B.

5.7.2.1 Physical Results

TOC ranged from 0.065 to 3.6 percent and varied by a factor of 1 to 10 in several cores. In accordance with SMS protocols, TOC concentrations below 0.5 percent were not TOC-normalized when compared to total PCBs, or the SQS or CSL criteria. In these cases, the total PCB concentrations were compared against the lowest apparent effects threshold (LAET) and second lowest apparent effects threshold (2LAET) criteria (dry weight basis). The total solids concentrations were relatively uniform, generally varying by 15 to 25 percent in each core. As expected, samples with higher total solids contained lower TOC concentrations.

5.7.2.2 Polychlorinated Biphenyls

The subsurface PCB data provide a comprehensive picture of PCB concentrations with depth over time in the vicinity of the SIA. Similar to the surface sediment PCB concentrations discussed above, the subsurface sediment PCB concentrations exceeded twice the CSL concentration centered around the Boeing cluster of outfalls adjacent to the northwestern corner of the SIA near historical Outfall 009, and just north of the sheet pile wall adjacent to the southeastern portion of the SIA. The PCB concentrations in subsurface sediments located along the remainder of the SIA shoreline exhibit PCB concentrations similar to the average river-wide PCB concentrations (i.e., between the SQS and CSL criteria). An evaluation of the potential historical and current migration pathways and sources of PCBs to the subsurface sediment from the SIA is presented in Section 6.

5.7.2.3 Metals

The subsurface sediment metals concentrations in the LDW in the vicinity of the SIA are well below the SQS criteria. Concentrations of cadmium, copper, mercury, silver, and zinc in subsurface sediment samples collected near the cluster of Boeing outfalls exceeded twice the CSL criteria. Two isolated subsurface sediment samples collected at station AJF-07 (at 3 to 4 feet, and 6 to 6.65 feet below mudline), which is located channelward of Outfalls 004 and 005 detected concentrations of arsenic between the SQS and CSL criteria. An SQS level exceedence of zinc also was identified 2 to 3 feet below mudline at station AJF-12. An evaluation of the potential historical and current migration pathways and sources of metals to the subsurface sediment from the SIA is presented in Section 6.

5.7.2.4 Semivolatile Organic Compounds

There are only two subsurface sampling stations with SVOC data: from 0 to 2 feet and 2 to 4 feet at DR206 (located across the Federal Navigation Channel adjacent to the Terminal 117 property), and from 1 to 2 feet at SD-DUW313 (located adjacent to Outfalls 003 and 004). The observed SVOC concentrations at these stations in the sampled intervals are well below the SQS criteria. An evaluation of the potential historical and current migration pathways and sources of SVOCs to the subsurface sediment from the SIA is presented in Section 6.

5.7.3 Sediment Porewater

Directly offshore of the Southwest Bank Area on Plant 2 near the northwest portion of the SIA, Windward (2006) collected porewater samples as part of the Phase 2 RI investigation. The purpose of this investigation was to collect porewater samples for VOC analysis adjacent to the documented upland VOC releases within the 2-66 Area on Plant 2 to assess risk to benthic invertebrates. Six stations samples were sampled for porewater using a piezometer assembly and eight stations using a peeper assembly. Cis-1,2-dichloroethene concentrations were detected at seven of eight porewater stations as well as isolated detections of 1,1-dichloroethane, trichloroethene, and vinyl chloride at some of the monitoring stations. These VOC detections document that releases of VOCs from the Plant 2 2-66 Area have a complete pathway to the LDW sediments.

6 CONCEPTUAL SITE MODEL

The purpose of the Source Control Evaluation is to evaluate whether the SIA is a potential ongoing source of chemicals of interest to the adjacent LDW with the potential to cause adverse effects to sediment quality. This evaluation will facilitate necessary source control implementation on the SIA, if any, prior to initiation of sediment cleanup activities to minimize the potential for sediment recontamination following cleanup. The CSM has been developed to evaluate possible migration pathways for chemicals of interest present on the SIA that may represent an ongoing source to LDW sediments. The CSM is based on existing information as summarized in this Evaluation Report and is considered dynamic and may be refined as additional information becomes available. The CSM includes the following elements:

- A summary of the history of the SIA including development and operations
- Identification of potential sources of chemicals of interest
- Identification of chemicals of interest for the Source Control Evaluation based on historical and current operations information and known conditions on the SIA
- A summary of the screening levels used for the Source Control Evaluation
- A discussion of the nature and extent of chemicals of interest in media at the SIA
- Identification of chemicals that represent a potential ongoing source to the LDW
- An evaluation of complete migration pathways for the identified chemicals to reach the LDW sediment and/or surface water

Each of these CSM elements is summarized in detail below. A schematic depiction of the CSM is included as Figure 6-1.

6.1 SIA History and Operations

The SIA was first developed in 1942 and occupied between 1942 and 1965 by Isaacson Iron Works. Historical information indicates that the western portion of the SIA included an embayment of the LDW, which was filled between May 1942 and 1946 (Appendix A). Bethlehem Steel occupied the northwestern portion of the SIA from approximately 1951 to 1963. From 1965 to 1992, the SIA property was owned and operated by EMJ. From 1992 to the present, the SIA property has been owned and operated by Jorgensen Forge.

The operations conducted on the SIA by Isaacson Iron Works consisted of forging and heat-treating steel for the fabrication of structural steel and tractor and road equipment (Farallon and Anchor 2004). Bethlehem Steel operated a steel distribution center with operations consisting of cutting prefabricated steel rods to customers' specifications. Operations conducted by EMJ included manufacturing precision-machined forgings from material grades, including carbon and low-alloy steels, duplex stainless grades, aluminum alloys, titanium alloys, and nickel-base alloys. Jorgensen Forge currently operates as a steel and aluminum forge and mill that produce custom steel and aluminum parts forged and machined to high quality specifications for various industrial clients. A comprehensive description of the known historical and current operations on the SIA is provided in Section 2.

6.2 Potential Sources of Chemicals of Interest

This Evaluation Report defines two categories of potential sources to evaluate the likelihood for current and/or future adverse impacts to the LDW sediment and/or surface water quality from the SIA. The primary potential sources consist of existing sources that could directly result in chemicals impacting the LDW sediment and/or surface water quality or could directly contribute to a secondary potential source. The secondary potential sources consist of media on the SIA that contain chemicals of interest from historical and/or ongoing activities at the SIA that could indirectly adversely impact the LDW sediment and/or surface water quality.

Considered to be both a primary and secondary potential source, this section also includes a discussion of off-site sources that have the potential to contribute chemicals that could migrate onto the SIA and subsequently adversely impact the LDW sediment and/or surface water quality. A description of the primary potential sources, secondary potential sources, and off-site sources of chemicals of interest for the SIA is described in the following sections. Figure 6-1 depicts a schematic of the potential primary and secondary sources at the SIA.

6.2.1 Primary Potential Sources

The primary potential sources are defined as those that have the potential to directly adversely impact LDW sediment and/or surface water quality through spills, leaks, dumping, handling and disposal activities, and other ongoing operations on the SIA. The primary potential sources on the SIA include chemicals that are stored and/or used on the SIA and waste products that are generated by operations on the SIA. Specifically, the primary potential ongoing SIA sources include on-site storage and use of chemicals; production by-products including slag, swarf, and bag house dust; accumulated surface dust and particulate, which may be composed of or contain chemicals; and wastewater.

The chemicals of interest associated with these primary potential SIA sources include:

- Petroleum products, including heating oil, hydraulic oil, cutting oil, diesel fuel and waste oil
- Solvents
- Metals

The details of current SIA operations, including a discussion of chemical and waste storage areas and containment, best management practices, and a summary of the generation and composition of waste products and containment are provided in Section 2.

6.2.2 Secondary Potential Sources

The secondary potential sources include SIA media that have been or will be impacted by primary potential sources and have the potential to impact sediments and/or surface water of the LDW through a direct or an indirect release. Secondary potential sources at the SIA include soil, groundwater, catch basin solids, and LNAPL. Section 5 presents a summary of the chemicals of interest that have been identified at the SIA in soil, groundwater, catch basin solids, and LNAPL. These include chemicals that are known or suspected to be associated with historical and/or current operations at the SIA or are otherwise known to be located on the SIA. The chemicals of interest associated with these secondary potential sources include:

- PCBs
- Petroleum products
- Metals
- VOCs
- SVOCs
- pH

6.2.3 Off-Site Potential Sources

The results of this Source Control Evaluation identified additional suspected or documented sources of chemicals of interest on the SIA that are not associated with historical and/or current operations on the SIA. These chemicals include PCBs, HVOCs, and arsenic. The off-site potential sources include the south-adjacent Boeing-Isaacson facility, which has documented concentrations of arsenic in soil and groundwater; Plant 2, which has documented concentrations of HVOCs in soil and groundwater; and the Property Line outfalls (12-inch and 24-inch) located on the northern portion of the SIA, which have documented concentrations of PCBs in solids within the lines. A more detailed discussion of the potential sources of each of these chemicals of interest is presented in Section 2.5.

6.3 Chemicals of Interest

The purpose of the Source Control Evaluation is to evaluate whether the SIA is a potential ongoing source of chemicals of interest to the adjacent LDW with the potential to cause adverse effects to sediment quality. Accordingly, as identified in Section 6.2.1 and 6.2.2, the chemicals of interest for this Source Control Evaluation include:

- PCBs
- TPH
- Metals
- VOCs
- SVOCs

6.4 Screening Levels for Chemicals of Interest

A discussion of the screening levels used for this Source Control Evaluation is presented in Section 5.1. Screening levels were developed by reviewing potentially applicable laws and regulations to define concentrations for the chemicals of interest that are considered protective of sediment quality in the LDW or, where use of sediment screening level values is inappropriate, screening level values that are protective of surface water quality in the LDW. The screening levels that are protective of sediment quality were preferentially selected as primary screening levels for the Source Control Evaluation over secondary screening levels that are protective of surface water quality given the focus of the AOC is on impacts to LDW sediment quality. Applicable screening levels for protection of sediment quality for the chemicals of interest were developed for solids using the SMS SQS criteria and for groundwater using the highly protective sediment equilibrium partitioning approach developed by SAIC (2007). For those chemical compounds that did not have associated SMS SQS criteria or were not included in the SAIC groundwater screening approach, applicable secondary soil and surface water screening levels were established to facilitate screening of this data. The screening levels used for this Source Control Evaluation for each chemical of interest in each media, as applicable, are defined on Table 5-1. It is important to note that an exceedence of a screening level(s) does not necessarily indicate the upland source of contamination poses an unacceptable risk to sediment and/or surface water quality, but indicates further evaluation of source control using a weight-of-evidence evaluation is warranted.

6.5 Nature and Extent of Chemicals in Secondary Potential Sources

This section presents a summary of the nature and extent of chemicals of interest in the secondary potential source media on the SIA. A more detailed summary of the data for each chemical of interest in each media is presented in Section 5 of this Evaluation Report.

6.5.1 Polychlorinated Biphenyls

Concentrations of PCBs have been detected in soil at concentrations exceeding the screening level value. While there are limited soil data for PCBs in soil on the central portion of the SIA, the potential sources have been characterized sufficiently to evaluate the potential migration of PCBs to the LDW from soil on the SIA.

Concentrations of PCBs have also been detected in catch basin solids on the SIA, including the Property Line outfalls, which are attributed to off-site sources; however, stormwater samples collected from SIA catch basins and permitted outfalls have not contained concentrations of PCBs above the laboratory PQLs. Concentrations of PCBs have not been detected in groundwater on the SIA, with one exception. The isolated detection of total PCBs in the groundwater sample collected from monitoring well MW-6 in June 2003 is likely a false detection, as discussed in Section 5.3.1. Concentrations of PCBs have not been detected in the cutting oil plume of LNAPL in Area 1.

6.5.2 Total Petroleum Hydrocarbons

Historical cutting oil releases have resulted in several feet of LNAPL on groundwater in the northeast portion of the SIA in Area 1. Releases of hydraulic oil have resulted in several feet of LNAPL on groundwater in the southeast portion of the SIA in Area 2. Releases of gasoline and diesel fuel as heating oil have also impacted subsurface soil and/or groundwater on the SIA in Area 4 and the Diesel Fuel Area. Screening levels developed for this Source Control Evaluation for TPH in groundwater are protective of surface water quality and include screening level values for benzene, toluene, and ethylbenzene.

Benzene has been detected in groundwater at concentrations exceeding the screening level in reconnaissance groundwater samples and in groundwater samples collected from monitoring wells located along the shoreline. However, concentrations of benzene exceeding the screening level have not been detected in groundwater on the SIA during ongoing quarterly monitoring performed since 2002. Concentrations of ethylbenzene and toluene have not been detected in groundwater on the SIA exceeding the screening levels.

The existing data indicate that the LNAPL present at the SIA presents a potential ongoing source to the LDW. The laboratory analytical results of samples of LNAPL have detected concentrations of toluene, tetrachloroethene, and naphthalene but have not detected concentrations of PCBs or SVOCs above the laboratory PQLs.

6.5.3 Metals

The results of soil samples collected from the imported fill material located along the shoreline bank detected concentrations of arsenic, copper, mercury, lead, and zinc exceeding the screening levels. Concentrations of cadmium, chromium, lead, and zinc have been detected in surface soil and/or subsurface soil on the SIA that are likely attributable to historical and ongoing operations.

The concentrations of dissolved arsenic, cadmium, chromium, copper, lead, mercury, and silver in groundwater are below the screening levels. The only metals that have been detected in groundwater exceeding the screening levels include nickel and zinc.

Concentrations of dissolved nickel and zinc detected in groundwater at the SIA are attributable to naturally occurring metals in groundwater and are not likely associated with releases on the SIA.

Concentrations of chromium, copper, nickel, and zinc exceeding the screening levels were detected in solids collected from catch basin solids on the SIA. Dissolved copper and nickel were also detected at concentrations exceeding the screening levels in stormwater samples collected from the stormwater outfalls at the SIA in 2005. The concentrations of metals detected in the stormwater system are likely associated with the operations at the SIA. Additional stormwater BMPs (i.e., routine catch basin cleanouts, increased frequency of site sweeping, and more vigilant monitoring of filter fabric within each of the SIA catch basins) were implemented following identification of the elevated metals concentrations in 2005. These BMPs likely reduced the potential ongoing sources of metals to the stormwater drainage system.

6.5.4 Semivolatile Organic Compounds

There are limited data available for SVOCs on the SIA. The available data indicate that concentrations of PAHs have not been detected in soil, groundwater, or LNAPL on the SIA exceeding the laboratory PQLs. In addition, there have been no detections of the other organic compounds in soil or groundwater above the laboratory PQLs, with one exception. Concentrations of bis(2-ethylhexyl)phthalate exceeding the screening level were detected in one reconnaissance groundwater sample collected in 1994. Groundwater samples collected from monitoring wells on the SIA have not been submitted for laboratory analysis of SVOCs.

There are no available data for SVOCs in catch basin solids or stormwater. There are insufficient data to determine whether SVOCs are present in soil, groundwater, or stormwater on the SIA at concentrations that may pose a risk to the LDW sediment quality.

6.5.5 Volatile Organic Compounds

Concentrations of HVOCs are present in soil and groundwater on the SIA along the northwestern property boundary with Plant 2. The low concentrations of HVOCs detected in soil in this area, along with the knowledge of releases of HVOCs from the adjacent 2-66 Area on Plant 2, indicate that the source of the HVOCs to soil in this area are releases from Plant 2. The groundwater data collected for HVOCs in this same area indicate that there is a widespread plume of vinyl chloride on the northwestern portion of the SIA that has migrated onto the SIA from an upgradient source area. Concentrations of PCE, TCE, and 1,1-DCE have been detected in groundwater exceeding the screening levels. Consistent with the source of the HVOCs in soil, the source of the HVOCs to groundwater in this area is considered to be due to documented releases from the adjacent 2-66 Area on Plant 2.

The concentrations of HVOCs detected in shoreline groundwater on the SIA indicate releases from the 2-66 Area on Plant 2 are a potential source to the LDW sediments. Further, detections of HVOCs in sediment porewater directly adjacent to the northwestern corner of the SIA (Section 5.7.3) indicate that these releases have a complete pathway to the LDW sediments.

Other VOCs have not been detected in soil and concentrations detected in groundwater do not pose a risk to the LDW. There are no known or suspected sources of HVOCs on the SIA. The observed locations of HVOCs in soil and groundwater on the SIA indicate that the HVOCs are attributable to documented releases of HVOCs on Plant 2. The conditions on the SIA do not contribute to or exacerbate the release of HVOCs to the LDW.

6.6 Chemicals that Represent an Ongoing Source

Comparison of existing data on the SIA to the screening levels defined for the Source Control Evaluation identified chemicals that represent an ongoing source to the LDW that could potentially result in concentrations exceeding sediment quality and/or surface water quality standards. These chemicals include:

- PCBs
- TPH
- Metals

Concentrations of PCBs have been detected exceeding the screening level in soil and solids collected from the SIA catch basins and Property Line stormwater outfalls. However, concentrations of PCBs have not been detected in groundwater or stormwater discharge above the screening level. The solids containing elevated PCB concentrations within the Property Line stormwater outfalls represent an ongoing source to the LDW. The source of stormwater discharge and solids to these outfalls include Plant 2 and the KCIA. Jorgensen does not contribute to these lines. PCBs in soil and catch basin solids on the SIA represent a source to the LDW.

Concentrations of TPH have been detected in soil and groundwater on the SIA and as LNAPL on groundwater. Concentrations of TPH detected in groundwater do not pose a risk to the LDW sediment or surface water quality. The presence of TPH in soil and LNAPL on the SIA has not been evaluated to determine whether complete pathways exist and therefore currently represent a source to the LDW.

The metals that have been detected on the SIA at concentrations exceeding the screening levels include:

- Arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc in soil
- Cadmium, chromium, copper, and zinc in catch basin solids
- Copper and nickel in stormwater

Based on these data, concentrations of metals in soil and catch basin solids represent a source to the LDW. The concentrations of metals in stormwater are likely related to the metals detected in the catch basin solids. The concentrations of metals in subsurface soil are likely attributable to the imported fill material. The concentrations of metals in surface soil on the southwest portion of the SIA and in catch basin solids are likely associated with ongoing operations.

In addition to the chemicals that have been identified on the SIA at concentrations exceeding the screening levels, the current storage and use of chemicals and the generation of production waste products indicate that solvents, metals and petroleum products are ongoing sources to the LDW.

6.7 Potential Migration Pathways to LDW

Ecology (2004) has identified nine potential migration pathways to the LDW. These include:

- Direct discharge of pollutants from commercial, industrial, private, or municipal stormwater outfalls
- Stormwater discharge from storm drains and pipes, ditches, creeks, or properties adjacent to the LDW
- CSOs consisting of combined discharges of stormwater, municipally permitted industrial discharges, and untreated sewage that is released directly into the LDW when sewers have reached capacity
- Discharge of contaminated groundwater through seeps or infiltration into storm drains and pipes, ditches, or creeks that drain directly to the LDW
- Erosion of LDW bank soil, contaminated fill, waste piles, landfills, and surface impoundments directly to sediment or stormwater, or leaching to groundwater
- Spills, dumping, leaks, and inappropriate housekeeping and management practices
- Waterway operations and traffic
- Air pollution
- Transport of contaminated sediment

Of the potential migration pathways identified by Ecology (2004), the following are relevant to the SIA Source Control Evaluation:

- Direct Discharge (herein referring to the discharge of chemicals through spills, dumping, leaks, and including airborne dust and particulate)
- Stormwater Discharge
- Discharge of Groundwater
- Erosion of Solids

The additional potential pathways identified by Ecology, including CSOs, waterway operations and traffic, and transport of contaminated sediment, are not evaluated as part of the Source Control Evaluation for the SIA because they are not applicable to historical, current, or likely future operations on the SIA. The impacts of air pollution at the SIA consist of an evaluation of the potential for airborne dust that may be associated with operations at the SIA to impact the LDW. Additional impacts from air pollution are beyond the scope of the Source Control Evaluation and are not discussed further.

The Statement of Work (Exhibit B to the Agreed Order) required that the Source Control Evaluation include an evaluation of direct discharge of effluent from the SIA. An evaluation of the ongoing SIA operations (Section 2.4) identified no discharge of any process water or effluent to the LDW, either through direct discharge or through the stormwater system. Therefore, direct discharge of effluent does not pose a potential threat to the LDW and will not be evaluated further.

6.8 Migration Pathways

The analysis of potential migration pathways considers chemical concentrations, transport mechanisms and whether there is a completed physical pathway from the SIA to the LDW. A migration pathway is considered to be complete if chemical concentrations are present exceeding the defined screening levels. Further, a complete migration pathway is only considered a source of chemicals to the SIA if a source of chemicals on the SIA is available to that pathway.

The potentially complete migration pathways applicable to the SIA that allow for potential sources to impact sediment quality and/or surface water quality of the LDW include the following:

- Direct Discharge
- Stormwater Discharge
- Discharge of Groundwater
- Erosion of Solids

For the purposes of this Evaluation Report, these migration pathways have been defined as either primary or secondary migration pathways. A summary of each of the potential primary and secondary migration pathways is identified in the CSM schematic (Figure 6-1), and discussed below.

6.8.1 Primary Migration Pathways

The primary migration pathways for chemicals of interest present in SIA media to reach the LDW include the following:

- Direct discharge of chemicals via surface runoff or airborne transport and fallout

- Discharge of chemicals and waste products to the stormwater system that discharge directly to the LDW
- Direct discharge of groundwater to sediment or surface water in the LDW through seeps
- Direct discharge of LNAPL to sediment or surface water in the LDW through seeps
- Erosion of solids and direct deposition in the LDW

6.8.2 Secondary Migration Pathways

The secondary migration pathways for chemicals of interest present in media at the SIA to reach the LDW include the following:

- Erosion of soil containing chemicals and deposition to the stormwater system with subsequent discharge to the LDW
- Leaching of chemicals in soil to groundwater
- Dissolution of LNAPL into groundwater

The evaluation of secondary migration pathways will assist in the identification of ongoing sources to the LDW. The discussion of primary and secondary migration pathways is presented in the following sections.

6.8.3 Direct Discharge

Chemicals including metals, petroleum products, and solvents are used, stored or generated on the SIA and may be directly released to the LDW through direct discharge. The primary migration pathway for chemicals to reach the LDW includes direct chemical releases by spills, leaks or dumping, direct deposition through accumulation and fallout of surface dust and particulate, and wastewater discharge.

The potential ongoing sources to the LDW through the direct discharge pathway include the following:

- Metals, petroleum products, and solvents that are used and stored on the SIA
- Metals that are present in production waste products
- Metals and petroleum products that may accumulate in surface dust and particulate

- Metals and petroleum products in wastewater
- Petroleum as LNAPL

The CSM includes consideration of releases of metals, petroleum products and solvents from primary potential sources to secondary potential sources at the SIA, including soil, groundwater, and catch basin solids. The various belowground machine pits and storage vaults located in the Forge Shop Area and Melt Shop Area have not been investigated to evaluate the potential impacts to soil and groundwater. All other potential source areas have been investigated and evaluated and the documented soil and groundwater conditions are summarized herein and discussed in the following sections with respect to potential impacts to LDW sediment.

As discussed in Section 2.4.4, the BMPs developed and implemented at the SIA minimize the direct discharge of chemicals used, stored, or generated on the SIA. The following sections present a summary of the potential direct discharge of chemicals through accumulation and deposition of surface dust and particulate, wastewater discharge, and LNAPL discharge.

6.8.3.1 Surface Dust and Particulate

Airborne dust and particulate may be generated directly by current operations on the SIA. As discussed in Section 2.4.4, dust generated by ongoing operations on the SIA is managed through BMPs, including routine maintenance, sweeping of paved surfaces outside the building, and sweeping of accumulated dust in the Melt Bag House and Billet Grinding Bag House, and does not represent a source to LDW sediment or surface water. The migration of chemicals of interest in airborne dust generated by the erosion of solids is a potential source to the LDW. The migration of chemicals of interest that may be present in exposed soil or waste products is discussed in Section 6.8.6.

6.8.3.2 Wastewater Discharge

The wastewater that is handled on the SIA consists of surface water runoff that collects in belowground vaults and pits, water separated from oil-water mixtures by the oil-water separators, water generated by steam cleaning of equipment and quench tank fluids. There is no process wastewater or effluent that is generated on the SIA. Stormwater that accumulates in the railroad scale vault and groundwater that accumulates in the vacuum de-gassing pit is discharged to the LDW through the stormwater conveyance system. The quality of water that accumulates in these vaults and pit has not been evaluated and represents a potential source to sediment or surface water quality in the LDW through the Stormwater Discharge migration pathway. All other wastewater is discharged to the Metro sewer system.

6.8.3.3 LNAPL Discharge

The presence of petroleum products as LNAPL on groundwater at the SIA provides a potential source to the LDW sediment and/or surface water quality. There is no indication that the LNAPL has migrated to the shoreline or discharges directly to the LDW. However, additional investigation is warranted to further define the lateral extent of LNAPL at the SIA.

Based on the current data, there is no direct discharge of chemicals of interest from the SIA to the LDW. However, data gaps exist pertaining to the quality of wastewater that discharges to the LDW through stormwater outfalls and the extent of LNAPL at the SIA. Because of the BMPs conducted on the SIA, the potential for impacts to the LDW sediments through ongoing direct discharge of chemicals of interest from the SIA is low.

6.8.4 Stormwater Discharge

The potential migration pathway for chemicals to reach the LDW through the stormwater system includes direct discharge to sediment from storm drains and pipes. Four permitted stormwater outfalls actively drain portions of the SIA, as discussed in detail in Section 2.4.3. Chemicals of interest that have been detected in the stormwater system, including stormwater and/or catch basin solids, on the SIA at concentrations exceeding the screening levels include the following:

- PCBs
- Cadmium, chromium, copper, lead, mercury, nickel, and zinc

The stormwater line solids and stormwater may also contain TPH associated with ongoing operations and spills, leaks, or dumping, although insufficient data is available to make this determination.

The stormwater system is a migration pathway for chemicals of interest that are present as primary potential sources to reach the LDW. The stormwater system is also a migration pathway for chemicals of interest from primary potential sources to accumulate in catch basins on the SIA. Exposed surface soil may be eroded by wind or water and transported to the stormwater system as solids. These chemicals may be introduced to the stormwater system through surface water runoff or airborne fallout with subsequent transport and deposition to the LDW sediment or surface water.

The elevated concentrations of chromium, copper, and zinc in the solids samples collected from the catch basins indicate that the discharge of water through the stormwater conveyance system potentially resulted in the deposition of solids into the LDW containing concentrations of chromium, copper, and zinc exceeding the SMS SQS and/or the CSL criteria.

Based on these data, there is a complete pathway for the above chemicals of interest to reach the LDW through the direct discharge of stormwater to sediment and/or surface water. There are insufficient data to determine whether TPH poses a source to sediment and/or surface water quality in the LDW through the discharge of stormwater from the SIA.

The potential ongoing sources to stormwater include the following:

- Metals, petroleum products, and solvents stored on the SIA can be spilled to catch basins or sumps that drain to stormwater system
- Metals and/or petroleum products in waste products, and surface dust that may accumulate as catch basin solids
- Eroded soil containing chemicals, which can be deposited in catch basins

The SIA operates under an existing SWPPP, as described in Section 2.4.4, to minimize the potential for the above identified potential sources to enter stormwater discharges.

All stormwater catch basins are clearly identified as draining to the LDW and contain heavy duty filter fabric and oil-absorbent booms and/or pads that are routinely inspected and replaced as necessary. A vendor performs site sweeping of all paved surfaces approximately monthly and solids are removed from the catch basins as necessary to further minimize the potential for particulates to be transported into the stormwater conveyance system. These BMPs are acceptable methods of managing solids and petroleum-based products that may enter the stormwater system. Based on the current BMPs conducted on the SIA, the impact of direct stormwater discharge to LDW sediments and surface water is considered to be low.

6.8.5 Discharge of Groundwater

The potential migration pathway for chemicals of interest present in groundwater on the SIA to impact LDW sediments consists of direct discharge of groundwater to sediment and/or surface water through groundwater seeps or infiltration into storm drains and pipes. Based on the existing groundwater and seep analytical data, there are no chemicals of interest that have been detected at concentrations exceeding the screening levels for protection of LDW sediment or surface water quality. Therefore, discharge of groundwater to sediment/surface water is an incomplete pathway for the SIA.

The hydrogeologic setting of the SIA and the observation of seeps along the shoreline bank indicate that groundwater likely discharges through sediment to surface water of the LDW. While there are sufficient data to determine that concentrations of PCBs and metals will not impact sediment or surface water quality through discharge of groundwater; there are insufficient data to determine whether releases of PAHs associated with TPH on the SIA have occurred and resulted in concentrations of PAHs in groundwater exceeding the screening level values.

The potential ongoing sources to groundwater include the following:

- Releases of accumulated wastewater in sumps and/or vaults
- Leaching of chemicals from soil
- Ongoing releases
- Dissolution of LNAPL

The potential for chemicals in wastewater to impact groundwater quality at the SIA has not been evaluated.

The existing groundwater data for the SIA indicates that chemicals in soil have not leached to groundwater at concentrations that may potentially result in adverse impacts to LDW sediment quality. The collection and analysis of groundwater samples have not detected PCBs in groundwater. Considering that there are no current sources of PCBs on the SIA to further impact soil, there are no PCBs in groundwater that have leached from the soil, and the insoluble nature of PCBs, it is unlikely that soil leaching to groundwater will result in PCBs in groundwater. However, the ongoing operations and potential for ongoing releases of metals pose a potential source to groundwater at the SIA. Based on currently observed groundwater conditions, the potential for future leaching of chemicals in soil to groundwater is low.

There is a potential for ongoing releases associated with current operations. However, the BMPs implemented at the SIA minimize the impacts of future potential releases of chemicals. The implementation of BMPs will mitigate the impact of releases to soil and groundwater at the SIA.

The existing groundwater data for the SIA indicate that there is currently no dissolution of LNAPL to groundwater.

6.8.6 Erosion of Solids

The potential migration pathway for chemicals of interest present in soil on the SIA to reach the LDW includes erosion of shoreline bank soil, contaminated fill, waste piles, and surface impoundments directly to the LDW sediment or stormwater, or leaching to groundwater. The potential chemical leaching pathway from soil to groundwater is discussed in Section 6.8.5. The potential migration pathway for chemicals present in soil on the SIA to impact LDW sediments include:

- Water and/or wind erosion of exposed soil, including bank fill material, waste piles and materials storage areas, and direct deposition in the LDW
- Water and/or wind erosion of exposed soil, waste piles and materials storage and deposition in the stormwater system.

The chemicals of interest that have been detected in soil on the SIA at concentrations exceeding the screening levels include:

- PCBs
- Arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc

Additionally, the ongoing operations include extensive use and storage of petroleum compounds. Concentrations of TPH have been detected in subsurface soil on the SIA.

The shoreline bank is composed a sheet pile wall on the south end of the SIA and armored soil and remnant pilings on the north end of the SIA. The current condition of the shoreline significantly limits any potential erosion of bank fill material and subsequent direct deposition of eroded soils into the LDW.

Concentrations of PCBs in soil are present in the fill material on the western portion of the SIA. Current operations include extensive use of metals and the creation of by-products containing metals. Metals have also been detected in the fill material on the western portion of the SIA. While the condition of the shoreline bank significantly limits the potential erosion of bank fill material and the direct deposition of eroded soils containing concentrations of PCBs and metals into the LDW, the erosion of exposed soil on the SIA and deposition through the stormwater system is a likely ongoing pathway. As discussed in Section 2.4.4, the BMPs implemented on the SIA are intended to minimize the transport of chemicals in the stormwater system and includes the routine removal of solids that accumulate in the stormwater system catch basins.

6.9 Summary of Migration Pathways

The results of the Source Control Evaluation indicate that concentrations of chemicals of interest present on the SIA have the potential to impact sediment quality and/or surface water quality in the LDW through the following migration pathways:

- Direct Discharge
- Stormwater Discharge
- Erosion of Solids

The Discharge of Groundwater pathway is determined to be incomplete because chemicals of interest have not been detected in groundwater at concentrations that could potentially result in adverse LDW sediment quality impacts. The potential ongoing sources to groundwater include leaching of chemicals from soil to groundwater and dissolution of LNAPL to groundwater, both of which have been demonstrated to be incomplete pathways. The additional potential sources to groundwater include ongoing surface releases of chemicals and releases of chemicals from accumulated wastewater in belowground equipment areas. The BMPs implemented at the SIA minimize the impacts of future potential surface releases of chemicals. The potential for chemicals in wastewater to impact groundwater quality at the SIA has not been evaluated.

The Direct Discharge pathway is complete because metals, petroleum products and solvents that are stored, used, and/or produced on the SIA. These chemicals of interest can reach the LDW through direct releases to sediment/surface water, accumulation and fallout of surface dust and particulate in the LDW, and discharge of wastewater. The BMPs include implementation of the Spill Prevention Plan (Appendix C), containing chemical storage areas in bermed containment areas, and keeping all paved surfaces clear of accumulated dust and debris. The potential for the direct discharge of LNAPL from the SIA to the LDW has not been evaluated. The potential source areas in the Forge Shop Area and Melt Shop Area have not been investigated to evaluate their impacts on soil and groundwater quality.

Stormwater Discharge is a complete pathway for chemicals identified to be present on the SIA to reach the LDW through airborne fallout and accumulation of solid particulate containing chemicals directly to the stormwater conveyance system, or the transport of surface dust and particulates containing chemicals via surface water runoff to the stormwater system. The Stormwater Discharge pathway includes the erosion of soil containing chemicals to be deposited in the stormwater conveyance system and transported to the LDW. The chemicals of interest for the Stormwater Discharge pathway include PCBs, metals associated with operations including cadmium, chromium, copper, lead, mercury, silver and zinc, and petroleum products. The BMPs implemented at the SIA are designed to prevent direct discharge of chemicals to the stormwater system and to minimize impacts of airborne fallout and surface water runoff to transport chemicals to the stormwater system. The BMPs include implementation of the SWPPP and the Spill Control Plan (Appendix C), installation and regular inspection of heavy duty filter fabric in catch basins, routine cleaning of catch basins, and keeping all paved surfaces clear of accumulated dust and debris.

The Erosion of Solids is a complete pathway for chemicals detected in soil to reach the LDW through direct airborne deposition or through the stormwater system. The chemicals of interest detected in soil at concentrations that could potentially result in recontamination of LDW sediments include PCBs, arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc. However, the current condition of the shoreline bank significantly limits the potential erosion of bank fill material and the direct deposition of eroded soils containing concentrations of PCBs and metals into the LDW. The erosion of exposed soil on the SIA and deposition through the stormwater system is a likely ongoing pathway. The BMPs implemented at the SIA to protect stormwater include implementation of the SWPPP and the Spill Control Plan (Appendix A), installation and regular inspection of heavy duty filter fabric in catch basins, routine cleaning of catch basins, and keeping all paved surfaces clear of accumulated dust and debris.

7 IDENTIFIED DATA GAPS

The CSM and migration pathway evaluation discussed in Section 6 identified data gaps necessary to determine if primary and secondary potential source areas have completed pathways to the LDW with the potential to cause adverse effects to sediment quality. In addition, as discussed below, Ecology has also identified a number of data gaps for the SIA, separate from the evaluation presented in Section 6, that they fill need to be filled to adequately document the status of source control from the SIA. This section presents a summary of the data gaps identified by this Evaluation Report and the proposed Ecology investigations and provides a brief summary of the scope of work to address the data gaps. The Data Gap Investigation Work Plan, prepared by Farallon and Anchor and dated May 2008, provides a detailed scope of work to address the data gaps in the Source Control Evaluation.

7.1 Ecology Data Gaps

As part of Ecology's ongoing source control efforts on the LDW, Ecology compiled existing operational and environmental information for Plant 2, KCIA, Jorgensen Forge, and the City of Tukwila to evaluate the status of upland source controls from the EPA-defined Early Action Area – 4 (EAA-4). This information was summarized in the *Lower Duwamish Waterway Early Action Area 4 Final Summary of Existing Information and Identification of Data Gaps* (Ecology 2007a). This report identified the following data gaps:

- The extent of arsenic contamination on the southeast portion of the SIA, associated with the potential migration to the SIA from the former wood treating facility on the adjacent Boeing-Isaacson Property, has not been evaluated to determine its extent onto the SIA and its potential impacts to sediments of the LDW
- The geochemical effects of TPH in soil on the redox potential of groundwater have not been evaluated
- Ownership of the 15-inch and 24-inch Property Line outfalls s located on the northern portion of the SIA has not been established
- The quality of water collected in sumps and pits and the process by which the water is discharged to the outfalls has not been determined
- Groundwater quality in the center portion of the SIA, in the location of the former Isaacson Iron Works building, needs to be evaluated.

Ecology's EAA-4 source control investigation was limited to a summary of information obtained from existing historical reports regarding operations and environmental conditions on the SIA. This investigation did not included detailed discussions with Jorgensen Forge personnel regarding ongoing operations, potential source areas, and potential migration pathways from the SIA, as is detailed in this Evaluation Report. The following subsections describe information gained during this Source Control Evaluation in order to refine the Ecology-identified data gaps and refine what data gaps still potentially exist.

7.1.1 Arsenic Contamination from Boeing-Isaacson Property

Concentrations of arsenic have been detected in soil on the SIA exceeding the screening level value along the shoreline bank (Figure 5-4). The concentrations of arsenic detected are attributed to the imported shoreline bank fill material located within the former embayment. There is no soil data on the southeast portion of the SIA to evaluate the extent of arsenic in soil attributable to the historical source on the south-adjacent Boeing-Isaacson property (Section 2.5.1.2).

Currently, there is insufficient arsenic data on the SIA to determine whether operations or conditions on the southeast portion of the SIA are resulting in migration of arsenic, either from soil, stormwater, or groundwater, to the LDW sediments. The southeast portion of the SIA is paved, which precludes the pathway for arsenic in soil to be eroded and transported to the LDW, either directly or through the stormwater conveyance system in this area. The southern-central portion of the SIA is unpaved along the border with the Boeing-Isaacson property, although there are no active stormwater catch basins in this area with the potential to carry surface solids through the stormwater conveyance system. Groundwater conditions in the southeast corner of the SIA have not been evaluated; however, the groundwater flow direction has been observed to flow towards the southwest on the eastern portion of the SIA, with a more westerly flow observed closer to the LDW (Appendix E). Based on these observations, it is unlikely that the plume of dissolved arsenic that has been identified on the south-adjacent Boeing-Isaacson property is migrating onto the SIA. Furthermore, the concentration of arsenic detected in the seep sample collected along the shoreline bank adjacent to the southern portion of the SIA (Figure 2-4) was 1.58 μg/L (total arsenic) and 1.35 μg/L (dissolved arsenic), both of which are well below the screening level value of 227 μg/L and likely attributable to naturally occurring arsenic. There were also no detections of arsenic concentrations in surface sediments adjacent to the southwest portion of the SIA.

This information collected during this Source Control Evaluation suggests that there is not a complete pathway to the LDW sediments for soils, stormwater, and/or groundwater on the southeast portion of the SIA and therefore, the potential extent of arsenic contamination on the eastern portion of the SIA is not considered a data gap. If Ecology believes arsenic may have migrated onto the SIA from the historical wood treating facility located south of the SIA, Jorgensen Forge recommends Ecology require the current owner of the property where the historical facility was located to conduct the appropriate investigation on the SIA to document the extent of the arsenic migration from their property.

7.1.2 Geochemical Effects of TPH in Soil

Ecology has indicated that the geochemical effects of TPH in soil on the redox potential of groundwater have not been documented to evaluate the potential precipitation of arsenic in water with a higher redox potential. However, the concentrations of dissolved arsenic detected in groundwater are all below the screening level indicating that any potential precipitation of arsenic because of elevated redox attributable to TPH in soil is not resulting in concentrations of arsenic in groundwater that pose a risk to the LDW.

7.1.3 Property-Line Stormwater Line Ownership

The ownership of the Property Line stormwater lines has been researched and a single easement was identified for the Boeing 15-inch outfall connection to the 24-inch property line outfall. However, the documented use of the stormwater lines is described in Section 4.3.1 and includes ongoing discharges of stormwater from KCIA and does not include discharge of stormwater from the Jorgensen Forge Facility.

Although indirectly, this data gap is considered applicable to this Evaluation Report as this information will likely assist with the future removal of accumulated solids within these lines which pose an ongoing source of elevated PCBs to the LDW sediments and the identification of necessary source controls for discharges to the 24-inch line from the ongoing KCIA discharges.

7.1.4 Wastewater Quality and Processes of Disposal

As discussed in detail in Section 2.4.1, the majority of wastewater generated on the SIA, including quench tank water and water that collects in equipment vaults and pits, is transported through the oil-water separator for discharge to the Metro system. Wastewater that collects in the railroad scale vault, the scrap metal scale vault, and the vacuum de-gassing pit is discharged through outfalls to the LDW. Consistent with the findings presented in this Evaluation Report, the quality of water discharged from these vaults and pits is a data gap and additional sampling and analysis is required. The scope of work to conduct wastewater sampling is presented in the Data Gap Investigation Work Plan.

7.1.5 Groundwater Quality in the Central Portion of the SIA

Figure 5-1 depicts all of the sample locations on the SIA. A number of borings have been advanced across the central portion of the SIA and have included the collection of reconnaissance groundwater samples. The groundwater laboratory analytical results are summarized in Section 5. Concentrations of TPH and metals exceeding the screening level values have not been detected in groundwater collected from the central portion of the SIA.

A review of the property history indicates that the central portion of the SIA was the location of the former Bethlehem Steel distribution building, constructed on the SIA in 1951 (Appendix A). The building was constructed with a concrete slab-on-grade foundation, which still exists on the SIA beneath the paved parking area. Since removal of the building in the mid-1960s, this area of the SIA has been used for temporary billet storage and employee parking.

Based on the reconnaissance groundwater data, the presence of the concrete slab, and the lack of significant potential source areas in the central portion of the SIA, in general, the groundwater quality in the central portion of the SIA is not considered a data gap. However, the Data Gap Investigation Work Plan includes a scope of work to address specific potential areas of concern in the central portion of the SIA that have not previously been investigated.

7.2 Source Control Evaluation Identified Data Gaps

The Source Control Evaluation has resulted in the identification of the following data gaps that are necessary to determine whether there are complete pathways of chemicals to the LDW with the potential to adversely affect sediment quality:

- There is insufficient data available for SVOCs and PAHs in groundwater to adequately assess the potential groundwater impacts from these chemicals to sediment quality
- The quality of stormwater that infiltrates into the railroad scale vault, groundwater that infiltrates into the vacuum de-gassing pit, and fluids that potentially enter the AOD vault and are subsequently pumped to the stormwater conveyance system has not been determined
- The quality of stormwater catch basin solids and stormwater outfall discharges have not been adequately determined
- The impacts of potential source areas along the southern property boundary and in the Forge Shop Area and the Melt Shop Area to soil and groundwater have not been evaluated
- The extent of LNAPL on the SIA has not been fully defined
- The existing BMPs have not been evaluated for their effectiveness to control the impacts of the storage, distribution, and incidental releases of petroleum products on the SIA
- The chemical composition of the swarf has not been evaluated

7.3 Proposed Additional Investigations to Fill Identified Data Gaps

The scope of work that will be conducted to address data gaps in the Source Control Evaluation is presented in detail in the Data Gap Investigation Work Plan, which is provided under separate cover. Per Exhibit C of the Agreed Order, the additional investigation activities results will be summarized in the Source Control Evaluation Addendum Report.

8 REFERENCES

Altier, Ron. 2007. Vice President of Operations, Jorgensen Forge Corporation. Personal Communication. November 8.

Anchor Environmental, L.L.C. (Anchor). 2006. Stormwater Pollution Prevention Plan. Prepared for Jorgensen Forge Corporation. March.

Anchor and Farallon Consulting, L.L.C. 2005. Second Draft Environmental Sampling Work Plan Addendum – Third Phase Environmental Sampling Activities. Prepared for the U.S. Environmental Protection Agency. April.

Dames and Moore. 1990a. Preliminary Site Assessment. Earle M. Jorgensen Company - Forge Facility, 8531 East Marginal Way South, Seattle, Washington.

Dames and Moore. 1990b. Limited Site Characterization. Jorgensen Forge Facility.

Dames and Moore. 1997. Report Phase I Environmental Site Assessment Update and Regulatory Compliance Review. Prepared for Key Equity Capital. January 14, 1997.

Dames and Moore. 1999. Subsurface Investigation Aluminum Heat Treatment Building Area. June 17, 1999.

Ecology and Environment. 2007. Lower Duwamish Waterway Early Action Area 4 Revised Draft Summary of Existing Information and Data Gaps – Report. Prepared for Ecology. April 2007.

Environmental Partners, Inc. (EPI) and Golder, Associates, Inc. (Golder Associates). 2006a. Draft – Boeing Plant 2 Seattle/Tukwila, Washington, Uplands Corrective Measures Study, Volume Vla: 2-40s Area, Data Gap Investigation Work Plan. Prepared for The Boeing Company. December 2006.

EPI, Floyd/Snider, and Golder Associates, Inc. 2006b. Technical Memorandum: Development and Use of Background Values, Boeing Plant 2, Seattle/Tukwila, Washington. Prepared for The Boeing Company. March 30.

Environmental Resources Management (ERM) and Exponent. 2000. Request for Groundwater NFA Determination Hydrogeologic Investigation and Site-specific Action Level for Arsenic in Groundwater – Boeing Isaacson SIA VCP ID# NW0453. Prepared for The Boeing Company. November 2000.

Ernst, Will. 2008. The Boeing Company Environmental Manager. Personal Communication to Jorgensen Forge Corporation during a meeting regarding the path forward for the property line outfalls. April 14.

Farallon Consulting, L.L.C.(Farallon). 2005a. Technical Memorandum Regarding Groundwater Data Summary. Prepared for U.S. Environmental Protection Agency . June 28.

Farallon Consulting, L.L.C.(Farallon). 2005b. Technical Memorandum Regarding Storm Drain Line Data Summary. Prepared for U.S. Environmental Protection Agency. July 28.

Farallon Consulting, L.L.C. (Farallon). 2007. May 2006, January 2007 and April 2007 – Groundwater Monitoring Status Report, Jorgensen Forge Facility. Prepared for Jorgensen Forge Corporation. June 21.

Farallon Consulting, L.L.C. and Anchor Environmental, L.L.C. (Farallon and Anchor). 2004. Second Draft Environmental Sampling Work Plan. Prepared for Earle M. Jorgensen Company. May 14.

Farallon and Anchor. 2006. Final Investigation Data Summary Report. Prepared for the U.S. Environmental Protection Agency. February 13, 2006.

Floyd Snider McCarthy, Inc. 2004. Phase I Transformer PCB Investigation Report. Prepared for The Boeing Company. February 24.

Floyd Snider and Weston Solutions, Inc. 2004. Phase II Transformer PCB Investigation Work Plan. Prepared for the Boeing Company. November.

Floyd Snider and Weston Solutions, Inc. 2005. Phase II Transformer PCB Investigation Report. Prepared for the Boeing Company. August 3.

Floyd Snider. 2007. Boeing Plant 2 Focused Corrective Measures Study OA-11 – Draft. Prepared for the Boeing Company. October 12, 2007.

Foster, Richard F. 1945. Report No. – Sources of Pollution in the Duwamish-Green River Drainage Area. Prepared for the Pollution Control Commission Survey. December 6.

Linne, Lee, Former Environmental Manager, Jorgensen Forge Corporation. 2003. Personal Communication. September 25.

Luzier, J.E. 1969. *Geology and Groundwater Resources of Southeastern King County, Washington*. Washington State Department of Ecology. Water Supply Bulletin 28.

Quantitative Environmental Analysis, L.L.C. (QEA). 2007. Lower Duwamish Waterway Sediment Transport Modeling Report Appendix G: Sediment Transport Analysis Report – Draft Final. Prepared for the Lower Duwamish Waterway Group. July 18, 2007.

Richard Foster. 1945. Sources of Pollution in the Duwamish-Green River Drainage Area. Prepared for the Pollution Control Board. December 6, 1945.

Richardson, D., J.W. Bingham, and R.J. Madison. 1968. *Water Resources of King County Washington*. U.S. Geological Survey. Water-Supply Paper 1852.

Roy F. Weston, Inc. 1996. RCRA Facility Investigation Groundwater Investigation Interim Report, Boeing-Plant 2, Seattle/Tukwila, Washington. Prepared for The Boeing Company. January.

Science Applications International Corporation (SAIC). 2007. Draft Source Control Action Plan - Slip 4 Duwamish Waterway. Prepared for the Washington State Department of Ecology. February 2007

SECOR International Incorporated (SECOR). 1991. Results of a Soil Investigation at the Cutting Oil Holding Tank and the Oil-Water Separator, Jorgensen Steel Company. Prepared for Jorgensen Forge Corporation.

SECOR. 1992a. Technical Proposal for Consent Decree to Conduct Remedial Actions at the Earl M. Jorgensen. Prepared for the Washington State Department of Ecology. February 10.

SECOR 1992b. Phase I Environmental Site Assessment at the Earle M. Jorgensen Forge Division Facility. Prepared for Earle M. Jorgensen Company. February 26.

SECOR 1992c. Laboratory Analytical Reports. OMS Laboratories, Inc. Reference 341-15. September 24.

SECOR. 1993a. Draft Area 2 — Oil Water Separator Area Focused Remedial Investigation/Feasibility Study. Prepared for Earle M. Jorgensen Company. February 12.

SECOR. 1993b. Draft Area 1 — Hollowbore Location Focused Remedial Investigation/ Feasibility Study. Prepared for Earle M. Jorgensen Company. February 19.

SECOR. 1993c. Draft Area 4 — Vicinity of Boring SB-9, Subsurface Soil Assessment. Prepared for Earle M. Jorgensen Company. April 13.

SECOR. 1995. Draft Summary of Weston Investigative Results at the Jorgensen Forge Facility. Prepared for Jorgensen Steel Company. March 13.

SECOR. 1997a. Draft 1995-1996 Annual Report, Former Jorgensen Forge Facility. Prepared for The EMJ Company. April 29.

SECOR. 1997b. Independent Remedial Action Report, Former Underground Storage Tank Area (Area 3). Prepared for The EMJ Company. August 7.

Seattle City Light (SCL). 2002. Fax cover sheet with subject: Transformer Information. May 1.

Seattle Public Utilities. 2006a. Letter with Subject: Results from the pollution prevention inspection: Corrective action required. February 7.

Seattle Public Utilities. 2006b. Letter with Subject: Results from the pollution prevention re-inspection: In Compliance. April 6.

Tanner, C.D. 1991. Potential Intertidal Habitat Restoration Sites in the Duwamish River Estuary. Environmental Protection Agency and Port of Seattle. Seattle, WA.

URS. 2002. Phase 1 Environmental Site Assessment Update. Prepared for the Jorgensen Forge Corporation. February 14, 2002.

U.S. Environmental Protection Agency (EPA). 2002a. Principles for Managing Contaminated Sediment Risks at Hazardous Waste Sites. February 12, 2002.

U.S. Environmental Protection Agency (EPA). 2002b. Letter with Subject: Freedom of Information Act Request Number 10-RIN-00412-02. August 7.

U.S. Environmental Protection Agency (EPA). 2003. Photographic Analysis of Jorgensen Forge Corporation/Duwamish River – Seattle, Washinton. Publication No. TS-PIC-20310003S. June.

U.S. Environmental Protection Agency (EPA). 2006. National Recommended Water Quality Criteria. Office of Water and Office of Science and Technology (4304T).

U.S. Environmental Protection Agency (EPA). 2006. Letter with Subject: Jorgensen Forge Facility: Administrative Order on Consent, U.S. EPA Docket No CERCLA 10-2003-0111 -

Approval of Final Investigation Data Summary Report and Request for an Engineering Evaluation/Cost Analysis (EE/CA). June 15.

Washington State Department of Ecology (Ecology). 1994. Natural Background Soil Metals Concentrations in Washington State. Publication #94-115. October.

Washington State Department of Ecology (Ecology). 1995. Ecology Sediment Management Standards. Chapter 173-204 WAC.

Washington State Department of Ecology (Ecology). 1999. Independent Remedial Action, Area 3, Jorgensen Forge Corporation. Letter from Ecology to Jorgensen Forge Corporation. October 11, 1999.

Washington State Department of Ecology (Ecology). 2001. Model Toxics Control Act Cleanup Regulation Chapter 173-340 WAC. February 12, 2001.

Washington State Department of Ecology (Ecology). 2004. Lower Duwamish Water Source Control Strategy. Ecology Publication No. 04-09-043. January 2004.

Washington State Department of Ecology (Ecology). 2006a. Water Quality Standards for Surface Waters of The State of Washington – Chapter 173-201A WAC. Publication No. 06-10-091.

Washington State Department of Ecology (Ecology). 2006b. Stormwater Compliance Inspection Report. Prepared by Inspector Greg Stegman. January 13.

Washington State Department of Ecology (Ecology). 2007a. Lower Duwamish Waterway Source Control Action Plan for Early Action Area 4 – Draft 2. Publication No. 07-09-004. October 2007.

Washington State Department of Ecology (Ecology). 2007b. Confirmed and Suspected Contaminated Site List Database. Website Accessed January 29, 2007. Online at http://www.ecy.wa.gov/programs/tcp/cscs/20061228%20CSCSL.pdf.

Weston 1999. Site Inspection Report. Lower Duwamish River. RK 2.5 11.5. Volume 1 Report and Appendices. Prepared for U.S. Environmental Protection Agency, Region 10. Seattle, Washington. Roy F. Weston, Inc. Seattle, Washington.

Windward Environmental, L.L.C. (Windward). 2003a. Phase I Remedial Investigation Report. Prepared for the U.S. Environmental Protection Agency and the Washington State Department of Ecology. Windward Environmental, L.L.C., Seattle, Washington. April.

Windward Environmental, L.L.C. (Windward). 2003b. Lower Duwamish Waterway Remedial Investigation Task 5: Identification of Candidate SIAs for Early Action – Technical Memorandum: Data Analysis and Candidate SIA Selection – Final. Prepared for the U.S. Environmental Protection Agency and the Washington State Department of Ecology. June 2003.

Windward Environmental, L.LC. (Windward). 2004. Data Report: Survey and Sampling of Lower Duwamish Waterway Seeps – Final. Prepared for the Lower Duwamish Waterway Group. November 18, 2004.

Windward Environmental, L.L.C. (Windward). 2006. Data and Analysis Report: Porewater Sampling of Lower Duwamish Waterway – Final. Prepared for the U.S. Environmental Protection Agency and Washington State Department of Ecology. March 20.

Windward, QEA. 2006. Lower Duwamish Waterway Remedial Investigation – Data Report Addendum: Sediment Transport Characterization. Draft. Prepared for Lower Duwamish Waterway Group.

TABLES

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-3[4]	9/9/1992	SECOR	14.05	11.55	—	0.00	2.50
	9/17/1992	SECOR	14.05	11.61	—	0.00	2.44
	9/21/1992	SECOR	14.05	11.61	—	0.00	2.44
	10/1/1992	SECOR	14.05	11.58	—	0.00	2.47
	10/8/1992	SECOR	14.05	11.61	—	0.00	2.44
	10/23/1992	SECOR	14.05	11.62	—	0.00	2.43
	10/28/1992	SECOR	14.05	NM	NM	NM	NM
	11/20/1992	SECOR	14.05	11.11	—	0.00	2.94
	12/8/1992	SECOR	14.05	10.84	—	0.00	3.21
	12/22/1992	SECOR	14.05	10.36	—	0.00	3.69
	1/8/1993	SECOR	14.05	10.38	—	0.00	3.67
	1/19/1993	SECOR	14.05	10.45	—	0.00	3.60
	2/2/1993	SECOR	14.05	10.12	—	0.00	3.93
	2/19/1993	SECOR	14.05	10.21	—	0.00	3.84
	3/3/1993	SECOR	14.05	10.72	—	0.00	3.33
	6/22/1995	SECOR	14.05	11.01	NM	NM	3.04
	1/15/1996	SECOR	14.05	9.35	NM	NM	4.70
	4/17/1996	SECOR	14.05	10.86	NM	NM	3.19
	8/28/1996	SECOR	14.05	11.80	NM	NM	2.25
	10/18-19/1999	URS	14.05	11.55	—	0.00	2.50
	1/5/2000	URS	14.05	10.38	—	0.00	3.67
	5/2-3/2000	URS	14.05	NM	NM	NM	NM
	8/22-23/2000	URS	14.05	NM	NM	NM	NM
	12/12-13/2000	URS	14.05	11.23	—	0.00	2.82
	2/14-15/2001	URS	14.05	10.89	—	0.00	3.16
	4/9/2002	Kane	14.05	10.65	—	0.00	3.40
	4/24/2004	Kane	14.05	NM	NM	NM	NM
	5/18/2005	Farallon	14.05	11.03	—	0.00	3.02
	12/13/2005	Farallon	14.05	11.48	—	0.00	2.57
	5/18/2006	Farallon	14.05	NM	NM	NM	NM
	1/11/2007	Farallon	14.05	9.03	—	0.00	5.02
	7/31/2007	Farallon	14.05	11.48	—	0.00	2.57

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-4	9/9/1992	SECOR	17.48	11.54	—	0.00	5.94
	9/17/1992	SECOR	17.48	11.60	—	0.00	5.88
	9/21/1992	SECOR	17.48	11.62	—	0.00	5.86
	10/1/1992	SECOR	17.48	11.53	—	0.00	5.95
	10/8/1992	SECOR	17.48	11.61	—	0.00	5.87
	10/23/1992	SECOR	17.48	11.62	—	0.00	5.86
	10/28/1992	SECOR	17.48	NM	NM	NM	NM
	11/20/1992	SECOR	17.48	11.12	—	0.00	6.36
	12/8/1992	SECOR	17.48	10.88	—	0.00	6.60
	12/22/1992	SECOR	17.48	10.58	—	0.00	6.90
	1/8/1993	SECOR	17.48	10.67	—	0.00	6.81
	1/19/1993	SECOR	17.48	10.73	—	0.00	6.75
	2/2/1993	SECOR	17.48	10.43	—	0.00	7.05
	2/19/1993	SECOR	17.48	10.62	—	0.00	6.86
	3/3/1993	SECOR	17.48	10.96	—	0.00	6.52
	4/9/1993	SECOR	17.48	14.93	—	0.00	2.55
	11/10/1993	SECOR	17.48	15.59	—	0.00	1.89
	3/2/1994	SECOR	17.48	14.33	—	0.00	3.15
	11/1/1994	SECOR	17.48	15.46	—	0.00	2.02
	1/4/1995	SECOR	17.48	13.55	—	0.00	3.93
	4/12/1995	SECOR	17.48	14.14	—	0.00	3.34
	6/22/1995	SECOR	17.48	15.04	—	0.00	2.44
	10/4/1995	SECOR	17.48	15.18	—	0.00	2.30
	1/15/1996	SECOR	17.48	12.82	—	0.00	4.66
	4/17/1996	SECOR	17.48	14.92	—	0.00	2.56
	8/28/1996	SECOR	17.48	15.50	—	0.00	1.98
	10/18/1999	URS	17.48	11.65	—	0.00	5.83
	1/5/2000	URS	17.48	10.47	—	0.00	7.01
	5/2-3/2000	URS	17.48	10.95	—	0.00	6.53
	8/22-23/2000	URS	17.48	11.70	—	0.00	5.78
	12/12-13/2000	URS	17.48	11.33	—	0.00	6.15
	2/14-15/2001	URS	17.48	10.99	—	0.00	6.49
	4/9/2002	Kane	17.48	10.70	—	0.00	6.78
	4/24/2004	Kane	17.48	10.38	—	0.00	7.10
	5/18/2005	Farallon	17.48	11.11	—	0.00	6.37
	12/13/2005	Farallon	17.48	11.56	—	0.00	5.92
	5/18/2006	Farallon	17.48	11.18	—	0.00	6.30
	1/11/2007	Farallon	17.48	9.47	—	0.00	8.01
	7/31/2007	Farallon	17.48	11.63	—	0.00	5.85

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-5	9/9/1992	SECOR	17.03	13.33	—	0.00	3.70
	9/17/1992	SECOR	17.03	12.78	—	0.00	4.25
	9/21/1992	SECOR	17.03	10.90	—	0.00	6.13
	10/1/1992	SECOR	17.03	11.75	—	0.00	5.28
	10/8/1992	SECOR	17.03	14.18	—	0.00	2.85
	10/23/1992	SECOR	17.03	13.20	—	0.00	3.83
	10/28/1992	SECOR	17.03	NM	—	NM	NM
	11/20/1992	SECOR	17.03	11.37	—	0.00	5.66
	12/8/1992	SECOR	17.03	10.09	—	0.00	6.94
	12/22/1992	SECOR	17.03	11.45	—	0.00	5.58
	1/8/1993	SECOR	17.03	10.86	—	0.00	6.17
	1/19/1993	SECOR	17.03	10.66	—	0.00	6.37
	2/2/1993	SECOR	17.03	10.64	—	0.00	6.39
	2/19/1993	SECOR	17.03	11.28	—	0.00	5.75
	3/3/1993	SECOR	17.03	11.18	—	0.00	5.85
	10/18-19/1999	URS	17.03	8.11	—	0.00	8.92
	1/5/2000	URS	17.03	10.15	—	0.00	6.88
	5/2-3/2000	URS	17.03	11.55	—	0.00	5.48
	8/22-23/2000	URS	17.03	NM	NM	NM	NM
	12/12-13/2000	URS	17.03	NM	NM	NM	NM
	2/14-15/2001	URS	17.03	14.57	—	0.00	2.46
	4/9/2002	Kane	17.03	11.91	—	0.00	5.12
	4/10/2003	Farallon	17.03	13.72	—	0.00	3.31
	4/24/2004	Kane	17.03	11.72	—	0.00	5.31
	5/18/2005	Farallon	17.03	11.00	—	0.00	6.03
	12/13/2005	Farallon	17.03	12.40	—	0.00	4.63
	5/18/2006	Farallon	17.03	13.75	—	0.00	3.28
	1/11/2007	Farallon	17.03	10.88	—	0.00	6.15
	7/31/2007	Farallon	17.03	15.75	—	0.00	1.28

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-6	9/9/1992	SECOR	20.61	15.61	—	0.00	5.00
	9/17/1992	SECOR	20.61	15.73	—	0.00	4.88
	9/21/1992	SECOR	20.61	15.68	—	0.00	4.93
	10/1/1992	SECOR	20.61	15.46	—	0.00	5.15
	10/8/1992	SECOR	20.61	15.51	—	0.00	5.10
	10/23/1992	SECOR	20.61	15.61	—	0.00	5.00
	10/28/1992	SECOR	20.61	NM	NM	NM	NM
	11/20/1992	SECOR	20.61	15.48	—	0.00	5.13
	12/8/1992	SECOR	20.61	14.19	—	0.00	6.42
	12/22/1992	SECOR	20.61	15.16	—	0.00	5.45
	1/8/1993	SECOR	20.61	14.85	—	0.00	5.76
	1/19/1993	SECOR	20.61	13.98	—	0.00	6.63
	2/2/1993	SECOR	20.61	14.41	—	0.00	6.20
	2/19/1993	SECOR	20.61	14.03	—	0.00	6.58
	3/3/1993	SECOR	20.61	14.60	—	0.00	6.01
	10/18-19/1999	URS	20.61	NM	NM	NM	NM
	1/5/2000	URS	20.61	14.40	—	0.00	6.21
	5/2-3/2000	URS	20.61	NM	NM	NM	NM
	8/22-23/2000	URS	20.61	NM	NM	NM	NM
	12/12-13/2000	URS	20.61	NM	NM	NM	NM
	2/14-15/2001	URS	20.61	15.05	—	0.00	5.56
	4/9/2002	Kane	20.61	NM	NM	NM	NM
	4/11/2003	Farallon	20.61	13.57	—	0.00	7.04
	4/24/2004	Kane	20.61	NM	NM	NM	NM
	5/18/2005	Farallon	20.61	14.07	—	0.00	6.54
	12/13/2005	Farallon	20.61	14.59	—	0.00	6.02
	5/18/2006	Farallon	20.61	14.10	—	0.00	6.51
	1/11/2007	Farallon	20.61	12.27	—	0.00	8.34
	7/31/2007	Farallon	20.61	14.50	—	0.00	6.11

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-7	9/9/1992	SECOR	20.84	15.05	—	0.00	5.79
	9/17/1992	SECOR	20.84	15.10	—	0.00	5.74
	9/21/1992	SECOR	20.84	15.11	—	0.00	5.73
	10/1/1992	SECOR	20.84	14.99	—	0.00	5.85
	10/8/1992	SECOR	20.84	15.11	—	0.00	5.73
	10/23/1992	SECOR	20.84	15.10	—	0.00	5.74
	10/28/1992	SECOR	20.84	NM	—	NM	NM
	11/20/1992	SECOR	20.84	14.62	—	0.00	6.22
	12/8/1992	SECOR	20.84	14.93	—	0.00	5.91
	12/22/1992	SECOR	20.84	14.12	—	0.00	6.72
	1/8/1993	SECOR	20.84	14.23	—	0.00	6.61
	1/19/1993	SECOR	20.84	14.28	—	0.00	6.56
	2/2/1993	SECOR	20.84	14.01	—	0.00	6.83
	2/19/1993	SECOR	20.84	14.23	—	0.00	6.61
	3/3/1993	SECOR	20.84	14.52	—	0.00	6.32
	10/18-19/1999	URS	20.84	15.25	—	0.00	5.59
	1/5/2000	URS	20.84	14.14	—	0.00	6.70
	5/2-3/2000	URS	20.84	NM	NM	NM	NM
	8/22-23/2000	URS	20.84	NM	NM	NM	NM
	12/12-13/2000	URS	20.84	NM	NM	NM	NM
	2/14-15/2001	URS	20.84	12.51	—	0.00	8.33
	4/9/2002	Kane	20.84	NM	NM	NM	NM
	4/11/2003	Farallon	20.84	14.19	—	0.00	6.65
	4/24/2004	Kane	20.84	13.98	—	0.00	6.86
	5/18/2005	Farallon	20.84	14.82	—	0.00	6.02
	12/13/2005	Farallon	20.84	15.20	—	0.00	5.64
	5/18/2006	Farallon	20.84	14.85	—	0.00	5.99
	1/11/2007	Farallon	20.84	13.14	—	0.00	7.70
	7/31/2007	Farallon	20.84	15.24	—	0.00	5.60

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-8	9/9/1992	SECOR	17.70	11.81	—	0.00	5.89
	9/17/1992	SECOR	17.70	11.86	—	0.00	5.84
	9/21/1992	SECOR	17.70	11.88	—	0.00	5.82
	10/1/1992	SECOR	17.70	11.76	—	0.00	5.94
	10/8/1992	SECOR	17.70	11.87	—	0.00	5.83
	10/23/1992	SECOR	17.70	11.87	—	0.00	5.83
	10/28/1992	SECOR	17.70	NM	NM	NM	NM
	11/20/1992	SECOR	17.70	11.38	—	0.00	6.32
	12/8/1992	SECOR	17.70	11.13	—	0.00	6.57
	12/22/1992	SECOR	17.70	10.87	—	0.00	6.83
	1/8/1993	SECOR	17.70	10.95	—	0.00	6.75
	1/19/1993	SECOR	17.70	11.00	—	0.00	6.70
	2/2/1993	SECOR	17.70	10.73	—	0.00	6.97
	2/19/1993	SECOR	17.70	10.90	—	0.00	6.80
	3/3/1993	SECOR	17.70	11.24	—	0.00	6.46
	4/9/1993	SECOR	17.70	15.15	—	0.00	2.55
	11/10/1993	SECOR	17.70	15.77	—	0.00	1.93
	3/2/1994	SECOR	17.70	14.53	—	0.00	3.17
	11/1/1994	SECOR	17.70	15.57	—	0.00	2.13
	1/4/1995	SECOR	17.70	13.64	—	0.00	4.06
	4/12/1995	SECOR	17.70	14.38	—	0.00	3.32
	6/22/1995	SECOR	17.70	15.29	—	0.00	2.41
	10/4/1995	SECOR	17.70	15.41	—	0.00	2.29
	1/15/1996	SECOR	17.70	13.60	—	0.00	4.10
	4/17/1996	SECOR	17.70	14.92	—	0.00	2.78
	8/28/1996	SECOR	17.70	15.58	—	0.00	2.12
	10/18-19/1999	URS	17.70	11.91	—	0.00	5.79
	1/5/2000	URS	17.70	10.76	—	0.00	6.94
	5/2-3/2000	URS	17.70	11.20	—	0.00	6.50
	8/22-23/2000	URS	17.70	NM	NM	NM	NM
	12/12-13/2000	URS	17.70	11.58	—	0.00	6.12
	2/14-15/2001	URS	17.70	11.24	—	0.00	6.46
	4/9/2002	Kane	17.70	11.02	—	0.00	6.68
	4/24/2004	Kane	17.70	10.59	—	0.00	7.11
	5/18/2005	Farallon	17.70	11.36	—	0.00	6.34
	12/13/2005	Farallon	17.70	11.81	—	0.00	5.89
	5/18/2006	Farallon	17.70	11.46	—	0.00	6.24
	1/11/2007	Farallon	17.70	NM	NM	NM	NM
	7/31/2007	Farallon	17.70	11.88	—	0.00	5.82

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-9	9/9/1992	SECOR	17.79	11.88	—	0.00	5.91
	9/17/1992	SECOR	17.79	11.92	—	0.00	5.87
	9/21/1992	SECOR	17.79	11.93	—	0.00	5.86
	10/1/1992	SECOR	17.79	11.82	—	0.00	5.97
	10/8/1992	SECOR	17.79	11.91	—	0.00	5.88
	10/23/1992	SECOR	17.79	11.93	—	0.00	5.86
	10/28/1992	SECOR	17.79	NM	NM	NM	NM
	11/20/1992	SECOR	17.79	11.43	—	0.00	6.36
	12/8/1992	SECOR	17.79	11.17	—	0.00	6.62
	12/22/1992	SECOR	17.79	NM	NM	NM	NM
	1/8/1993	SECOR	17.79	11.00	—	0.00	6.79
	1/19/1993	SECOR	17.79	11.04	—	0.00	6.75
	2/2/1993	SECOR	17.79	10.76	—	0.00	7.03
	2/19/1993	SECOR	17.79	10.95	—	0.00	6.84
	3/3/1993	SECOR	17.79	11.28	—	0.00	6.51
	4/9/1993	SECOR	17.79	15.12	—	0.00	2.67
	11/10/1993	SECOR	17.79	15.75	—	0.00	2.04
	3/2/1994	SECOR	17.79	14.51	—	0.00	3.28
	11/1/1994	SECOR	17.79	15.54	—	0.00	2.25
	1/4/1995	SECOR	17.79	13.58	NM	NM	4.21
	4/12/1995	SECOR	17.79	14.16	NM	NM	3.63
	6/22/1995	SECOR	17.79	15.08	NM	NM	2.71
	10/4/1995	SECOR	17.79	15.21	NM	NM	2.58
	1/15/1996	SECOR	17.79	13.49	NM	NM	4.30
	4/17/1996	SECOR	17.79	14.23	NM	NM	3.56
	8/28/1996	SECOR	17.79	15.21	NM	NM	2.58
	10/18-19/1999	URS	17.79	11.96	—	0.00	5.83
	1/5/2000	URS	17.79	10.77	—	0.00	7.02
	5/2-3/2000	URS	17.79	11.23	—	0.00	6.56
	8/22-23/2000	URS	17.79	12.03	—	0.00	5.76
	12/12-13/2000	URS	17.79	11.66	—	0.00	6.13
	2/14-15/2001	URS	17.79	11.25	—	0.00	6.54
	4/9/2002	Kane	17.79	11.05	—	0.00	6.74
	4/24/2004	Kane	17.79	10.62	—	0.00	7.17
	5/18/2005	Farallon	17.79	11.40	—	0.00	6.39
	12/13/2005	Farallon	17.79	11.84	—	0.00	5.95
	5/18/2006	Farallon	17.79	11.45	—	0.00	6.34
	1/11/2007	Farallon	17.79	9.88	—	0.00	7.91
	7/31/2007	Farallon	17.79	11.92	—	0.00	5.87

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-10	9/9/1992	SECOR	17.57	11.80	—	0.00	5.77
	9/17/1992	SECOR	17.57	11.85	—	0.00	5.72
	9/21/1992	SECOR	17.57	11.84	—	0.00	5.73
	10/1/1992	SECOR	17.57	11.71	—	0.00	5.86
	10/8/1992	SECOR	17.57	11.83	—	0.00	5.74
	10/23/1992	SECOR	17.57	11.83	—	0.00	5.74
	10/28/1992	SECOR	17.57	NM	—	NM	NM
	11/20/1992	SECOR	17.57	11.34	—	0.00	6.23
	12/8/1992	SECOR	17.57	11.05	—	0.00	6.52
	12/22/1992	SECOR	17.57	10.85	—	0.00	6.72
	1/8/1993	SECOR	17.57	10.62	—	0.00	6.95
	1/19/1993	SECOR	17.57	10.19	—	0.00	7.38
	2/2/1993	SECOR	17.57	10.69	—	0.00	6.88
	2/19/1993	SECOR	17.57	10.90	—	0.00	6.67
	3/3/1993	SECOR	17.57	11.18	—	0.00	6.39
	4/9/1993	SECOR	17.57	14.87	NM	NM	2.70
	11/10/1993	SECOR	17.57	15.52	NM	NM	2.05
	3/2/1994	SECOR	17.57	14.29	NM	NM	3.28
	11/1/1994	SECOR	17.57	15.33	NM	NM	2.24
	1/4/1995	SECOR	17.57	13.67	NM	NM	3.90
	4/12/1995	SECOR	17.57	14.24	NM	NM	3.33
	6/22/1995	SECOR	17.57	15.05	NM	NM	2.52
	10/4/1995	SECOR	17.57	15.13	NM	NM	2.44
	1/15/1996	SECOR	17.57	13.72	NM	NM	3.85
	4/17/1996	SECOR	17.57	14.24	NM	NM	3.33
	8/28/1996	SECOR	17.57	15.10	NM	NM	2.47
	11/26/1996	SECOR	17.57	14.53	NM	NM	3.04
	10/18-19/1999	URS	17.57	11.90	—	0.00	5.67
	1/5/2000	URS	17.57	10.75	—	0.00	6.82
	5/2-3/2000	URS	17.57	11.23	—	0.00	6.34
	8/22-23/2000	URS	17.57	11.98	—	0.00	5.59
	12/12-13/2000	URS	17.57	11.56	—	0.00	6.01
	2/14-15/2001	URS	17.57	11.23	—	0.00	6.34
	4/9/2002	Kane	17.57	10.89	—	0.00	6.68
	4/24/2004	Kane	17.57	10.92	—	0.00	6.65
	5/18/2005	Farallon	17.57	11.23	—	0.00	6.34
	12/13/2005	Farallon	17.57	11.73	—	0.00	5.84
	5/18/2006	Farallon	17.57	11.40	—	0.00	6.17
	1/11/2007	Farallon	17.57	NM	NM	NM	NM
	7/31/2007	Farallon	17.57	11.71	—	0.00	5.86

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-11	9/9/1992	SECOR	17.70	11.85	—	0.00	5.85
	9/17/1992	SECOR	17.70	11.90	—	0.00	5.80
	9/21/1992	SECOR	17.70	11.92	—	0.00	5.78
	10/1/1992	SECOR	17.70	11.79	—	0.00	5.91
	10/8/1992	SECOR	17.70	11.92	—	0.00	5.78
	10/23/1992	SECOR	17.70	11.91	—	0.00	5.79
	10/28/1992	SECOR	17.70	NM	NM	NM	NM
	11/20/1992	SECOR	17.70	11.42	—	0.00	6.28
	12/8/1992	SECOR	17.70	11.17	—	0.00	6.53
	12/22/1992	SECOR	17.70	10.93	—	0.00	6.77
	1/8/1993	SECOR	17.70	11.01	—	0.00	6.69
	1/19/1993	SECOR	17.70	11.04	—	0.00	6.66
	2/2/1993	SECOR	17.70	10.78	—	0.00	6.92
	2/19/1993	SECOR	17.70	10.97	—	0.00	6.73
	3/3/1993	SECOR	17.70	11.29	—	0.00	6.41
	11/10/1993	SECOR	17.70	15.60	NM	NM	2.10
	3/2/1994	SECOR	17.70	14.36	NM	NM	3.34
	4/12/1995	SECOR	17.70	14.24	NM	NM	3.46
	6/22/1995	SECOR	17.70	15.13	NM	NM	2.57
	10/4/1995	SECOR	17.70	15.19	NM	NM	2.51
	1/15/1996	SECOR	17.70	13.60	NM	NM	4.10
	4/17/1996	SECOR	17.70	14.46	NM	NM	3.24
	8/28/1996	SECOR	17.70	14.79	NM	NM	2.91
	11/26/1996	SECOR	17.70	14.26	NM	NM	3.44
	10/18-19/1999	URS	17.70	12.00	—	0.00	5.70
	1/5/2000	URS	17.70	NM	NM	NM	NM
	5/2-3/2000	URS	17.70	NM	NM	NM	NM
	8/22-23/2000	URS	17.70	NM	NM	NM	NM
	12/12-13/2000	URS	17.70	11.65	—	0.00	6.05
	2/14-15/2001	URS	17.70	11.38	—	0.00	6.32
	4/9/2002	Kane	17.70	NM	NM	NM	NM
	4/24/2004	Kane	17.70	NM	NM	NM	NM
	5/18/2005	Farallon	17.70	11.43	—	0.00	6.27
	12/13/2005	Farallon	17.70	NM	NM	NM	NM
	5/18/2006	Farallon	17.70	11.45	NM	0.00	6.25
	1/11/2007	Farallon	17.70	9.82	NM	0.00	7.88
	7/31/2007	Farallon	17.70	11.95	—	0.00	5.75

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-12	9/9/1992	SECOR	17.19	11.56	—	0.00	5.63
	9/17/1992	SECOR	17.19	11.53	—	0.00	5.66
	9/21/1992	SECOR	17.19	11.55	—	0.00	5.64
	10/1/1992	SECOR	17.19	11.40	—	0.00	5.79
	10/8/1992	SECOR	17.19	11.59	—	0.00	5.60
	10/23/1992	SECOR	17.19	11.54	—	0.00	5.65
	10/28/1992	SECOR	17.19	NM	NM	NM	NM
	11/20/1992	SECOR	17.19	11.05	—	0.00	6.14
	12/8/1992	SECOR	17.19	10.77	—	0.00	6.42
	1/22/1992	SECOR	17.19	10.58	—	0.00	6.61
	1/8/1993	SECOR	17.19	10.65	—	0.00	6.54
	1/19/1993	SECOR	17.19	10.65	—	0.00	6.54
	2/2/1993	SECOR	17.19	10.42	—	0.00	6.77
	2/19/1993	SECOR	17.19	10.61	—	0.00	6.58
	3/3/1993	SECOR	17.19	10.93	—	0.00	6.26
	10/18-19/1999	URS	17.19	13.50	11.28	2.22	5.71
	1/5/2000	URS	17.19	NM	NM	NM	NM
	5/2-3/2000	URS	17.19	13.01	10.84	2.17	6.15
	8/22-23/2000	URS	17.19	12.90	11.30	1.60	5.75
	12/12-13/2000	URS	17.19	12.89	11.03	1.86	5.99
	2/14-15/2001	URS	17.19	12.75	10.75	2.00	6.26
	4/9/2002	Kane	17.19	13.51	11.57	1.94	5.45
	4/24/2004	Kane	17.19	13.75	11.02	2.73	5.92
	5/18/2005	Farallon	17.19	12.21	11.00	1.21	6.08
	12/13/2005	Farallon	17.19	12.15	11.41	0.74	5.71
	5/18/2006	Farallon	17.19	12.11	11.09	1.02	6.01
	7/31/2007	Farallon	17.19	14.10	13.50	0.60	3.64

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-13	9/9/1992	SECOR	17.44	11.82	—	0.00	5.62
	9/17/1992	SECOR	17.44	11.79	—	0.00	5.65
	9/21/1992	SECOR	17.44	11.82	—	0.00	5.62
	10/1/1992	SECOR	17.44	11.65	—	0.00	5.79
	10/8/1992	SECOR	17.44	11.85	—	0.00	5.59
	10/23/1992	SECOR	17.44	11.80	—	0.00	5.64
	10/28/1992	SECOR	17.44	NM	NM	NM	NM
	11/20/1992	SECOR	17.44	11.33	—	0.00	6.11
	12/8/1992	SECOR	17.44	11.00	—	0.00	6.44
	12/22/1992	SECOR	17.44	10.84	—	0.00	6.60
	1/8/1993	SECOR	17.44	11.11	—	0.03*	6.36
	1/19/1993	SECOR	17.44	10.87	—	0.08*	6.64
	2/2/1993	SECOR	17.44	10.85	—	0.21	6.78
	2/19/1993	SECOR	17.44	11.58	—	0.78	6.57
	3/3/1993	SECOR	17.44	11.96	—	0.84	6.24
	10/18-19/1999	URS	17.44	14.15	11.51	2.64	5.69
	1/5/2000	URS	17.44	13.75	10.40	3.35	6.74
	5/2-3/2000	URS	17.44	14.06	10.88	3.18	6.27
	8/22-23/2000	URS	17.44	11.49	—	0.00	5.95
	12/12-13/2000	URS	17.44	13.61	11.22	2.39	6.00
	2/14-15/2001	URS	17.44	13.46	10.95	2.51	6.26
	4/9/2002	Kane	17.44	14.80	11.71	3.09	5.45
	4/24/2004	Kane	17.44	14.25	11.52	2.73	5.67
	5/18/2005	Farallon	17.44	13.28	11.14	2.14	6.11
	12/13/2005	Farallon	17.44	12.85	11.61	1.24	5.72
	5/18/2006	Farallon	17.44	12.99	11.25	1.74	6.03
	4/13/2007	Farallon	17.44	13.02	11.11	1.91	6.16
	7/31/2007	Farallon	17.44	6.50	3.59	2.91	13.59

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-14	9/9/1992	SECOR	17.64	11.94	—	0.00	5.70
	9/17/1992	SECOR	17.64	11.91	—	0.00	5.73
	9/21/1992	SECOR	17.64	11.93	—	0.00	5.71
	10/1/1992	SECOR	17.64	11.79	—	0.00	5.85
	10/8/1992	SECOR	17.64	11.96	—	0.00	5.68
	10/23/1992	SECOR	17.64	11.92	—	0.00	5.72
	10/28/1992	SECOR	17.64	NM	NM	NM	NM
	11/20/1992	SECOR	17.64	NM	NM	NM	NM
	12/8/1992	SECOR	17.64	11.15	—	0.00	6.49
	12/22/1992	SECOR	17.64	10.94	—	0.00	6.70
	1/8/1993	SECOR	17.64	11.04	—	0.00	6.60
	1/19/1993	SECOR	17.64	11.03	—	0.00	6.61
	2/2/1993	SECOR	17.64	10.79	—	0.00	6.85
	2/19/1993	SECOR	17.64	10.98	—	0.00	6.66
	3/3/1993	SECOR	17.64	11.30	—	0.00	6.34
	10/18-19/1999	URS	17.64	NM	NM	NM	NM
	1/5/2000	URS	17.64	11.00	—	0.00	6.64
	5/2-3/2000	URS	17.64	11.38	—	0.00	6.26
	8/22-23/2000	URS	17.64	12.02	—	0.00	5.62
	12/12-13/2000	URS	17.64	11.66	—	0.00	5.98
	2/14-15/2001	URS	17.64	11.43	—	0.00	6.21
	4/9/2002	Kane	17.64	11.19	—	0.00	6.45
	4/24/2004	Kane	17.64	NM	NM	NM	NM
	5/18/2005	Farallon	17.64	11.44	—	0.00	6.20
	12/13/2005	Farallon	17.64	11.88	—	0.00	5.76
	5/18/2006	Farallon	17.64	11.50	—	0.00	6.14
	1/11/2007	Farallon	17.64	8.82	—	0.00	8.82
	7/31/2007	Farallon	17.64	11.98	—	0.00	5.66

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-15	9/9/1992	SECOR	17.65	11.82	—	0.00	5.83
	9/17/1992	SECOR	17.65	11.87	—	0.00	5.78
	9/21/1992	SECOR	17.65	11.89	—	0.00	5.76
	10/1/1992	SECOR	17.65	11.75	—	0.00	5.90
	10/8/1992	SECOR	17.65	11.89	—	0.00	5.76
	10/23/1992	SECOR	17.65	11.87	—	0.00	5.78
	10/28/1992	SECOR	17.65	NM	NM	NM	NM
	11/20/1992	SECOR	17.65	11.38	—	0.00	6.27
	12/8/1992	SECOR	17.65	11.14	—	0.00	6.51
	12/22/1992	SECOR	17.65	10.89	—	0.00	6.76
	1/8/1993	SECOR	17.65	10.95	—	0.00	6.70
	1/19/1993	SECOR	17.65	10.95	—	0.00	6.70
	2/2/1993	SECOR	17.65	10.72	—	0.00	6.93
	2/19/1993	SECOR	17.65	10.90	—	0.00	6.75
	3/3/1993	SECOR	17.65	11.21	—	0.00	6.44
	10/18-19/1999	URS	17.65	9.41	—	0.00	8.24
	1/5/2000	URS	17.65	10.17	—	0.00	7.48
	5/2-3/2000	URS	17.65	11.26	—	0.00	6.39
	8/22-23/2000	URS	17.65	11.95	—	0.00	5.70
	12/12-13/2000	URS	17.65	11.62	—	0.00	6.03
	2/14-15/2001	URS	17.65	10.83	—	0.00	6.82
	4/9/2002	Kane	17.65	10.36	—	0.00	7.29
	4/11/2003	Farallon	17.65	8.77	—	0.00	8.88
	4/24/2004	Kane	17.65	10.58	—	0.00	7.07
	5/18/2005	Farallon	17.65	10.25	—	0.00	7.40
	12/13/2005	Farallon	17.65	11.69	—	0.00	5.96
	5/18/2006	Farallon	17.65	11.53	—	0.00	6.12
	1/11/2007	Farallon	17.65	7.38	—	0.00	10.27
	7/31/2007	Farallon	17.65	11.95	—	0.00	5.70

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-16	9/9/1992	SECOR	17.72	NM	NM	NM	NM
	9/17/1992	SECOR	17.72	NM	NM	NM	NM
	9/21/1992	SECOR	17.72	NM	NM	NM	NM
	10/2/1992	SECOR	17.72	13.89	—	2.27	5.90
	10/8/1992	SECOR	17.72	NM	NM	NM	NM
	10/23/1992	SECOR	17.72	NM	NM	NM	NM
	10/28/1992	SECOR	17.72	NM	NM	NM	NM
	11/20/1992	SECOR	17.72	13.41	11.39	2.02	6.15
	12/8/1992	SECOR	17.72	13.58	10.88	2.70	6.60
	12/22/1992	SECOR	17.72	13.90	10.67	3.23	6.76
	1/8/1993	SECOR	17.72	NM	NM	NM	NM
	1/19/1993	SECOR	17.72	15.33	10.50	4.83	6.79
	2/2/1993	SECOR	17.72	15.72	10.24	5.48	6.99
	2/19/1993	SECOR	17.72	16.56	10.25	6.31	6.90
	3/3/1993	SECOR	17.72	16.56	10.50	6.06	6.67
	10/18-19/1999	URS	17.72	15.50	11.00	4.50	6.32
	1/5/2000	URS	17.72	15.46	9.69	5.77	7.51
	5/2-3/2000	URS	17.72	15.49	10.27	5.22	6.98
	8/22-23/2000	URS	17.72	15.45	11.03	4.42	6.29
	12/12-13/2000	URS	17.72	14.50	10.72	3.78	6.66
	2/14-15/2001	URS	17.72	15.42	10.36	5.06	6.90
	4/9/2002	Kane	17.72	17.00	11.20	5.80	6.00
	4/24/2004	Kane	17.72	15.09	10.03	5.06	7.23
	12/29/2004	Farallon	17.72	15.38	9.98	5.40	7.25
	5/18/2005	Farallon	17.72	15.45	10.38	5.07	6.88
	12/13/2005	Farallon	17.72	17.72	11.00	6.72	6.12
	5/18/2006	Farallon	17.72	17.72	10.60	7.12	6.48
	4/13/2007	Farallon	17.72	15.32	10.26	5.06	7.00
	7/31/2007	Farallon	17.72	17.36	13.00	4.36	4.33

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-17	10/18-19/1999	URS	17.61	NM	NM	NM	NM
	1/5/2000	URS	17.61	NM	NM	NM	NM
	5/2-3/2000	URS	17.61	NM	NM	NM	NM
	8/22-23/2000	URS	17.61	16.71	11.12	5.59	5.99
	12/12-13/2000	URS	17.61	17.32	10.90	6.42	6.13
	2/14-15/2001	URS	17.61	16.02	10.45	5.57	6.66
	4/9/2002	Kane	17.61	14.70	10.90	3.80	6.37
	4/24/2004	Kane	17.61	NM	NM	NM	NM
	5/18/2005	Farallon	17.61	13.90	10.25	3.65	7.03
	12/13/2005	Farallon	17.61	16.20	10.92	5.28	6.21
	5/18/2006	Farallon	17.61	14.18	10.39	3.79	6.88
	4/13/2007	Farallon	17.61	14.24	10.27	3.97	6.98
	7/31/2007	Farallon	17.61	17.61	12.83	4.78	4.35
MW-18	9/9/1992	SECOR	17.51	12.11	—	0.00	5.40
	9/17/1992	SECOR	17.51	12.02	—	0.00	5.49
	9/21/1992	SECOR	17.51	12.13	—	0.00	5.38
	10/1/1992	SECOR	17.51	11.78	—	0.00	5.73
	10/8/1992	SECOR	17.51	12.06	—	0.00	5.45
	10/23/1992	SECOR	17.51	12.03	—	0.00	5.48
	10/28/1992	SECOR	17.51	NM	NM	NM	NM
	11/20/1992	SECOR	17.51	11.45	—	0.00	6.06
	12/8/1992	SECOR	17.51	11.41	—	0.80	6.83
	12/22/1992	SECOR	17.51	9.23	—	0.06	8.33
	1/8/1993	SECOR	17.51	NM	NM	NM	NM
	1/19/1993	SECOR	17.51	9.15	—	0.30	8.63
	2/2/1993	SECOR	17.51	13.44	—	3.55	7.30
	2/19/1993	SECOR	17.51	—**	—	2.72**	--
	3/3/1993	SECOR	17.51	—**	—	2.42**	--
	10/18-19/1999	URS	17.51	12.10	11.50	0.60	5.96
	1/5/2000	URS	17.51	11.51	10.11	1.40	7.27
	5/2-3/2000	URS	17.51	NM	NM	NM	NM
	8/22-23/2000	URS	17.51	12.10	11.65	0.45	5.82
	12/12-13/2000	URS	17.51	13.65	11.20	2.45	6.09
	2/14-15/2001	URS	17.51	11.55	10.82	0.73	6.62
	4/9/2002	Kane	17.51	NM	NM	NM	NM
	4/24/2004	Kane	17.51	NM	NM	NM	NM
	5/18/2005	Farallon	17.51	11.69	10.05	1.64	7.31
	12/13/2005	Farallon	17.51	11.60	11.02	0.58	6.44
	5/18/2006	Farallon	17.51	11.65	9.88	1.77	7.47
	4/13/2007	Farallon	17.51	11.66	9.09	2.57	8.19
	7/31/2007	Farallon	17.51	14.22	13.12	1.10	4.29

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-19	9/9/1992	SECOR	17.47	NM	NM	NM	NM
	9/17/1992	SECOR	17.47	NM	NM	NM	NM
	9/21/1992	SECOR	17.47	NM	NM	NM	NM
	10/2/1992	SECOR	17.47	14.58	—	3.98	6.51
	10/8/1992	SECOR	17.47	NM	NM	NM	NM
	10/23/1992	SECOR	17.47	NM	NM	NM	NM
	10/28/1992	SECOR	17.47	14.07	—	3.95	6.99
	11/20/1992	SECOR	17.47	14.54	—	4.20	6.75
	12/8/1992	SECOR	17.47	14.51	—	4.54	7.09
	12/22/1992	SECOR	17.47	14.53	—	4.70	7.22
	1/8/1993	SECOR	17.47	14.55	—	4.72	7.22
	1/19/1993	SECOR	17.47	14.55	—	4.69	7.19
	2/2/1993	SECOR	17.47	14.60	—	4.98	7.40
	2/19/1993	SECOR	17.47	14.81	—	5.07	7.27
	3/3/1993	SECOR	17.47	14.89	—	4.76	6.91
	10/18-19/1999	URS	17.47	14.80	10.93	3.87	6.19
	1/5/2000	URS	17.47	14.85	9.72	5.13	7.29
	5/2-3/2000	URS	17.47	10.24	NA	NA	7.23
	8/22-23/2000	URS	17.47	14.70	11.01	3.69	6.13
	12/12-13/2000	URS	17.47	15.50	11.30	4.20	5.79
	2/14-15/2001	URS	17.47	14.78	9.98	4.80	7.06
	4/9/2002	Kane	17.47	15.76	10.99	4.77	6.05
	4/10/2003	Farallon	17.47	9.74	—	5.04	12.32
	4/24/2004	Kane	17.47	13.84	8.86	4.98	8.16
	5/18/2005	Farallon	17.47	14.64	10.41	4.23	6.68
	12/13/2005	Farallon	17.47	14.90	10.80	4.10	6.30
	5/18/2006	Farallon	17.47	14.70	10.44	4.26	6.65
	4/13/2007	Farallon	17.47	14.60	10.32	4.28	6.76
	7/31/2007	Farallon	17.47	16.00	12.77	3.23	4.41

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-20	9/9/1992	SECOR	18.22	NM	NM	NM	NM
	9/17/1992	SECOR	18.22	NM	NM	NM	NM
	9/21/1992	SECOR	18.22	NM	NM	NM	NM
	10/1/1992	SECOR	18.22	14.68	—	4.30	7.45
	10/8/1992	SECOR	18.22	NM	NM	NM	NM
	10/23/1992	SECOR	18.22	NM	NM	NM	NM
	10/28/1992	SECOR	18.22	14.68	—	4.18	7.34
	11/20/1992	SECOR	18.22	14.69	—	4.44	7.57
	12/8/1992	SECOR	18.22	14.68	—	4.76	7.87
	12/22/1992	SECOR	18.22	14.62	—	4.80	7.97
	1/8/1993	SECOR	18.22	14.67	—	4.86	7.97
	1/19/1993	SECOR	18.22	14.63	—	5.08	8.21
	2/2/1993	SECOR	18.22	14.73	—	5.39	8.39
	2/19/1993	SECOR	18.22	15.04	—	5.61	8.29
	3/3/1993	SECOR	18.22	14.84	—	4.92	7.86
	10/18-19/1999	URS	18.22	14.81	10.53	4.28	7.30
	1/5/2000	URS	18.22	14.96	9.37	5.59	8.35
	5/2-3/2000	URS	18.22	14.85	9.85	5.00	7.92
	8/22-23/2000	URS	18.22	14.65	10.35	4.30	7.48
	12/12-13/2000	URS	18.22	14.75	10.95	3.80	6.93
	2/14-15/2001	URS	18.22	14.72	10.19	4.53	7.62
	4/9/2002	Kane	18.22	17.76	10.29	7.47	7.26
	4/24/2004	Kane	18.22	NM	NM	NM	NM
	12/29/2004	Farallon	18.22	14.56	9.41	5.15	8.35
	5/18/2005	Farallon	18.22	14.81	9.46	5.35	8.28
	12/13/2005	Farallon	18.22	14.77	10.12	4.65	7.68
	5/18/2006	Farallon	18.22	14.50	9.60	4.90	8.18
	4/13/2007	Farallon	18.22	14.56	9.51	5.05	8.26
	7/31/2007	Farallon	18.22	16.64	11.97	4.67	5.83

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-21[4]	9/9/1992	SECOR	13.90	NM	NM	NM	NM
	9/17/1992	SECOR	13.90	NM	NM	NM	NM
	9/21/1992	SECOR	13.90	NM	NM	NM	NM
	10/1/1992	SECOR	13.90	14.76	—	5.20	3.87
	10/8/1992	SECOR	13.90	NM	NM	NM	NM
	10/23/1992	SECOR	13.90	NM	NM	NM	NM
	10/28/1992	SECOR	13.90	14.78	—	6.15	4.72
	11/20/1992	SECOR	13.90	14.75	—	4.57	3.31
	12/8/1992	SECOR	13.90	14.73	—	5.22	3.92
	12/22/1992	SECOR	13.90	14.73	—	5.44	4.12
	1/8/1993	SECOR	13.90	NM	—	NM	NM
	1/19/1993	SECOR	13.90	14.82	—	6.80	5.27
	2/2/1993	SECOR	13.90	15.01	—	7.05	5.31
	2/19/1993	SECOR	13.90	14.99	—	6.65	4.96
	3/3/1993	SECOR	13.90	14.56	—	5.50	4.35
	10/18-19/1999	URS	13.90	14.85	7.85	7.00	5.42
	1/5/2000	URS	13.90	14.52	6.97	7.55	6.25
	5/2-3/2000	URS	13.90	NM	NM	NM	NM
	8/22-23/2000	URS	13.90	13.22	7.85	5.37	5.57
	12/12-13/2000	URS	13.90	14.60	8.35	6.25	4.99
	2/14-15/2001	URS	13.90	14.59	7.78	6.81	5.51
	4/9/2002	Kane	13.90	14.90	6.89	8.01	6.29
	4/24/2004	Kane	13.90	NM	NM	NM	NM
	5/18/2005	Farallon	13.90	11.45	7.04	4.41	6.46
	12/13/2005	Farallon	13.90	14.00	7.77	6.23	5.57
	5/18/2006	Farallon	13.90	13.67	7.17	6.50	6.15
	4/13/2007	Farallon	13.90	13.79	7.08	6.71	6.22
	7/31/2007	Farallon	13.90	15.23	9.61	5.62	3.78

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-22	9/9/1992	SECOR	16.98	11.72	—	0.00	5.26
	9/17/1992	SECOR	16.98	11.62	—	0.00	5.36
	9/21/1992	SECOR	16.98	11.67	—	0.00	5.31
	10/1/1992	SECOR	16.98	11.30	—	0.00	5.68
	10/8/1992	SECOR	16.98	11.64	—	0.00	5.34
	10/23/1992	SECOR	16.98	11.60	—	0.00	5.38
	10/28/1992	SECOR	16.98	NM	NM	NM	NA
	11/20/1992	SECOR	16.98	10.97	—	0.00	6.01
	12/8/1992	SECOR	16.98	9.73	—	0.00	7.25
	12/22/1992	SECOR	16.98	6.57	—	0.00	10.41
	1/8/1993	SECOR	16.98	5.41	—	0.00	11.57
	1/19/1993	SECOR	16.98	5.17	—	0.00	11.81
	2/2/1993	SECOR	16.98	6.46	—	0.00	10.52
	2/19/1993	SECOR	16.98	6.97	—	0.00	10.01
	3/3/1993	SECOR	16.98	7.73	—	0.00	9.25
	10/18-19/1999	URS	16.98	7.70	—	0.00	9.28
	1/5/2000	URS	16.98	7.72	7.21	0.51	9.72
	5/2-3/2000	URS	16.98	8.10	7.36	0.74	9.55
	8/22-23/2000	URS	16.98	9.18	7.99	1.19	8.88
	12/12-13/2000	URS	16.98	10.30	8.20	2.10	8.59
	2/14-15/2001	URS	16.98	8.62	7.78	0.84	9.12
	4/9/2002	Kane	16.98	8.71	6.76	1.95	10.04
	4/24/2004	Kane	16.98	6.92	6.21	0.71	10.71
	12/29/2004	Farallon	16.98	12.29	6.95	5.34	9.55
	5/18/2005	Farallon	16.98	12.22	6.94	5.28	9.56
	12/13/2005	Farallon	16.98	12.35	7.45	4.90	9.09
	5/18/2006	Farallon	16.98	10.83	7.27	3.56	9.39
	4/13/2007	Farallon	16.98	10.69	7.16	3.53	9.50
	7/31/2007	Farallon	16.98	14.34	9.70	4.64	6.86
MW-23	10/18-19/1999	URS	17.84	12.11	—	0.00	5.73
	1/5/2000	URS	17.84	10.82	—	0.00	7.02
	5/2-3/2000	URS	17.84	11.28	—	0.00	6.56
	8/22-23/2000	URS	17.84	11.98	—	0.00	5.86
	12/12-13/2000	URS	17.84	12.30	—	0.00	5.54
	2/14-15/2001	URS	17.84	11.35	—	0.00	6.49
	4/9/2002	Kane	17.84	10.08	—	0.00	7.76
	4/24/2004	Kane	17.84	11.02	—	0.00	6.82
	12/29/2004	Farallon	17.84	10.76	—	0.00	7.08
	5/18/2005	Farallon	17.84	11.36	—	0.00	6.48
	12/13/2005	Farallon	17.84	11.84	—	0.00	6.00
	5/18/2006	Farallon	17.84	11.45	—	0.00	6.39
	1/11/2007	Farallon	17.84	9.87	—	0.00	7.97
	7/31/2007	Farallon	17.84	11.92	—	0.00	5.92

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-24	10/18-19/1999	URS	17.88	12.55	—	0.00	5.33
	1/5/2000	URS	17.88		—	0.00	17.88
	5/2-3/2000	URS	17.88	12.78	—	0.00	5.10
	8/22-23/2000	URS	17.88	12.55	—	0.00	5.33
	12/12-13/2000	URS	17.88	11.92	—	0.00	5.96
	2/14/2000	URS	17.88	11.69	—	0.00	6.19
	4/9/2002	Kane	17.88	11.34	—	0.00	6.54
	4/11/2003	Farallon	17.88	11.03	—	0.00	6.85
	4/24/2004	Kane	17.88	11.52	—	0.00	6.36
	5/18/2005	Farallon	17.88	11.52	—	0.00	6.36
	12/13/2005	Farallon	17.88	11.95	—	0.00	5.93
	5/18/2006	Farallon	17.88	11.69	—	0.00	6.19
	1/11/2007	Farallon	17.88	10.18	—	0.00	7.70
	7/31/2007	Farallon	17.88	12.15	—	0.00	5.73
MW-25	10/18-19/1999	URS	17.64	12.50	—	0.00	5.14
	1/5/2000	URS	17.64	NM	NM	NM	NM
	5/2-3/2000	URS	17.64	11.82	—	0.00	5.82
	8/22-23/2000	URS	17.64	12.52	—	0.00	5.12
	12/12-13/2000	URS	17.64	11.88	—	0.00	5.76
	2/14-15/2001	URS	17.64	11.59	—	0.00	6.05
	4/9/2002	Kane	17.64	11.45	—	0.00	6.19
	4/11/2003	Farallon	17.64	10.98	—	0.00	6.66
	4/24/2004	Kane	17.64	12.01	—	0.00	5.63
	12/29/2004	Farallon	17.64	6.86	—	0.00	10.78
	5/18/2005	Farallon	17.64	11.46	—	0.00	6.18
	12/13/2005	Farallon	17.64	11.80	—	0.00	5.84
	5/18/2006	Farallon	17.64	11.75	—	0.00	5.89
	1/11/2007	Farallon	17.64	10.21	—	0.00	7.43
	7/31/2007	Farallon	17.64	12.26	—	0.00	5.38
MW-26	10/18-19/1999	URS	18.36	21.09	11.10	9.99	6.36
	1/5/2000	URS	18.36	20.98	9.93	11.05	7.44
	5/2-3/2000	URS	18.36	21.09	10.60	10.49	6.82
	8/22-23/2000	URS	18.36	20.72	11.31	9.41	6.20
	12/12-13/2000	URS	18.36	21.15	11.00	10.15	6.45
	2/14-15/2001	URS	18.36	21.15	10.62	10.53	6.79
	4/9/2002	Kane	18.36	21.02	11.13	9.89	6.34
	4/24/2004	Kane	18.36	NM	NM	NM	NM
	5/18/2005	Farallon	18.36	10.80	10.35	0.45****	7.97
	12/13/2005	Farallon	18.36	19.35	10.92	8.43	6.68
	5/18/2006	Farallon	18.36	19.35	10.39	8.96	7.16
	4/13/2007	Farallon	18.36	19.30	10.31	8.99	7.24
	7/31/2007	Farallon	18.36	21.65	12.69	8.96	4.86

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-27	10/18-19/1999	URS	18.15	18.50	11.52	6.98	6.00
	1/5/2000	URS	18.15	18.20	10.28	7.92	7.16
	5/2-3/2000	URS	18.15	18.55	10.90	7.65	6.56
	8/22-23/2000	URS	18.15	18.66	11.64	7.02	5.88
	12/12-13/2000	URS	18.15	18.30	11.25	7.05	6.27
	2/14-15/2001	URS	18.15	18.20	7.85	10.35	9.37
	4/9/2002	Kane	18.15	19.93	11.59	8.34	5.81
	4/24/2004	Kane	18.15	NM	NM	NM	NM
	5/18/2005	Farallon	18.15	12.15	10.71	1.44****	7.31
	12/13/2005	Farallon	18.15	21.20	11.22	9.98	6.03
	5/18/2006	Farallon	18.15	21.50	10.80	10.70	6.39
	4/13/2007	Farallon	18.15	21.72	10.91	10.81	6.27
	7/31/2007	Farallon	18.15	23.02	13.34	9.68	3.94
MW-28	10/18-19/1999	URS	18.35	19.00	11.20	7.80	6.45
	1/5/2000	URS	18.35	18.20	10.53	7.67	7.13
	5/2-3/2000	URS	18.35	17.90	11.25	6.65	6.50
	8/22-23/2000	URS	18.35	18.41	11.82	6.59	5.94
	12/12-13/2000	URS	18.35	18.80	11.70	7.10	6.01
	2/14-15/2001	URS	18.35	18.14	11.24	6.90	6.49
	4/9/2002	Kane	18.35	18.30	11.70	6.60	6.06
	4/24/2004	Kane	18.35	18.49	10.62	7.87	7.02
	12/29/2004	Farallon	18.35	13.51	10.25	3.26****	7.81
	5/18/2005	Farallon	18.35	10.93	0.00	0****	7.42
	12/13/2005	Farallon	18.35	17.35	11.22	6.13	6.58
	5/18/2006	Farallon	18.35	16.45	10.89	5.56	6.96
	4/13/2007	Farallon	18.35	16.41	10.81	5.60	7.04
	7/31/2007	Farallon	18.35	21.33	16.70	4.63	1.23
MW-29	10/18-19/1999	URS	18.24	21.55	11.23	10.32	6.08
	1/5/2000	URS	18.24	21.38	10.00	11.38	7.22
	5/2-3/2000	URS	18.24	21.42	10.67	10.75	6.60
	8/22-23/2000	URS	18.24	--	11.39	NM	Not Available
	12/12-13/2000	URS	18.24	21.35	11.00	10.35	6.31
	2/14-15/2001	URS	18.24	21.29	10.73	10.56	6.56
	4/9/2002	Kane	18.24	22.59	11.39	11.20	5.84
	4/24/2004	Kane	18.24	NM	NM	NM	NM
	5/18/2005	Farallon	18.24	18.24	10.99	7.25	6.60
	12/13/2005	Farallon	18.24	18.72	11.50	7.22	6.09
	5/18/2006	Farallon	18.24	18.50	11.03	7.47	6.54
	4/13/2007	Farallon	18.24	18.16	10.92	7.24	6.67
	7/31/2007	Farallon	18.24	20.49	13.51	6.98	4.10

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-30	10/18-19/1999	URS	17.48	12.20	—	0.00	5.28
	1/5/2000	URS	17.48	10.94	—	0.00	6.54
	5/2-3/2000	URS	17.48	11.60	—	0.00	5.88
	8/22-23/2000	URS	17.48	NM	NM	NM	NM
	12/12-13/2000	URS	17.48	11.70	—	0.00	5.78
	2/14-15/2001	URS	17.48	11.33	—	0.00	6.15
	4/9/2002	Kane	17.48	11.23	—	0.00	6.25
	4/24/2004	Kane	17.48	NM	NM	NM	NM
	5/18/2005	Farallon	17.48	11.29	—	0.00	6.19
	12/13/2005	Farallon	17.48	11.79	—	0.00	5.69
	5/18/2006	Farallon	17.48	11.60	—	0.00	5.88
	1/11/2007	Farallon	17.48	10.02	—	0.00	7.46
	7/31/2007	Farallon	17.48	12.08	—	0.00	5.40
MW-31	10/18-19/1999	URS	17.50	12.36	—	0.00	5.14
	1/5/2000	URS	17.50	11.06	—	0.00	6.44
	5/2-3/2000	URS	17.50	11.82	—	0.00	5.68
	8/22-23/2000	URS	17.50	12.41	—	0.00	5.09
	12/12-13/2000	URS	17.50	11.77	—	0.00	5.73
	2/14-15/2001	URS	17.50	11.51	—	0.00	5.99
	4/9/2002	Kane	17.50	11.35	—	0.00	6.15
	4/11/2003	Farallon	17.50	10.90	—	0.00	6.60
	4/24/2004	Kane	17.50	11.42	—	0.00	6.08
	12/29/2004	Farallon	17.50	10.76	—	0.00	6.74
	5/18/2005	Farallon	17.50	11.40	—	0.00	6.10
	12/13/2005	Farallon	17.50	11.70	—	0.00	5.80
	5/18/2006	Farallon	17.50	11.56	—	0.00	5.94
	1/11/2007	Farallon	17.50	10.09	—	0.00	7.41
	7/31/2007	Farallon	17.50	11.99	—	0.00	5.51
MW-32	10/18-19/1999	URS	13.62	11.75	—	0.00	1.87
	1/5/2000	URS	13.62	10.62	—	0.00	3.00
	5/2-3/2000	URS	13.62	10.97	—	0.00	2.65
	8/22-23/2000	URS	13.62	11.62	—	0.00	2.00
	12/12-13/2000	URS	13.62	11.25	—	0.00	2.37
	2/14-15/2001	URS	13.62	11.04	—	0.00	2.58
	4/9/2002	Kane	13.62	10.94	—	0.00	2.68
	4/24/2004	Kane	13.62	10.62	—	0.00	3.00
	5/18/2005	Farallon	13.62	NM	NM	NM	NM
	12/13/2005	Farallon	13.62	11.54	—	0.00	2.08
	5/18/2006	Farallon	13.62	11.20	—	0.00	2.42
	1/11/2007	Farallon	13.62	9.60	—	0.00	4.02
	7/31/2007	Farallon	13.62	11.61	—	0.00	2.01

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-33	10/18-19/1999	URS	17.23	12.10	11.70	0.40	5.49
	1/5/2000	URS	17.23	11.71	10.38	1.33	6.73
	5/1/2000	URS	17.23	10.68	NA	0.00	6.55
	8/22-23/2000	URS	17.23	13.00	11.40	1.60	5.69
	12/12-13/2000	URS	17.23	13.12	11.00	2.12	6.04
	2/14-15/2001	URS	17.23	12.70	10.78	1.92	6.28
	4/9/2002	Kane	17.23	NM	NM	NM	NM
	4/11/2003	Farallon	17.23	12.04	—	1.72	6.76
	4/24/2004	Kane	17.23	10.71	—	0.00	6.52
	5/18/2005	Farallon	17.23	12.56	10.95	1.61	6.14
	12/13/2005	Farallon	17.23	12.86	11.32	1.54	5.77
	5/18/2006	Farallon	17.23	12.55	11.04	1.51	6.05
	4/13/2007	Farallon	17.23	12.51	10.92	1.59	6.17
	7/31/2007	Farallon	17.23	14.96	13.37	1.59	3.72
MW-34	10/18-19/1999	URS	17.13	11.39	—	0.00	5.74
	1/5/2000	URS	17.13	10.36	—	0.00	6.77
	5/2-3/2000	URS	17.13	10.81	—	0.00	6.32
	8/22-23/2000	URS	17.13	11.43	—	0.00	5.70
	12/12-13/2000	URS	17.13	11.08	—	0.00	6.05
	2/14-15/2001	URS	17.13	10.85	—	0.00	6.28
	4/9/2002	Kane	17.13	10.75	—	0.00	6.38
	4/24/2004	Kane	17.13	10.92	—	0.00	6.21
	5/18/2005	Farallon	17.13	10.96	—	0.00	6.17
	12/13/2005	Farallon	17.13	11.40	—	0.00	5.73
	5/18/2006	Farallon	17.13	11.04	—	0.00	6.09
	1/11/2007	Farallon	17.13	9.41	—	0.00	7.72
	7/31/2007	Farallon	17.13	11.26	—	0.00	5.87
MW-35[4]	10/18-19/1999	URS	13.96	19.20	11.00	8.20	2.22
	1/5/2000	URS	13.96	18.85	9.70	9.15	3.44
	5/2-3/2000	URS	13.96	NM	NM	NM	NM
	8/22-23/2000	URS	13.96	NM	NM	NM	NM
	12/12-13/2000	URS	13.96	NM	NM	NM	NM
	2/14-15/2001	URS	13.96	NM	NM	NM	NM
	4/9/2002	Kane	13.96	NM	NM	NM	NM
	4/24/2004	Kane	13.96	NM	NM	NM	NM
	5/18/2005	Farallon	13.96	NM	NM	NM	NM
	12/13/2005	Farallon	13.96	NM	NM	NM	NM
	5/18/2006	Farallon	13.96	NM	NM	NM	NM
	12/13/2005	Farallon	13.96	NM	NM	NM	NM

Table 2-1
Summary of Groundwater Elevation and LNAPL Data

Monitoring Well ID	Date Collected	Collected By	Casing Elevation (feet)[1]	Depth to Water (feet)[2]	Depth to LNAPL (feet)	LNAPL Thickness (feet)	Potentiometric Surface Elevation (feet)[3]
MW-36	10/18-19/1999	URS	17.41	12.14	—	0.00	5.27
	1/5/2000	URS	17.41	10.97	—	0.00	6.44
	5/2-3/2000	URS	17.41	11.36	—	0.00	6.05
	8/22-23/2000	URS	17.41	NM	NM	NM	NM
	12/12-13/2000	URS	17.41	12.58	—	0.00	4.83
	2/14-15/2001	URS	17.41	11.32	—	0.00	6.09
	4/9/2002	Kane	17.41	11.17	—	0.00	6.24
	4/11/2003	Farallon	17.41	10.85	—	0.00	6.56
	4/24/2004	Kane	17.41	11.44	—	0.00	5.97
	5/18/2005	Farallon	17.41	11.35	—	0.00	6.06
	12/13/2005	Farallon	17.41	11.74	—	0.00	5.67
	5/18/2006	Farallon	17.41	11.48	—	0.00	5.93
	1/11/2007	Farallon	17.41	9.90	—	0.00	7.51
	7/31/2007	Farallon	17.41	11.91	—	0.00	5.50

NOTES:

[1]Relative elevation of top of casing, in feet, as surveyed by PLS, Inc., Issaquah, Washington, 8/22/2003.

[2]Depth to water below top of well casing.

[3]Potentiometric Surface = (Casing Elevation - Depth to Water) +0.91(LNAPL Thickness). The specific gravity for LNAPL is estimated at 0.91 (for tyipical diesel and/or oil).

[4]Top of casing elevation relative to arbitary benchmark datum of 15.00 feet established by SECOR, well not located during 8/22/2003 survey event.

* = LNAPL thickness as observed in polyethylene bailer.

**= Due to obstruction in MW-18, DTW was not measured and LNAPL thickness is minimum thickness.

***=Groundwater elevation (feet above mean sea level).

****= Measurement affected by instrument error.

— = data not available
Farallon = Farallon Consulting, L.L.C.
Kane = Kane Environmental, Inc.
LNAPL = light non-aqueous phase liquid
NM = not measured
SECOR = SECOR International, Inc.
TOC = top of casing

Table 2-2
Summary of Groundwater Quality Field Measurements

Monitoring Well ID	Date	Depth to Water (feet) [1]	Temperature (ºC)	pH	Conductivity (mS/cm)	Dissolved Oxygen (mg/l)	ORP (mV)
MW-6	12/14/2005	14.59	12.91	6.74	0.358	0.78	45.5
	5/18/2006	14.10	13.30	6.43	0.389	0.93	-32.4
	1/11/2007	12.27	11.82	6.44	0.281	9.47	155.1
MW-7	12/14/2005	15.2	14.88	6.15	0.274	0.94	97.9
	5/18/2006	14.85	14.90	5.55	0.275	IE	254.6
	1/11/2007	13.14	13.42	6.06	0.197	5.59	174.4
MW-9	5/18/2005	11.44	14.48	6.29	0.278	0.54	-12.5
	12/14/2005	11.84	14.38	6.47	0.509	0.40	47.5
	5/18/2006	11.45	15.03	6.16	0.382	0.84	-7.6
	1/11/2007	9.88	13.38	6.27	0.380	2.82	21.2
MW-10	5/18/2005	11.97	0.482	6.48	0.482	0.55	-43.2
	12/14/2005	11.73	14.7	6.49	0.541	0.41	32.9
	5/18/2006	11.4	15.18	6.53	1.417	0.68	-58.1
	1/11/2007	NM	NM	NM	NM	NM	NM
MW-11	5/19/2006	11.45	14.85	6.22	0.490	0.91	-36.6
	1/11/2007	10.01	13.44	6.21	0.347	4.14	55.0
MW-14	12/14/2005	11.88	14.1	6.63	0.46	0.38	68.2
	5/18/2006	11.50	14.65	6.48	0.313	0.73	-34.9
	1/11/2007	8.82	13.08	6.31	0.309	2.45	46.2
MW-15	12/14/2005	11.69	13.92	6.25	0.31	2.15	119.2
	5/19/2006	11.53	14.3	6.05	0.199	4.72	47.2
	1/11/2007	7.38	11.56	6.11	0.437	3.24	40.3
MW-23	5/18/2005	11.41	14.25	5.98	0.337	0.34	6.5
	12/14/2005	11.84	15.37	6.08	0.365	0.34	64.3
	5/18/2006	11.45	14.83	6.12	0.490	0.79	20.9
	1/11/2007	9.87	14.52	6.06	0.418	10.64	-33.1
MW-24	5/18/2005	11.70	15.86	6.84	0.884	0.33	-90.2
	12/14/2005	11.95	15.30	6.91	1.171	0.34	-10.9
	5/18/2006	11.69	15.41	6.74	1.100	0.78	-106.9
	1/11/2007	10.18	14.07	6.68	0.789	12.87	-94.8
MW-25	5/18/2005	11.50	16.03	6.41	0.23	2.58	-18
	12/14/2005	11.80	15.60	6.46	0.381	1.01	139.5
	5/18/2006	11.75	15.98	6.35	0.298	0.71	-49.3
	1/11/2007	10.21	12.47	6.40	0.298	8.07	-48.2
MW-30	12/14/2005	11.79	15.51	6.45	0.596	0.36	35.3
	5/18/2006	11.60	15.88	6.26	0.228	0.78	-27.5
	1/11/2007	10.02	15.73	6.29	0.331	0.95	-21.5
MW-31	5/18/2005	11.41	14.96	6.57	0.408	0.51	-78.6
	12/14/2005	11.70	14.92	6.61	0.566	0.46	61.5
	5/18/2006	11.56	15.39	6.34	0.528	0.66	-60.4
	1/11/2007	10.09	14.46	6.66	0.515	10.81	-83.7

Table 2-2
Summary of Groundwater Quality Field Measurements

Monitoring Well ID	Date	Depth to Water (feet) [1]	Temperature (ºC)	pH	Conductivity (mS/cm)	Dissolved Oxygen (mg/l)	ORP (mV)
MW-34	5/18/2005	11.12	15.94	6.36	0.649	1.27	-53.8
	12/14/2005	11.40	15.54	6.45	0.596	0.36	35.3
	5/18/2006	11.04	15.09	6.42	0.789	0.86	71.6
	1/11/2007	9.41	14.19	6.42	0.729	1.33	-21.9

NOTES:

[1]Below top of well casing in feet.

ºC = celsius

mg/l = milligrams per liter

mS/cm = microSiemens per centimeter

mV = millivolts

NM = not measured

ORP = oxidation reduction potential

Table 2-3
Summary of Below Ground Equipment and Containment

Equipment	Belowground Features	Containment	Comments
Hollowbore 58 Lathe	Concrete vault that is approximately 9 feet bfs by 17 feet wide by 50 feet long. Vault houses the lathe motors and pumps, steel walled 5.500 gallon clean cutting oil storage tank, and cutting oil recycling filtration system.	The vault is composed of concrete walls, flooring and celing. The cutting oil storage tank is contained within a concrete bermed area within the vault.	Visual observations of the lathe and vault in December 2007 identified a film of oil was present throughout the lathe and adjacent floor surface, and on the floor surface in the vault. No drains or sump pumps within the Hollowbore Area were identified that lead to the stormwater drainage system. No signs of visible hydraulic oil or staining were present outside the building adjacent to the Hollowbore Area. Concrete vault was intact with no signs of groundwater infiltration.
Hollowbore 59/60 Lathe	Concrete vault that is approximately 7 feet bfs by 20 feet wide by 20 feet long that serves as a pump room for lathes 59 and 60. Vault is divided by an interior concrete wall into an east and west compartment. The east compartment contains the piping, motors, and pumps to lathe 60. The west compartment contains the piping, motor, and pump for lathe 59 and two auxillary pumps and motors and final oil filter. The west compartment also contains an intermediate approximately 240 gallon steel cutting oil storage tank. A sump pump within each of the compartments pumps any accumulated residual and/or spilled cutting oil to the intermediate storage tank.	The vault is composed of concrete walls and flooring and a steel plate roof. The intermediate storage tank in the west compartment is bermed.	Visual observations of the lathe and vault in December 2007 identified a film of oil was present throughout the lathe and ajacent floor surface, and on the floor surface in the vault. No drains or sump pumps within the Hollowbore Area were identified that lead to the stormwater drainage system. No signs of visible hydraulic oil or staining were present outside the building adjacent to the Hollowbore Area. Concrete vault was intact with no signs of groundwater infiltration.
Frenchman 63 Lathe	Concrete-lined vault exists beneath the lathe that ranges from approximately 4 to 10 feet bfs by 28 feet wide by 18 feet long. Vault houses the lathe motors and gear boxes. No hydraulic oil is used in this machine and/or stored in the vault.	The vault is composed of concrete walls, flooring and ceiling.	This lathe does not use hydraulic oil. Visual observations of the lathe and vault in December 2007 identified no visual sign of hydraulic oil on the floor. No drains or sump pumps within the Hollowbore Area were identified that lead to the stormwater drainage system. No signs of visible hydraulic oil or staining were present outside the building adjacent to the Hollowbore Area. Concrete vault was intact with no signs of groundwater infiltration.
West Craven Lathe	Concrete vault that ranges from approximately 3 to 5 feet bfs by 26 feet wide by 11 feet long. Vault includes a shallower equipment level and a deeper level. The deeper level contains an approximately 30 gallon capacity steel tank used for the storage of hydraulic oil, associated pumping equipment, and a sump pump.	The vault is composed of concrete walls, flooring and ceiling.	The sump pump was installed in case a spill of oil occurs and is plumbed to flexible hosing that extends to an aboveground mobile tote. Visual observations of the vault in December 2007 indicated hydraulic oil on the lathe or the concrete floor surface surrounding the lathe. A visible film of hydraulic oil was observed on the concrete floor of the vault. No drains or sump pumps were identified that lead to the stormwater drainage system. The concrete flooring, walls, and ceiling were intact with minimal signs of cracking.
East Craven Lathe	Concrete vault that ranges from approximately 3 to 8 feet bfs by 22 feet wide by 18 feet long. The deeper level in the east Craven vault contains an approximately 100-gallon capacity steel tank used for the storage of hydraulic oil and associated pumping equipment. There are no sump pumps in this vault.	The vault is composed of concrete walls, flooring and ceiling.	There are no sump pumps in this vault. Visual observations of the vault in December 2007 indicated hydraulic oil on the lathe or the concrete floor surface surrounding the lathe. A visible film of hydraulic oil was observed on the concrete floor of the vault. No drains were identified that lead to the stormwater drainage system. The concrete flooring, walls, and ceiling were intact with minimal signs of cracking.

Table 2-3
Summary of Below Ground Equipment and Containment

Equipment	Belowground Features	Containment	Comments
660 Ton Press	Press pit is approximately 6 feet wide by 9 feet long by 6 feet deep. Pit is used for access for maintenance of the press—no equipment or oil storage is within the pit.	The pit is fully enclosed in concrete with access via a drop-in ladder.	Hydraulic oil for operation of the press is stored in an adjacent above ground pump room. Visual observations of the pit in December 2007 indicated oil staining on the concrete flooring and walls within the press pit. The concrete flooring, walls, and ceiling within the press pit was intact with minimal signs of cracking. Groundwater infiltration was not observed in the press pit and there were no observed drains and/or sump pumps within the press pit.
1,250 Ton Press	The press pit is approximately 15 feet wide by 10 feet long by 8 feet bgs deep. The pit is fully enclosed in concrete with access via a drop-in ladder. The pit is used for access for maintenance of the press—no equipment or oil storage is within the pit.	The pit is fully enclosed in concrete with access via a drop-in ladder.	Hydraulic oil for operation of the press is stored in an adjacent above ground pump room. A dual-intake pump is located in the press pit. If residual oil accumulates in the pit or a spill occurs, this pump conveys the hydraulic oil through piping directly to the oil-water separator west of the Aluminum Heat Treat Area Building. Visual observations of the pit in December 2007 indicated oil staining on the concrete flooring and walls within the press pit. The concrete flooring, walls, and ceiling within the press pit was intact with minimal signs of cracking. Groundwater infiltration was not observed in the press pit and there were no observed drains and/or sump pumps within the press pit.
2,500 Ton Press	The press pit is approximately 10 feet bfs by 15 feet wide by 20 feet long. The pit is fully enclosed in concrete with access via a drop-in ladder. The pit is used for access for maintenance of the press—no equipment or oil storage is within the pit.	The pit is fully enclosed in concrete with access via a drop-in ladder.	Hydraulic oil for operation of the press is stored in an adjacent above ground pump room. A dual-intake pump is located in the press pit. If residual oil accumulates in the pit or a spill occurs, this pump conveys the hydraulic oil through piping directly to the oil-water separator west of the Aluminum Heat Treat Area Building. Visual observations of the pit in December 2007 indicated oil staining on the concrete flooring and walls within the press pit. The concrete flooring, walls, and ceiling within the press pit was intact with minimal signs of cracking. Groundwater infiltration was not observed in the press pit and there were no observed drains and/or sump pumps within the press pit.
5,000 Ton Press	The press pit is approximately 35 feet bfs by 50 feet long by 30 feet wide. The press pit is connected to a dual-level underground concrete vault with access via a stairwell. The first level is approximately 12 feet bfs and houses the hydraulic conduit for the press. The second level is approximately 35 feet bfs and houses the pump room, power station, hydraulic lines, and an approximately 4,000-gallon steel tank used for the storage of hydraulic oil.	The vault is double-walled with an internal sheet piling surrounded by concrete. The hydraulic oil storage tank is contained within a concrete berm to function as a spill control reservoir.	Separate sump pumps service each level of the underground vault. If a spill occurs or residual oil accumulates on either level of the vault, these pumps convey the hydraulic oil through underground piping to the oil-water separator. Visual observations of the pit in December 2007 indicated oil staining on the concrete flooring and walls within the press pit. The concrete flooring, walls, and ceiling within the press pit was intact with minimal signs of cracking. Groundwater infiltration was not observed in the press pit and there were no observed drains and/or sump pumps within the press pit.

Table 2-3
Summary of Below Ground Equipment and Containment

Equipment	Belowground Features	Containment	Comments
L&F Straightening Press	The press pit is a shallow concrete pit located approximately 2.5 feet bfs by 9.5 feet long by 22.5 feet wide. The pit is used for access for maintenance of the press; no equipment or hydraulic oil is stored within the pit.	The pit is fully enclosed in concrete.	The press equipment nearly fills the shallow below ground pit limiting visual observations of the integrity of the concrete walls and floor. Elevated concrete platform directly adjacent to the press pit houses an approximately 700-gallon hydraulic oil storage steel tank for operation of the press, press pumps, and non-contact cooling water heat exchanger. The heat exchanger uses tap water and the heat exchange discharge is monitored via a thermostatic control and discharged as necessary directly to the oil-water separator directly west of the Aluminum Heat Treat Area building. There are no sumps within the pit or drains connected to the stormwater conveyance system.
Ring Mill	Machine pit is located directly below the ring mill equipment and is approximately 8 feet bfs by 50 feet long by 15 feet wide. This pit is enclosed by concrete walls, is used for maintenance access only, and houses no equipment and/or coolant.	The pit is enclosed by concrete walls and flooring.	There are no pumps in this pit and no connection from the pit to the stormwater conveyance system. Any residual coolant that accumulates in the pit or spills that may occur into the pit is drained to the adjacent coolant storage vault (see below) and/or manually pumped directly to mobile totes, if necessary. Visual observations of the machine pit in December 2007 identified spots of coolant on the ring mill equipment and visible staining on the concrete walls within the machine pit. The observations indicated the concrete flooring and walls within the machine pit and coolant storage vault was intact with minimal signs of cracking. No signs of groundwater infiltration were observed in the machine pit or coolant storage vault and no drains and/or sump pumps were identified within the machine pit or vault.
Ring Expander	Machine pit sits directly below the equipment and is approximately 12 feet bfs by 10 feet long by 10 feet wide. The pit is enclosed by concrete walls and houses the hydraulic pumps and lines, lubrication grease system, sump pump, and an approximately 300-gallon hydraulic oil storage steel tank for operation of the ring expander.	The pit is enclosed by concrete walls and flooring.	Any residual hydraulic oil that accumulate in the pit or spills that may occur into the pit are pumped directly to mobile totes via the sump pump. Excess grease on the machine pit and floor are manually scraped off and placed into empty grease kegs and disposed off site. Visual observations of the machine pit were conducted in December 2007 and identified spots of hydraulic oil on the ring expander equipment and visible oil staining on the concrete walls within the machine pit . The observations indicated the concrete flooring and walls within the machine pit and hydraulic oil storage vault was intact with minimal signs of cracking. No signs of groundwater infiltration were observed in the machine pit and no drains and/or sump pumps were identified within the machine pit.
Outdoor Railroad Scale Vault	Concrete vault that reaches approximately 8 feet bgs sits directly below the scale. The vault provides underground access for maintenance of the scales; no equipment is stored within the vaults.	The pit is enclosed by concrete walls and flooring.	Visual observations of both scales were performed in December 2007 and indicated that the concrete were intact with minimal signs of cracking and that stormwater infiltration can occur through the cracks in the weighing platforms. The railroad scale vault has a sump that conveys collected stormwater to Outfall 001.
Outdoor Scrap Metal Scale Vault	Concrete vault that reaches approximately 8 feet bgs sits directly below the scale. The vault provides underground access for maintenance of the scales; no equipment is stored within the vaults.	The pit is enclosed by concrete walls and flooring.	Visual observations of both scales were performed in December 2007 and indicated that the concrete were intact with minimal signs of cracking and that stormwater infiltration can occur through the cracks in the weighing platforms. The vault does not have a drain or sump and any accumulated stormwater ponds in the vault and evaporates.

Table 2-3
Summary of Below Ground Equipment and Containment

Equipment	Belowground Features	Containment	Comments
Arc Furnace	The arc furnace pit houses the two arc furnace units and the ladle used to transfer the molten steel to the ingot pour area.	The pit is enclosed by concrete walls and flooring.	Discussions with Jorgenson Forge personnel indicated that groundwater has not accumulated in the arc furnace pit and there are no drains or sumps to the stormwater conveyance system in the pit.
AOD	The AOD pit houses the AOD vessel .	The pit is enclosed by concrete walls and flooring.	Discussions with Jorgenson Forge personnel indicated that groundwater has not accumulated in the AOD pit and there are no drains or sumps to the stormwater conveyance system in the pit.
Vacuum-Degassing Vessels	The vacuum-degassing pit houses the vacuum degassing vessels and is approximately 8 feet bgs.	The pit is enclosed by concrete walls and flooring.	Groundwater continuously infiltrates into the vacuum de-gassing pit during periods of high groundwater elevations, collects within a constructed concrete sump, and is conveyed to stormwater Outfall 002 via an underground sump pump. Visual observations of the vacuum de-gassing pit sump in December 2007 identified that the groundwater infiltration into the pit can come into contact with dust fallout from the aboveground operations in the vicinity. The floor area in the groundwater infiltration area is routinely swept to minimize the accumulation of dust and introduction into the pit. The quality of water that accumulates in the vacuum de-gassing pit has not been evaluated.
AOD Scale	The AOD scale vault is approximately 8 feet below ground, and provides underground access to the scale for maintenance; no equipment is in the vault.	The pit is enclosed by concrete walls and flooring.	The vault is covered with a steel plate that significantly limits the introduction of solid material into the vault. Visual observation of the vaultin December 2007 indicates that it is enclosed by a concrete floor, walls, and ceiling that are intact and show minimal signs of cracking. The vault includes a single sump pump that is piped to Outfall 003. Routine investigations of the vault by Jorgensen Forge personnel indicate that accumulation of water or particulates has not been observed, and that the sump pump has not been maintained in several years due to lack of use. No water was present in the vault during the December 2007 visual observations. It is likely that the sump was designed for emergency purposes to ensure drainage of any fluids that may enter the pit prior to damaging the scale electronics.
Ingot Mold Area	The ingot mold area sits in a below-ground concrete pit that is approximately 8 feet deep by 75 feet long by 16 feet wide.	The pit is enclosed by concrete walls and flooring.	Visual observation of the pit in December 2007 indicates that it is enclosed by a concrete floor, walls, and ceiling that are intact and show minimal signs of cracking. No signs of water were observed in the pit or sump pumps or drains that are connected to the stormwater conveyance system. Jorgenson Forge personnel indicated that groundwater has not accumulated in the pit.

Table 2-3
Summary of Below Ground Equipment and Containment

Equipment	Belowground Features	Containment	Comments
Q1 Quench Tank	Below ground vertical tank used for quenching of heat treated steel. This quench tank is directly adjacent to Q2 and Q3 and is located within a three-level belowground concrete vault that is approximately 30 feet bgs by 24 feet long by 30 feet wide and was installed in approximately 1970. The vault is double-walled with an internal sheet piling surrounded by concrete. In addition to the quench tanks, the vault also contains one vertical heat treating furnace and support equipment for the tanks and furnace.	The steel quench tank is contained with a vault that is double-walled with an internal sheet piling surrounded by concrete.	Visual observations of the concrete vault in December 2007 indicated the concrete was intact with minimal cracks. A single sump pump serves to remove any accumulated fluids on the bottom of the vault to an above-ground mobile tote. There is no current connection between any of the quench tanks and/or the vault and the stormwater conveyance system.
Q2 Quench Tank	Below ground vertical tank used for quenching of heat treated steel. This quench tank is directly adjacent to Q1 and Q3 and is located within a three-level belowground concrete vault that is approximately 30 feet bgs by 24 feet long by 30 feet wide and was installed in approximately 1970. The vault is double-walled with an internal sheet piling surrounded by concrete. In addition to the quench tanks, the vault also contains one vertical heat treating furnace and support equipment for the tanks and furnace.	The steel quench tank is contained with a vault that is double-walled with an internal sheet piling surrounded by concrete.	Visual observations of the concrete vault in December 2007 indicated the concrete was intact with minimal cracks. A single sump pump serves to remove any accumulated fluids on the bottom of the vault to an above-ground mobile tote. There is no current connection between any of the quench tanks and/or the vault and the stormwater conveyance system.
Q3 Quench Tank	Below ground vertical tank used for quenching of heat treated steel. This quench tank is directly adjacent to Q1 and Q2 and is located within a three-level belowground concrete vault that is approximately 30 feet bgs by 24 feet long by 30 feet wide and was installed in approximately 1970. The vault is double-walled with an internal sheet piling surrounded by concrete. In addition to the quench tanks, the vault also contains one vertical heat treating furnace and support equipment for the tanks and furnace.	The steel quench tank is contained with a vault that is double-walled with an internal sheet piling surrounded by concrete.	Visual observations of the concrete vault in December 2007 indicated the concrete was intact with minimal cracks. A single sump pump serves to remove any accumulated fluids on the bottom of the vault to an above-ground mobile tote. There is no current connection between any of the quench tanks and/or the vault and the stormwater conveyance system.
Q8 Quench Tank	Below ground vertical tank used for water quenching of heat-treated aluminum.	Steel tank within a concrete vault.	This quench tank uses tap water. The tank is drained once or twice per month directly to the oil-water separator located west of the Aluminum Heat Treat Area building for maintenance purposes.
Steam Clean Area	Consists of a steel grate at ground surface underlain by a concrete reservoir that is approximately 1 foot bgs. The concrete reservoir is graded such that fluids are gravity fed to the connected oil-water separator on the north end of the steam clean area.	Concrete floor and walls.	The concrete reservoir is inspected periodically by Jorgensen Forge personnel and cleaned as necessary by removing the steel grate, shoveling out the contents into sealable containers with floor dry material, and disposed appropriately offsite. Visual observation of the steam clean area in December 2007 indicated that the steel-grate surface is not bermed, and therefore, potential offspray during cleaning of equipment and/or spills during transfer of oil-water mixtures could reach the pavement and migrate to the nearby stormwater catch basins and subsequently the LDW. However, no evidence of spills was documented in the Jorgensen Forge files. The concrete flooring underlying the steel grate was intact with minimal visible cracks.

Table 2-3
Summary of Below Ground Equipment and Containment

Equipment	Belowground Features	Containment	Comments
Central-Western Oil-Water Separator	Separator is connected to the steam clean area at approximately 1 foot bgs and is overlain by a steel grate at the ground surface. The separator is composed of two hydraulically connected tanks separated by a concrete baffle to increase the efficiency of the oil separation. The two tanks have a footprint that is approximately 6.5 feet bgs by 2 feet long by 2 feet wide and is encased in concrete.	Concrete floor and walls with open top. Approximately 1 feet bgs overlain by steel grate.	The tank is visually inspected periodically by Jorgensen Forge personnel and separated oil is manually pumped into mobile totes pending off-site disposal. Visual observations of the concrete vault in December 2007 indicated the concrete was intact with minimal cracks. The separated water from the downgradient tank is gravity fed directly to Metro.
Decommissioned Oil Storage Area Oil-Water Separator	This oil-water separator is one of ten 15,000-gallon capacity steel tanks that were historically used for heating oil storage and diesel fuel as backup fuel supply. The bank of 10 steel tanks are contained within a concrete vault with walls extending several feet above and below ground surface.	Tank is contained with a concrete vault.	Currently, access to the oil-water separator tank is limited to the surface of the eastern most edge of the tank. This access point allows Jorgensen Forge personnel to manually check the level of the oil and water levels in the tank. As necessary, employees manually pump the separated oil on the surface to the adjacent covered and concrete bermed centrifugation unit.
Oil-Water Separator West of Aluminum Heat Treat Area Building	The separator is composed of two hydraulically connected chambers separated by a concrete baffle. The tank is encased in concrete, is approximately 6 inches bgs and has dimensions of 5 feet deep by 5 feet long by 8 feet wide. The tank is located just beneath (approximately 8 inches) the roadway pavement and structural concrete and access to the tank is limited to two manholes in the pavement.	Encased by concrete on all sides.	The bottoms of the tanks do not extend into the documented layer of LNAPL that is floating on groundwater in Area 2. The separated water from the down-gradient tank is gravity fed directly to Metro. The tank is visually inspected periodically by Jorgensen Forge personnel and separated oil is manually pumped into mobile totes pending off-site disposal. During previous cleaning of the tank, Jorgensen Forge personnel noted that the concrete vault foundation was intact with minimal cracks.

Table 2-4
Summary of Chemical Storage Areas, Containment, and Best Management Practices

Location	Contents	Containment	Comments	Applicable Best Management Practices
Just north of the west end of Melt Shop building	Three variable volume tanks of liquid gas (i.e., oxygen, argon and nitrogen).	On concrete, bermed.	Site personnel take frequent measurements of the volume within each tank and call the gas vendor to provide additional gas when necessary.	Filling of the tanks is conducted with the bermed area.
Just east of the Aluminum Heat Treat building	6,000-gallon steel propane tank.	On concrete.	Site personnel take frequent measurements of the volume within each tank and call the gas vendor to provide additional gas when necessary.	None.
Decommissioned Oil Storage Area	15,000-gallon steel tank, acts as oil/water separator for the recovered oil/water mixture collected from the press lots, skimmer and reuse process.	Contained in concrete vault backfilled with mill scale, uncovered.	Southernmost tank of historically used 10 diesel oil storage tanks. Separated oil is pumped to the adjacent 6,000 gallon clean hydraulic oil tank. Excess water is discharged to the Metro stormwater sewer system.	The volume within the tank is routinely monitored to ensure the tank does not become overfilled. The tank is contained with a concrete vault to contain any potential spills from the tank.
Just south of the Decommissioned Oil Storage Area	4,000-gallon steel tank, used for storage of purchased and recycled clean hydraulic oil.	On concrete, bermed, covered shed.	Site personnel take frequent measurements of the volume within each tank.	The volume within the tank is routinely monitored to ensure the tank does not become overfilled. The tank is contained within a concrete, bermed, covered area to contain any potential spills from the tank. Placards are posted in the containment area communicating spill response actions and a spill control kit is adjacent to the containment area.
Just south of the Decommissioned Oil Storage Area	Approximately 1,200-gallon steel tank, used for storage of used hydraulic oil.	On concrete, bermed, covered shed.	Used oil from this tank is pumped through an adjacent centrifuge system to recover the clean hydraulic fraction. The recovered clean hydraulic oil is pumped to the directly adjacent 4,000 gallon steel tank and the dirty fraction is disposed of by an outside vendor. Site personnel take frequent measurements of the volume within each tank to ensure the volume stays below the tank capacity.	The volume within the tank is routinely monitored to ensure the tank does not become overfilled. The tank is contained within a concrete, bermed, covered area to contain any potential spills from the tank. Placards are posted in the containment area communicating spill response actions and a spill control kit is adjacent to the containment area.
Just south of the Decommissioned Oil Storage Area	Approximately 2,000-gallon steel tank, used for storage of used petroleum oil only collected from gear boxes, automotive equipment, and scrap oil.	On concrete, bermed, covered shed	Site personnel take frequent measurements of the volume within the tank to ensure the volume stays below the tank capacity.	Jorgensen Forge personnel transfer the used oil to this tank within the bermed area to avoid spills outside the containment area. The volume within the tank is routinely monitored to ensure the tank does not become overfilled. The tank is contained with a concrete, bermed, covered area to contain any potential spills from the tank. Placards are posted in the containment area communicating spill response actions and a spill control kit is adjacent to the containment area.
Just south of the Decommissioned Oil Storage Area	Two adjacent approximately 750-gallon high-density polyethylene (HDPE) tanks, one tank is used for storage and distribution of clean soluble cleaning oil and the other is storage of dirty soluble cleaning oil.	On concrete, bermed, covered shed.	Volume of oil within each tank is visible through the plastic tank and a disposal vendor is contacted as necessary.	Jorgensen Forge personnel transfer the new/used oil from/to this tank within the bermed area to avoid spills outside the containment area. The volume within the dirty soluble oil tank is routinely monitored to ensure the tank does not become overfilled. The tanks are contained with a concrete, bermed, covered area to contain any potential spills from the tanks. Placards are posted in the containment area communicating spill response actions and a spill control kit is adjacent to the containment area.
Petroleum oil storage building just east of the Machine Shop Area	Storage/distribution of petroleum oil from 55-gallon drums.	The building is a stand alone structure that is covered and completely contained by a concrete berm.	Small quantities are taken from this building and used in equipment throughout the facility.	Each of the 55-gallon drums is stored off the ground with a drip pan under each of the dispensor spigots. Placards are posted in the containment area communicating spill response actions and a spill control kit is located within the building.

Table 2-4
Summary of Chemical Storage Areas, Containment, and Best Management Practices

Location	Contents	Containment	Comments	Applicable Best Management Practices
Within ring expander machine pit within the Forge Shop Area	Hydraulic oil storage and process tank and associated piping and a grease lubrication system.	Below ground within a concrete machine pit.	Containment and associated piping is Below ground. Volume measured frequently by Jorgensen Forge personnel and filled as necessary. Visbile grease on the ring expander machine and floor surface.	A sump pump conveys any fluids that accumulate on the pit floor to above ground mobile totes and the mobile totes are routinely monitored to avoid overfilling.
West of ring mill in within the Forge Shop Area	Two hydraulically connected coolant fluid storage tanks and associated piping.	Below ground within a concrete vault.	Containment and associated piping is Below ground. Volume measured frequently by Jorgensen Forge personnel and filled as necessary.	Placards are posted in the vicinity of the pit communicating spill response actions and a spill control kit is located nearby.
660, 1,250, 2,500, 5,000 ton and L&F straightening presses	Each of the presses contains a steel tank for storage of hydaulic oil.	The 660, 1,250, and 2,500 ton press tanks are contained within above ground pump houses surrounded by a perimeter underlying concrete reservoir which functions as a spill control reservoir. The 5,000 ton press tank is stored in a below ground concrete equipment vault that is surounded by a concrete berm. The L&F straightening press tank does not have secondary containment.	The concrete reservoir under the 660, 1,250, and 2,500 ton press pump rooms looked intact with minimal signs of cracking. The 5,000 ton press storage tank concrete floor and containment berm looked intact with minimal signs of cracking.	The hydraulic storage tanks are filled carefully so as to avoid spills and prevent overfilling of the tanks.
Beneath arc furnace in Melt Shop Area	Two steel tanks used for storage of hydraulic oil used in arc furnaces.	Below ground on concrete base.	Containment and associated piping is below ground within the arc furnace pit. Volume measured frequently by Site personnel and filled as necessary.	The hydraulic storage tanks are filled carefully so as to avoid spills and prevent overfilling of the tanks.
West of laboratory	300-gallon gasoline tank used for distribution of diesel fuel to site mobile equipment.	Concrete bermed area with fencing to restrict access.	Volume measured frequently by Site personnel and filled as necessary.	Placards are posted in the vicinity of the pit communicating spill response actions and a spill control kit is located nearby.
Used oil storage building	HDPE totes used to store cosmolubric fire safe oil/water mixture.	Concrete bermed area, covered.	Mobile totes are stored in this concrete bermed, covered storage building pending appropriate disposal.	Placards are posted in the vicinity of the pit communicating spill response actions and a spill control kit is located nearby.
Storage building northwest corner of Property	3,000-gallon steel tank used for storage and distribution of diesel gasoline for site machinery.	Concrete bermed area in covered storage area with doors to restrict access.	Tank is stored in concrete bermed, covered storage building along with 55-gallon drums of used oils and solvent tank pending appropriate offsite disposal.	Placards are posted in the vicinity of the pit communicating spill response actions and a spill control kit is located nearby.
Storage building northwest corner of Property	250-gallon HDPE tank used for storage of all used solvents (e.g., paint thinner, kerosene, etc).	Concrete bermed area in covered storage area with doors to restrict access.	Tank is stored in concrete bermed area within the covered storage building along with 55-gallon drums of used oils pending appropriate offsite disposal and the diesel gasoline tank.	Placards are posted in the vicinity of the pit communicating spill response actions and a spill control kit is located nearby.

Table 2-5
Waste Storage Areas, Containment, and Best Management Practices

Location	Contents	Containment	Comments	Best Management Practices
Just south of the Decommissioned Oil Storage Area	Approximately 2,000-gallon steel tank, used for storage of used petroleum oil only collected from gear boxes, automotive equipment, and scrap oil.	On concrete, bermed, covered shed.	Site personnel take frequent measurements of the volume within the tank to ensure the volume stays below the tank capacity.	Jorgensen Forge personnel transfer the used oil to this tank within the bermed area to avoid spills outside the containment area. The volume within the tank is routinely monitored to ensure the tank does not become overfilled. The tank is contained with a concrete, bermed, covered area to contain any potential spills from the tank. Placards are posted in the containment area communicating spill response actions and a spill control kit is adjacent to the containment area.
West of Melt Shop baghouse	Billet grinding bag house swarf storage	Located on paved and unpaved areas surrounded by Ecology blocks. Pile is partially covered by a tarp.	Swarf is reused in the melt shop operations, however, at times production is greater than recycling leading to net increase of this material. Unused swarf is placed into railcars or trucks and recycled off site.	The swarf pile is tarped occasionally to attempt to further contain the pile.
North end of melt bag house	Melt bag house dust	Collected in transportable lined metal bin on concrete floor.	Minimial dust layer observed inside collection room. Disposed of every 60-90 days as RCRA hazardous waste to Subtitle C landfull in Arlington, Oregon. Concrete floor in good condition.	The concrete floor within the building is routinely swept to further minimize potential migration of the dust outside the building.

Table 2-5
Waste Storage Areas, Containment, and Best Management Practices

Location	Contents	Containment	Comments	Best Management Practices
Southwestern corner of SIA and directly west of Machine Shop Area	Chips storage	Chips stored along the southwest corner of the SIA are in an uncovered, unpaved area and contained on three sides by concrete walls. The chips stored west of the Machine Shop Area are within enclosed, above ground steel boxes.	Chips are either reused in the melt shop operations or recycled offsite. Slag is transported to non-hazardous Subtitle D landfill.	The paved area surrounding the chips stored west of the Machine Shop Area is routinely swept to minimize the potential for chips to migrate into stormwater catch basins.
Southwestern corner of SIA	EAF and AOD slag storage	Slag is dumped in an uncovered, unpaved area adjacent to the bin storage area and chip storage.	Slag is transported to non-hazardous Subtitle D landfill.	Vendors that remove the material for offsite disposal are requested to wash their tires in the breezeway area following pulling out of the unpaved area adjacent to the slag piles. The breezeway is routinely swept by Jorgenesn Forge personnel using a mobile sweeper.
Melt Shop Area	Scrap and dust	Material stored on both concrete and unpaved areas. Covered.	Dust accumulations up to several inches	None.

Table 2-6
Summary of Analytical Results for Operations By-Products

Sample Location	Sample Date	Analytical Results (milligrams per kilogram) [1]							
		Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Silver	Zinc
AOD Slag	1/22/2001	—	—	3,400	130	100 U	220	—	110
	8/30/2004	15 U	0.74 U	19	3.6	37 U	19	0.74 U	1.5 U
	5/15/2007	21.7	4.4	3,310	12.5	0.81 U	167	0.81 U	3.4
EAF Slag	1/22/2001	—	—	3,500	18	100 U	740	—	2,700
	8/30/2004	52	3.9 U	2,100	40	39 U	260	8.5	8 U
	5/15/2007	13.9	12.4	31,300	228	0.78	3,670	2	8.5
Melt Bag House Dust	1/22/2001	—	—	84,000	2,300	1,600	5,000	—	40 U
	8/30/2004	19 U	5	31,000	1,500	300	3,300	33	6,400
	5/15/2007	39.9	21.3	85,000	1,260	1,460	2,290	27.4	4,690

NOTES:

[1]Analyzed by U.S. Environmental Protection Agency Method 6010B.

— = not analyzed

U = no detectable concentrations above the listed laboratory practical quantitation limit

Table 5-1
Screening Level Values for the Source Control Evaluation

	Protective of Sediment Quality - Primary Screening Levels			Protective of Surface Water Quality - Secondary Screening Levels			
	Soil/Catch Basin Solids		Groundwater	Groundwater/Stormwater/Surface Water			
Chemical	**Natural Background Soil Concentrations [1]**	**Ecology SMS Sediment Quality Standards [2]**	**SQS Protective Groundwater Screening Level [3]**	**Ecology Freshwater Chronic Water Quality Criteria[4]**	**Ecology Marine Chronic Water Quality Criteria [4]**	**Ecology MTCA Method B Standard Formula Values for Surface Water [5]**	**Laboratory Practical Detection Limit [6]**
Metals	mg/kg	mg/kg dry	µg/L	µg/L	µg/L	µg/L	µg/L
arsenic	7	57	227	190	36	0.0982	
aluminum	32,600	-	-	-	-	-	
antimony	-	-	-	-	-	1,040	
barium	-	-	-	-	-	-	
beryllium	0.6	-	-	-	-	273	
bromide	-	-	-	-	-	-	
cadmium	1	5.1	2.6	1.03 [7]	9.3	20.3	
chromium	48	260	306	10	50	486	
cobalt	-	-	-		-	-	
copper	36	390	123	11.4 [7]	3.1	2,660	
lead	24	450	11.3	2.52 [7]	8.1	-	
mercury	0.07	0.41	0.0052	0.012 [6]	0.025 [6]	-	0.125
nickel	48	-	-	157 [7]	8.2	-	
selenium	-	-	-	5	71	2,700	
silver	-	6.1	1.5		-	25,900	
thallium	-	-	-		-	-	
vanadium	-	-	-		-	-	
zinc	85	410	32.6	104.5 [7]	81	16,500	
Polycyclic Aromatic Hydrocarbons	mg/kg	µg/kg dry	µg/L	µg/L	µg/L	µg/L	µg/L
acenaphthene	-	500	2.6	-	-	643	
acenaphthylene	-	1300	10.8	-	-	-	
anthracene	-	960	10.8	-	-	25,900	
benz[a]anthracene	-	1300	0.26	-	-	0.0296	
benzo[a]pyrene	-	1600	0.13	-	-	0.0296	
benzo[b]fluoranthene	-	--	0.29	-	-	0.0296	
benzo[g,h,i]perylene	-	670	0.012	-	-	-	
benzo[k]fluoranthene	-	--	0.29	-	-	0.0296	
chrysene	-	1400	0.47	-	-	0.0296	
dibenzo[a,h]anthracene	-	230	0.0046	-	-	0.0296	
fluoranthene	-	1700	2.3	-	-	90.2	
fluorene	-	540	2.0	-	-	3,460	
indeno[1,2,3-c,d]pyrene	-	600	0.013	-	-	0.0296	
methylnaphthalene, 2-	-	670	18.2	-	-	-	
naphthalene	-	2100	53.8	-	-	49,400	
phenanthrene	-	1500	4.8	-	-	-	
pyrene	-	2600	14.4	-	-	2,590	
Total benzofluoranthenes (SMS)	-	3200	-	-	-	-	
Total HPAH (SMS)	-	12000	-	-	-	-	
Total LPAH (SMS)	-	5200	-	-	-	-	
Other Organic Compounds	mg/kg	µg/kg dry	µg/L	µg/L	µg/L	µg/L	µg/L
benzoic acid	-	650	2639	-	-	-	
benzyl alcohol	-	57	214	-	-	-	
dibenzofuran	-	540	1.3	-	-	-	

Table 5-1
Screening Level Values for the Source Control Evaluation

Chemical	Protective of Sediment Quality - Primary Screening Levels: Soil/Catch Basin Solids		Protective of Sediment Quality - Primary Screening Levels: Groundwater	Protective of Surface Water Quality - Secondary Screening Levels: Groundwater/Stormwater/Surface Water			
	Natural Background Soil Concentrations [1]	Ecology SMS Sediment Quality Standards [2]	SQS Protective Groundwater Screening Level [3]	Ecology Freshwater Chronic Water Quality Criteria[4]	Ecology Marine Chronic Water Quality Criteria [4]	Ecology MTCA Method B Standard Formula Values for Surface Water [5]	Laboratory Practical Detection Limit [6]
dichlorobenzene, 1,2-	-	35	5.2	-	-	4,200	
dichlorobenzene, 1,4-	-	110	7.1	-	-	4.86	
dimethylphenol, 2,4-	-	29	2.4	-	-	-	
hexachlorobenzene	-	22	0.11	-	-	0.000466	
hexachlorobutadiene	-	11	3.9	-	-	29.9	
methylphenol, 2- (o-cresol)	-	63	8.4	-	-	-	
methylphenol, 4- (p-cresol)	-	670	91	-	-	-	
nitrosodiphenylamine, N-	-	28	2.0	-	-	9.73	
pentachlorophenol	-	360	6.3	-	7.9	4.91	
phenol	-	420	92	-	-	1,110,000	
trichlorobenzene, 1,2,4-	-	31	1.1	-	-	227	
Phthalate Esters	mg/kg	µg/kg dry	µg/L	µg/L	µg/L	µg/L	µg/L
bis[2-ethylhexyl]phthalate	-	1,300	0.28	-	-	3.56	
butyl benzyl phthalate	-	63	0.52	-	-	1,250	
diethyl phthalate	-	48	151	-	-	28,400	
dimethyl phthalate	-	71	484	-	-	72,000	
di-n-butyl phthalate	-	1,400	143	-	-	2,910	
di-n-octyl phthalate	-	420	0.30	-	-	-	
Polychlorinated Biphenyls (PCBs)	mg/kg	µg/kg dry	µg/L	µg/L	µg/L	µg/L	µg/L
Aroclor 1016	-	-	0.44	-	-	0.00582	
Aroclor 1221	-	-	-	-	-	-	
Aroclor 1232	-	-	-	-	-	-	
Aroclor 1242	-	-	-	-	-	-	
Aroclor 1248	-	-	0.27	-	-	-	
Aroclor 1254	-	-	0.16	-	-	0.00166	
Aroclor 1260	-	-	0.058	-	-	-	
Aroclor 1262	-	-	-	-	-	-	
Aroclor 1268	-	-	-	-	-	-	
Total PCBs (SMS)	-	130	0.27	0.014 [6]	0.03 [6]	-	0.05
Petroleum Hydrocarbons	mg/kg	µg/kg dry	µg/L	µg/L	µg/L	µg/L	µg/L
GRO	-	-	-	-	-	-	
benzene	-	-	-	-	-	22.7	
DRO	-	-	-	-	-	-	
ethylbenzene	-	-	-	-	-	69,100	
hydraulic fluid	-	-	-	-	-	-	
kerosene	-	-	-	-	-	-	
mineral spirits	-	-	-	-	-	-	
ORO	-	-	-	-	-	-	
toluene	-	-	-	-	-	48,500	
total xylenes	-	-	-	-	-	-	
TPH-unidifferentiated	-	-	-	-	-	-	
Volatile Organic Compounds	mg/kg	µg/kg dry	µg/L	µg/L	µg/L	µg/L	µg/L
acetone	-	-	-	-	-	-	
carbon disulfide	-	-	-	-	-	-	

Table 5-1
Screening Level Values for the Source Control Evaluation

Chemical	Protective of Sediment Quality - Primary Screening Levels			Protective of Surface Water Quality - Secondary Screening Levels			
	Soil/Catch Basin Solids		Groundwater	Groundwater/Stormwater/Surface Water			
	Natural Background Soil Concentrations [1]	Ecology SMS Sediment Quality Standards [2]	SQS Protective Groundwater Screening Level [3]	Ecology Freshwater Chronic Water Quality Criteria[4]	Ecology Marine Chronic Water Quality Criteria [4]	Ecology MTCA Method B Standard Formula Values for Surface Water [5]	Laboratory Practical Detection Limit [6]
chlorobenzene	-	-	-	-	-	5,030	
chloroethane	-	-	-	-	-	-	
chloroform	-	-	-	-	-	283	
chloromethane	-	-	-	-	-	133	
dichloroethane, 1,1-	-	-	-	-	-	-	
dichloroethane, 1,2-	-	-	-	-	-	59.4	
dichloroethene, 1,1-	-	-	-	-	-	1.93	
dichloroethene, cis-1,2-	-	-	-	-	-	-	
dichlorothene, trans-1,2-	-	-	-	-	-	32,800	
tetrachloroethene	-	-	-	-	-	4.15	
trichloroethane, 1,1,1-	-	-	-	-	-	417,000	
trichloroethene	-	-	-	-	-	55.6	
trimethylbenzene, 1,2,4-	-	-	-	-	-	-	
vinyl chloride	-	-	-	-	-	3.69	

Notes:

Indicates selected screening level value for soil and catch basin solids.
Indicates selected screening level value for groundwater.
Indicates selected screening level value for surface water.
Indicates selected screening level value for groundwater and surface water.

[1] Washington State Department of Ecology (Ecology) Natural Background Soil Metals Concentrations in Washington State, October 1994.
[2] defined below, analytes denoted with a (*) symbol represent the LAET criteria rather than the TOC-normalized SMS SQS criteria.
[3] SAIC. 2007. Draft Source Control Action Plan - Slip 4 Duwamish Waterway. Prepared for the Washington State Department of Ecology. February 2007.
[4] Ecology Water Quality Standards for Surface Waters of the State of Washington, Toxic Substances Criteria (TSC), Chronic Toxicity (WAC 173-201A), November 2006.
[5] Ecology Cleanup Levels and Risk Calculations (CLARC) under the Model Toxics Control Act (MTCA) Cleanup Regulation, Standard Method B Formula Values for Surface Water, November 2001.
[6] Ecology TSC values are less than the laboratory practical detection limit, therefore, the practical detection limit is used as the screening level.
[7] The Freshwater chronic TSC for this metal is hardness dependent. The hardness was assumed to be 100 mg/L $CaCO_3$ for the data screening evaluation.

mg/kg = milligrams per kilogram
µg/kg = micrograms per kilogram
µg/l = micrograms per liter
- = no applicable value
The screening level values for metals in groundwater and surface water are for dissolved metals.

Table 5-2
Summary of Soil Analytical Results for Polychlorinated Biphenyls

Sample Location	Sample Depth (feet)	Sample Date	Sampled by	Analytical Results (milligrams per kilogram) [1]										
				Aroclor										Total PCBs
				1016	1016/1242	1221	1232	1242	1248	1254	1260	1262	1268	
Subsurface Soil Samples														
MW-13	6 - 6.5	8/27/1992	SECOR	0.05 U	—	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	—	—	0.05 U
MW-16	9 - 9.5	8/29/1992	SECOR	0.05 U	—	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	—	—	0.05 U
MW-19	9 - 9.5	8/26/1992	SECOR	0.05 U	—	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	—	—	0.05 U
MW-20	6 - 6.5	8/28/1992	SECOR	0.05 U	—	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	—	—	0.05 U
PL2-JF04A	6 - 8	2/16/2005	Weston	0.046 U	—	0.046 U	0.046 U	0.046 U	0.046 U	0.046 U	0.046 U	—	—	0.046 U
	8 - 10	2/16/2005		0.046 U	—	0.046 U	0.046 U	0.046 U	0.046 U	0.046 U	0.046 U	—	—	0.046 U
	10 - 12	2/16/2005		0.045 U	—	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	—	—	0.045 U
	12 - 14	2/16/2005		0.044 U	—	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	—	—	0.044 U
	14 - 16	2/16/2005		0.044 U	—	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	—	—	0.044 U
	16 - 18	2/16/2005		0.043 U	—	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	—	—	0.043 U
SB-07220	0 - 2	6/10/2003	Weston	0.036 U	—	0.073 U	0.036 U	0.036 U	0.036 U	0.11	0.11 UJ	0.036 U	0.11	0.22
	2 - 4	6/10/2003		0.043 U	—	0.085 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.085 U
	4 - 6	6/10/2003		0.043 U	—	0.086 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.086 U
	6 - 8	6/10/2003		0.039 U	—	0.077 U	0.039 U	0.039 U	0.039 U	0.046	0.039 U	0.039 U	0.037 J	0.083 J
	8 - 10	6/10/2003		0.038 U	—	0.076 U	0.038 U	0.038 U	0.038 U	0.073	0.059 UJ	0.038 U	0.059	0.132
	10 - 12	6/10/2003		0.041 U	—	0.082 U	0.041 U	0.041 U	0.041 U	0.041 U	0.041 U	0.041 U	0.024 J	0.024 J
	12 - 14	6/10/2003		0.044 U	—	0.088 U	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.088 U
	14 - 16	6/10/2003		0.043 U	—	0.086 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.086 U
SB-07228	0 - 2	6/10/2003	Weston	0.036 U	—	0.073 U	0.036 U	0.036 U	0.036 U	0.056	0.054 UJ	0.044 U	0.044	0.1
	2 - 4	6/10/2003		0.037 U	—	0.073 U	0.037 U	0.037 U	0.037 U	0.2	0.039 UJ	0.044 U	0.037 U	0.2
	4 - 6	6/10/2003		0.038 U	—	0.076 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.046 U	0.038 U	0.076 U
	6 - 8	6/10/2003		0.045 U	—	0.089 U	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.054 U	0.045 U	0.089 U
	8 - 10	6/10/2003		0.045 U	—	0.09 U	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.054 U	0.045 U	0.09 U
	10 - 12	6/10/2003		0.044 U	—	0.087 U	0.044 U	0.044 U	0.044 U	0.053 UJ	0.1	0.052 U	0.044 U	0.1
	12 - 14	6/10/2003		0.048 U	—	0.096 U	0.048 U	0.048 U	0.048 U	0.048 U	0.034 J	0.057 U	0.048 U	0.034 J
	14 - 16	6/10/2003		0.043 U	—	0.085 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.051 U	0.043 U	0.085 U
SB-07229r	6 - 8	2/14/2005	Weston	0.064 U	—	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	0.064 U	—	—	0.064 U
	8 - 10	2/14/2005		0.036 U	—	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	—	—	0.036 U
	10 - 12	2/14/2005		0.047 U	—	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	—	—	0.047 U
	12 - 14	2/14/2005		0.045 U	—	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	—	—	0.045 U
	14 - 16	2/14/2005		0.044 U	—	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	—	—	0.044 U
Source Control Evaluation Screening Level Value [2]														**0.13**

Table 5-2
Summary of Soil Analytical Results for Polychlorinated Biphenyls

Sample Location	Sample Depth (feet)	Sample Date	Sampled by	Analytical Results (milligrams per kilogram) [1]										
				Aroclor										
				1016	1016/1242	1221	1232	1242	1248	1254	1260	1262	1268	Total PCBs
SB-07230r	6 - 8	2/14/2005	Weston	0.036 U	—	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	—	—	0.036 U
	8 - 10	2/14/2005		0.040 U	—	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	—	—	0.040 U
	10 - 12	2/14/2005		0.048 U	—	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	0.048 U	—	—	0.048 U
	12 - 14	2/14/2005		0.045 U	—	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	—	—	0.045 U
	14 - 16	2/14/2005		0.044 U	—	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	—	—	0.044 U
SB-07231r	6 - 8	2/14/2005	Weston	0.036 U	—	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	—	—	0.036 U
	8 - 10	2/14/2005		0.039 U	—	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	—	—	0.039 U
	10 - 12	2/14/2005		0.046 U	—	0.046 U	0.046 U	0.046 U	0.046 U	0.046 U	0.046 U	—	—	0.046 U
	12 - 14	2/14/2005		0.044 U	—	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	—	—	0.044 U
	14 - 16	2/14/2005		0.044 U	—	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	—	—	0.044 U
SB-07232r	6 - 8	2/14/2005	Weston	0.037 U	—	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	—	—	0.037 U
	8 - 10	2/14/2005		0.047 U	—	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	—	—	0.047 U
	10 - 12	2/14/2005		0.049 U	—	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	0.049 U	—	—	0.049 U
	12 - 14	2/14/2005		0.046 U	—	0.046 U	0.046 U	0.046 U	0.046 U	0.046 U	0.046 U	—	—	0.046 U
	14 - 16	2/14/2005		0.044 U	—	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.088 UY	—	—	0.088 UY
SB-07233r	6 - 8	2/14/2005	Weston	0.044 U	—	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.220 UY	—	—	**0.220 UY**
	8 - 10	2/14/2005		0.044 U	—	0.088 UY	0.130 UY	0.088 UY	0.044 U	0.130 UY	0.220 UY	—	—	**0.220 UY**
	10 - 12	2/14/2005		0.046 U	—	0.046 U	0.046 U	0.046 U	0.046 U	0.046 U	0.046 U	—	—	0.046 U
	12 - 14	2/14/2005		0.044 U	—	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	—	—	0.044 U
	14 - 16	2/14/2005		0.044 U	—	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	—	—	0.044 U
SB-07234	0 - 2	6/10/2003	Weston	0.034 U	—	0.069 U	0.034 U	0.034 U	0.034 U	0.03 J	0.052	0.034 U	0.034 U	0.082 J
	2 - 4	6/10/2003		0.038 U	—	0.075 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.075 U
	4 - 6	6/10/2003		0.04 U	—	0.08 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.04 U	0.08 U
	6 - 8	6/10/2003		0.043 U	—	0.087 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.087 U
	8 - 10	6/10/2003		0.039 U	—	0.078 U	0.039 U	0.039 U	0.039 U	0.025 J	0.039 U	0.039 U	0.039 U	0.078 U
	10 - 12	6/10/2003		0.043 U	—	0.087 U	0.043 U	0.043 U	0.043 U	0.045	0.062	0.043 U	0.043 U	0.107
	12 - 14	6/10/2003		0.043 U	—	0.086 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.086 U
	14 - 16	6/10/2003		0.042 U	—	0.084 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.084 U
SB-07245	0 - 0	6/10/2003	Weston	0.038 U	—	0.075 U	0.038 U	0.038 U	0.038 U	0.072	0.038 U	0.045 U	0.038 U	0.072
	0 - 2	6/10/2003		0.042 U	—	0.085 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.051 U	0.042 U	0.085 U
	2 - 4	6/10/2003		0.038 U	—	0.077 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.046 U	0.038 U	0.077 U
	4 - 6	6/10/2003		0.038 U	—	0.075 U	0.038 U	0.038 U	0.038 U	0.038 U	0.038 U	0.045 U	0.038 U	0.075 U
	6 - 8	6/10/2003		0.042 U	—	0.085 U	0.042 U	0.042 U	0.042 U	0.042 U	0.042 U	0.051 U	0.042 U	0.085 U
	8 - 10	6/10/2003		0.039 U	—	0.079 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.047 U	0.039 U	0.079 U
	10 - 12	6/10/2003		0.044 U	—	0.088 U	0.044 U	0.044 U	0.044 U	0.023 J	0.044 U	0.053 U	0.044 U	0.088 U
	12 - 14	6/10/2003		0.042 U	—	0.085 U	0.042 U	0.042 U	0.042 U	0.047	0.042 U	0.051 U	0.042 U	0.047
Source Control Evaluation Screening Level Value [2]														**0.13**

Table 5-2
Summary of Soil Analytical Results for Polychlorinated Biphenyls

Sample Location	Sample Depth (feet)	Sample Date	Sampled by	Analytical Results (milligrams per kilogram) [1]										
				Aroclor										
				1016	1016/1242	1221	1232	1242	1248	1254	1260	1262	1268	Total PCBs
SB-07246	0 - 0	6/10/2003	Weston	0.036 U	—	0.072 U	0.036 U	0.036 U	0.036 U	0.036 U	0.13	0.036 U	0.071	0.201
	0 - 2	6/10/2003		0.036 U	—	0.072 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.072 U
	2 - 4	6/10/2003		0.039 U	—	0.078 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.078 U
	4 - 6	6/10/2003		0.037 U	—	0.074 U	0.037 U	0.037 U	0.037 U	0.051	0.061	0.037 U	0.027 J	0.139 J
	8 - 10	6/10/2003		0.044 U	—	0.089 U	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.089 U
	10 - 12	6/10/2003		0.047 U	—	0.095 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.095 U
	12 - 14	6/10/2003		0.046 U	—	0.091 U	0.046 U	0.046 U	0.046 U	0.046 U	0.046 U	0.046 U	0.046 U	0.091 U
SB-07247	0 - 0	6/10/2003	Weston	0.037 U	—	0.074 U	0.037 U	0.037 U	0.037 U	0.11	0.098 UY	0.044 U	0.085	0.195
	0 - 2	6/10/2003		0.039 U	—	0.078 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.046 UY	0.039 U	0.078 U
	2 - 4	6/10/2003		0.041 U	—	0.082 U	0.041 U	0.041 U	0.041 U	0.041 U	0.041 U	0.049 U	0.041 U	0.082 U
	4 - 6	6/10/2003		0.037 U	—	0.074 U	0.037 U	0.037 U	0.037 U	0.037 U	0.037 U	0.045 U	0.02 J	0.02 J
	6 - 8	6/10/2003		0.039 U	—	0.078 U	0.039 U	0.039 U	0.039 U	0.039 U	0.039 U	0.047 U	0.039 U	0.078 U
	8 - 10	6/10/2003		0.047 U	—	0.093 U	0.047 U	0.047 U	0.047 U	0.047 U	0.047 U	0.056 U	0.047 U	0.093 U
	10 - 12	6/10/2003		0.046 U	—	0.091 U	0.046 U	0.046 U	0.046 U	0.046 U	0.046 U	0.055 U	0.046 U	0.091 U
	12 - 14	6/10/2003		0.043 U	—	0.086 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.052 U	0.043 U	0.086 U
SB-07250	0 - 2	2/14/05	Weston	0.110 U	—	0.110 U	0.110 U	0.110 U	0.110 U	0.64	0.500 J	—	—	1.140 J
	2 - 4	2/14/2005		0.500 U	—	0.500 U	0.500 U	0.500 U	0.500 U	1.000 UY	3.000	—	—	3.00
	4 - 6	2/14/2005		0.043 U	—	0.043 U	0.043 U	0.043 U	0.043 U	0.086 UY	0.110	—	—	0.110
	6 - 8	2/14/2005		0.045 U	—	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	0.045 U	—	—	0.045 U
	8 - 10	2/14/2005		0.044 U	—	0.044 U	0.044 U	0.044 U	0.044 U	0.180 UY	0.5	—	—	0.500
	10 - 12	2/14/2005		0.040 U	—	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	0.040 U	—	—	0.040 U
	12 - 14	2/14/2005		0.043 U	—	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	0.043 U	—	—	0.043 U
	14 - 16	2/14/2005		0.044 U	—	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	0.044 U	—	—	0.044 U
SB-07252	0 - 2	2/15/2005	Weston	0.120 U	—	0.120 U	0.120 U	0.120 U	0.120 U	0.590 UY	0.490	—	—	0.490
	2 - 4	2/15/2005		0.032 U	—	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	—	—	0.032 U
SB-07253	0 - 2	2/15/05	Weston	0.036 U	—	0.036 U	0.036 U	0.036 U	0.036 U	0.036 U	0.130	—	—	0.130
	2 - 4	2/15/2005		0.032 U	—	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	—	—	0.032 U
	4 - 6	2/15/2005		0.032 U	—	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	—	—	0.032 U
	6 - 8	2/15/2005		0.033 U	—	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	—	—	0.033 U
	8 - 10	2/15/2005		0.033 U	—	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	0.033 U	—	—	0.033 U
	10 - 12	2/15/2005		0.032 U	—	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	0.032 U	—	—	0.032 U
SB-08916	2	9/13/1994	Weston	—	0.072 U	—	—	—	0.072 U	0.072 U	0.072 U	—	—	0.072 U
	5	9/13/1994		—	0.083 U	—	—	—	0.083 U	0.083 U	0.083 U	—	—	0.083 U
	12.5	9/13/1994		—	0.088 UJH	—	—	—	0.088 UJH	0.088 UJH	0.088 UJH	—	—	0.088 UJH
SB-09101	2	9/12/1994	Weston	—	0.035 U	—	—	—	0.035 U	0.035 U	0.035 U	—	—	0.035 U
	5	9/12/1994		—	0.036 U	—	—	—	0.036 U	0.036 U	0.036 U	—	—	0.036 U
	12.5	9/12/1994		—	0.045 U	—	—	—	0.045 U	0.045 U	0.045 U	—	—	0.045 U
Source Control Evaluation Screening Level Value [2]														**0.13**

Table 5-2
Summary of Soil Analytical Results for Polychlorinated Biphenyls

Sample Location	Sample Depth (feet)	Sample Date	Sampled by	Analytical Results (milligrams per kilogram) [1]										
				Aroclor										
				1016	1016/1242	1221	1232	1242	1248	1254	1260	1262	1268	Total PCBs
SB-09105	2	9/12/1994	Weston	—	0.035 U	—	—	—	0.035 U	0.035 U	0.07 UY	—	—	0.07 UY
	5	9/12/1994		—	0.036 U	—	—	—	0.036 U	0.036 U	0.036 U	—	—	0.036 U
	12.5	9/12/1994		—	0.044 U	—	—	—	0.044 U	0.044 U	0.044 U	—	—	0.044 U
SB-09106	2	9/12/1994	Weston	—	0.035 U	—	—	—	0.035 U	0.035 U	0.069 J	—	—	0.069 J
	5	9/12/1994		—	0.083 UY	—	—	—	0.042 U	0.042 U	0.042 U	—	—	0.083 UY
	12.5	9/12/1994		—	0.045 U	—	—	—	0.045 U	0.045 U	0.045 U	—	—	0.045 U
SB1	0 - 2	8/26/2004	Farallon	0.0101 U	—	0.0101 U	0.0101 U	0.0101 U	0.0101 U	0.0908 C1	0.105 C1	—	—	0.1958
	2 - 4	8/26/2004		0.0103 U	—	0.0103 U	0.0103 U	0.0103 U	0.0103 U	0.0103 U	0.007 J C1	—	—	0.007 J
	4 - 6	8/26/2004		0.0109 U	—	0.0109 U	0.0109 U	0.0109 U	0.0109 U	0.0109 U	0.0035 J C1	—	—	0.0035 J
	6 - 8	8/26/2004		0.0095 U	—	0.0095 U	0.0095 U	0.0095 U	0.0095 U	0.0095 U	0.0095 U	—	—	0.00568 J
	8 - 10	8/26/2004		0.0113 U	—	0.0113 U	0.0113 U	0.0113 U	0.0113 U	0.0113 U	0.00568 J C1	—	—	0.0057
	10 - 12	8/26/2004		0.0136 U	—	0.0136 U	0.0136 U	0.0136 U	0.0136 U	0.0136 U	0.0136 U	—	—	0.0136 U
SB2	0 - 2	8/26/2004	Farallon	0.0111 U	—	0.0111 U	0.0111 U	0.0111 U	0.0111 U	0.396 C1	0.0111 U	—	—	0.3960
	2 - 4	8/26/2004		0.0113 U	—	0.0113 U	0.0113 U	0.0113 U	0.0113 U	0.0937 C1	0.0251 C1	—	—	0.1188
	4 - 6	8/26/2004		0.0116 U	—	0.0116 U	0.0116 U	0.0116 U	0.0116 U	0.0294 C1	0.0148 C1	—	—	0.0442
	6 - 8	8/26/2004		0.0111 U	—	0.0111 U	0.0111 U	0.0111 U	0.0111 U	0.0282 C1	0.0155 C1	—	—	0.0437
	8 - 10	8/26/2004		0.0125 U	—	0.0125 U	0.0125 U	0.0125 U	0.0125 U	0.0125 U	0.00618 J C1	—	—	0.00618 J
	10 - 12	8/26/2004		0.0106 U	—	0.0106 U	0.0106 U	0.0106 U	0.0106 U	0.415 C1	0.253 C1	—	—	0.6680
	12 - 14	8/26/2004		0.0102 U	—	0.0102 U	0.0102 U	0.0102 U	0.0102 U	0.00606 J C1	0.0102 U	—	—	0.0061
	14 - 16	8/26/2004		0.0114 U	—	0.0114 U	0.0114 U	0.0114 U	0.0114 U	0.0114 U	0.0114 U	—	—	0.00606 J
SB3	0 - 2	8/26/2004	Farallon	0.524 U	—	0.524 U	0.524 U	0.524 U	0.524 U	15.5 C1	2.27 C1	—	—	17.77
	2 - 4	8/26/2004		0.0098 U	—	0.0098 U	0.0098 U	0.0098 U	0.0098 U	0.174 C1	0.0323 C1	—	—	0.2063
	4 - 6	8/26/2004		0.0103 U	—	0.0103 U	0.0103 U	0.0103 U	0.0103 U	0.194 C1	0.0334 C1	—	—	0.2274
	6 - 8	8/26/2004		0.0116 U	—	0.0116 U	0.0116 U	0.0116 U	0.0116 U	0.22 C1	0.0385 C1	—	—	0.2585
	8 - 10	8/26/2004		0.0117 U	—	0.0117 U	0.0117 U	0.0117 U	0.0117 U	0.156 C1	0.0695 C1	—	—	0.2255
SB4	0 - 2	8/26/2004	Farallon	0.202 U	—	0.202 U	0.202 U	0.202 U	0.202 U	5.93 C1	0.904 C1	—	—	6.834
	2 - 4	8/26/2004		0.0562 U	—	0.0562 U	0.0562 U	0.0562 U	0.0562 U	1.15 C1	0.774 C1	—	—	1.924
	4 - 6	8/26/2004		0.587 U	—	0.587 U	0.587 U	0.587 U	0.587 U	9.86 C1	1.47 C1	—	—	11.33
	6 - 8	8/26/2004		0.0114 U	—	0.0114 U	0.0114 U	0.0114 U	0.0114 U	0.32 C1	0.0768 C1	—	—	0.3968
	8 - 10	8/26/2004		0.0118 U	—	0.0118 U	0.0118 U	0.0118 U	0.0118 U	0.328 C1	0.107 C1	—	—	0.4350
	10 - 12	8/26/2004		0.0124 U	—	0.0124 U	0.0124 U	0.0124 U	0.0124 U	0.0127 C1	0.00935 J C1	—	—	0.02205 J
	12 - 14	8/26/2004		0.22 U	—	0.22 U	0.22 U	0.22 U	0.22 U	6.01 C1	1.03 C1	—	—	7.04
	14 - 16	8/26/2004		0.118 U	—	0.118 U	0.118 U	0.118 U	0.118 U	1.37 C1	0.19 C1	—	—	1.56
Source Control Evaluation Screening Level Value [2]														**0.13**

Table 5-2
Summary of Soil Analytical Results for Polychlorinated Biphenyls

Sample Location	Sample Depth (feet)	Sample Date	Sampled by	Analytical Results (milligrams per kilogram)[1]										
				Aroclor										Total PCBs
				1016	1016/1242	1221	1232	1242	1248	1254	1260	1262	1268	
SB5	0 - 2	8/26/2004	Farallon	0.0102 U	—	0.0102 U	0.0102 U	0.0102 U	0.0102 U	0.0267 C1	0.00801 J C1	—	—	0.03471 J
	2 - 4	8/26/2004		0.0122 U	—	0.0122 U	0.0122 U	0.0122 U	0.0122 U	0.00778 J C1	0.00713 J C1	—	—	0.01491 J
	4 - 6	8/26/2004		0.0112 U	—	0.0112 U	0.0112 U	0.0112 U	0.0112 U	0.049 C1	0.014 C1	—	—	0.063
	6 - 8	8/26/2004		0.011 U	—	0.011 U	0.011 U	0.011 U	0.011 U	0.0116 C1	0.00851 J C1	—	—	0.02011 J
	8 - 10	8/26/2004		0.0114 U	—	0.0114 U	0.0114 U	0.0114 U	0.0114 U	0.0967 C1	0.0875 C1	—	—	0.1842
	10 - 12	8/26/2004		0.012 U	—	0.012 U	0.012 U	0.012 U	0.012 U	0.0528 C1	0.0725 C1	—	—	0.1253
	12 - 14	8/26/2004		0.0111 U	—	0.0111 U	0.0111 U	0.0111 U	0.0111 U	0.0505 C1	0.0724 C1	—	—	0.1229
	14 - 16	8/26/2004		0.0128 U	—	0.0128 U	0.0128 U	0.0128 U	0.0128 U	0.0745 C1	0.0989 C1	—	—	0.1734
SB6	0 - 2	8/27/2004	Farallon	0.0099 U	—	0.0099 U	0.0099 U	0.0099 U	0.0099 U	0.0594 C1	0.0782 C1	—	—	0.1376
	2 - 4	8/27/2004		0.0095 U	—	0.0095 U	0.0095 U	0.0095 U	0.0095 U	0.0905 C1	0.0673 C1	—	—	0.1578
	4 - 6	8/27/2004		0.01 U	—	0.01 U	0.01 U	0.01 U	0.01 U	0.122 C1	0.0605 C1	—	—	0.1825
	6 - 8	8/27/2004		0.0097 U	—	0.0097 U	0.0097 U	0.0097 U	0.0097 U	0.145 C1	0.0584 C1	—	—	0.2034
	8 - 10	8/27/2004		0.0101 U	—	0.0101 U	0.0101 U	0.0101 U	0.0101 U	0.0935 C1	0.113 C1	—	—	0.2065
	10 - 12	8/27/2004		0.0103 U	—	0.0103 U	0.0103 U	0.0103 U	0.0103 U	0.172 C1	0.0938 C1	—	—	0.2658
	12 - 14	8/27/2004		0.0106 U	—	0.0106 U	0.0106 U	0.0106 U	0.0106 U	0.133 C1	0.0523 C1	—	—	0.1853
	14 - 16	8/27/2004		0.0103 U	—	0.0103 U	0.0103 U	0.0103 U	0.0103 U	0.0404 C1	0.0503 C1	—	—	0.0907
SB7	0 - 2	8/27/2004	Farallon	0.0102 U	—	0.0102 U	0.0102 U	0.0102 U	0.0102 U	0.0683 C1	0.0293 C1	—	—	0.0976
	2 - 4	8/27/2004		0.0105 U	—	0.0105 U	0.0105 U	0.0105 U	0.0105 U	**0.256 C1**	0.0952 C1	—	—	0.3512
	4 - 6	8/27/2004		0.054 U	—	0.054 U	0.054 U	0.054 U	0.054 U	**1.13 C1**	0.493 C1	—	—	1.623
	6 - 8	8/27/2004		0.0099 U	—	0.0099 U	0.0099 U	0.0099 U	0.0099 U	**0.251 C1**	0.114 C1	—	—	0.365
	8 - 10	8/27/2004		0.011 U	—	0.011 U	0.011 U	0.011 U	0.011 U	**0.323 C1**	0.0967 C1	—	—	0.4197
	10 - 12	8/27/2004		0.0119 U	—	0.0119 U	0.0119 U	0.0119 U	0.0119 U	**0.21 C1**	0.0924 C1	—	—	0.3024
	12 - 14	8/27/2004		0.0111 U	—	0.0111 U	0.0111 U	0.0111 U	0.0111 U	**0.253 C1**	0.128 C1	—	—	0.381
	14 - 16	8/27/2004		0.0124 U	—	0.0124 U	0.0124 U	0.0124 U	0.0124 U	**0.204 C1**	0.425 C1	—	—	0.629
Source Control Evaluation Screening Level Value[2]														**0.13**

Table 5-2
Summary of Soil Analytical Results for Polychlorinated Biphenyls

Sample Location	Sample Depth (feet)	Sample Date	Sampled by	Analytical Results (milligrams per kilogram)[1]										
				Aroclor										Total PCBs
				1016	1016/1242	1221	1232	1242	1248	1254	1260	1262	1268	
Stormwater Line and Catch Basin Solids Samples														
CB010 (SDMH-15A)	0-1	4/8/2005	Boeing	—	—	—	—	**8 U**	**39**	**40**	**8 U**	—	—	79
CB011 (SDMH-15A)	0-0.75	4/8/2005	Boeing	—	—	—	—	**0.64 U**	**3.4**	**3**	**0.8**	—	—	7.2
CB012 (SDMH-15A)	0.75-1	4/8/2005	Boeing	—	—	—	—	**24 U**	**120**	**230**	**47 UY**	—	—	350
SD001 (MH 37-2)	0-0.08	5/2/2005	Boeing	—	—	—	—	**256 U**	**771 U**	**2,600**	**256 U**	—	—	2,600
SD002 (MH 37-7)	0-0.08	5/3/2005	Boeing	—	—	—	—	**86.2 U**	**86.2 U**	**730**	**86.2 U**	—	—	730
SD003 (SDM-015B)	0-0.08	5/3/2005	Boeing	—	—	—	—	**16.7 U**	**16.7 U**	**140**	**16.7 U**	—	—	140
SD004 (SDMH-24B)	0-0.08	5/3/2005	Boeing	—	—	—	—	**323 U**	**323 U**	**2,400**	**323 U**	—	—	2,400
SD005 (SDMH-24B)	0-0.08	5/3/2005	Boeing	—	—	—	—	**3**	**1,400 U**	**10,000**	**1,400 U**	—	—	10,000
SD006 (Public SDMH-11)	0-0.25	6/3/2005	Boeing	—	—	—	—	**0.96 U**	**0.96 U**	**68**	**0.96 U**	—	—	68
12SD-070105-01	0-0.08	7/1/2005	Boeing	**1.6 U**	—	**1.6 U**	**1.6 U**	**1.6 U**	**1.6 U**	**1,100**	**1.6 U**	—	—	1,100
12SD-070105-02	0-0.25	7/1/2005	Boeing	**1.6 U**	—	**1.6 U**	**1.6 U**	**1.6 U**	**1.6 U**	**6.5**	**1.6 U**	—	—	6.5
CB1	0	8/31/2004	Farallon	0.0215 U	—	0.0215 U	0.0215 U	0.0215 U	0.0215 U	**0.174 C1**	0.109 C1	—	—	0.2830
CB2	0	8/31/2004	Farallon	0.0184 U	—	0.0184 U	0.0184 U	0.0184 U	0.0184 U	**0.193 C1**	0.109 C1	—	—	0.3020
CB3	0	8/31/2004	Farallon	0.0139 U	—	0.0139 U	0.0139 U	0.0139 U	0.0139 U	0.106 C1	**0.182 C1**	—	—	0.2880
CB4	0	8/31/2004	Farallon	0.0146 U	—	0.0146 U	0.0146 U	0.0146 U	0.0146 U	0.079 C1	0.0502 C1	—	—	0.1292
Source Control Evaluation Screening Level Value[2]														**0.13**

NOTES:

Results in **BOLD** indicate that the laboratory practical quantitation limit exceeds the screening level value.

[highlighted] Indicates detected concentration exceeds the Source Control Evaluation Screening Level Value.

[1] Analyzed by U.S. Environmental Protection Agency Method 8080, 8081, or 8082.

[2] Source Control Evaluation Screening Level Reference.

— = not analyzed

C1 = Second column confirmation was performed. The relative percent difference between the two column results was below 40%.

H = denotes value greater than minimum shown

J = the analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity

U = no detectable concentrations above the listed laboratory practical quantitation limit

UJ = estimated detection limit

Y = The analyte reporting limit is raised due to a positive chromatographic interference. The compound is not detected above the raised limit but may be present at or below the limit.

Table 5-3
Summary of Soil Analytical Results for Petroleum Hydrocarbons

Sample Location	Sample Depth (feet)	Sample Date	Sampled by	Analytical Results (milligrams per kilogram) [1]										
				Benzene[1]	Ethylbenzene[1]	Toluene[1]	Xylenes Total[1]	TPH - Undifferentiated [2]	GRO[3]	DRO[4]	ORO[5]	MS[6]	HF[7]	Ker[8]
DM-B-1	11	3/1/1990	Dames and Moore	0.04 U	0.04 U	0.04 U	0.04 U	6 U	—	—	—	—	—	—
DM-B-2	11	2/28/1990	Dames and Moore	—	—	—	—	6 U	—	—	—	—	—	—
DM-B-3	11	2/28/1990	Dames and Moore	—	—	—	—	6 U	—	—	—	—	—	—
DM-B-4	11	2/28/1990	Dames and Moore	—	—	—	—	4,100	—	—	—	—	—	—
DM-B-5	8	2/28/1990	Dames and Moore	—	—	—	—	13,000	—	—	—	—	—	—
DM-B-6	8	3/1/1990	Dames and Moore	0.05	0.1	0.07	0.68	6 U	—	—	—	—	—	—
DM-B-7	13	3/1/1990	Dames and Moore	0.04 U	0.04 U	0.04 U	0.04 U	6 U	—	—	—	—	—	—
DM-B-9	16	3/1/1990	Dames and Moore	—	—	—	—	6 U	—	—	—	—	—	—
DM-B-10	8	3/1/1990	Dames and Moore	—	—	—	—	12	—	—	—	—	—	—
DM-B-11	11	3/1/1990	Dames and Moore	—	—	—	—	6 U	—	—	—	—	—	—
DM-B-12	13.5	3/1/1990	Dames and Moore	—	—	—	—	870	—	—	—	—	—	—
DM-B-13	13.5	3/1/1990	Dames and Moore	—	—	—	—	6 U	—	—	—	—	—	—
DM-B-14	10.5	3/1/1990	Dames and Moore	—	—	—	—	6 U	—	—	—	—	—	—
DM-SB-1	0 - 3.5	3/1/1990	Dames and Moore	0.0025 U	0.0025 U	0.0025 U	0.0025 U	6 U	—	—	—	—	—	—
DM-SB-2	0 - 3.5	3/1/1990	Dames and Moore	0.0025 U	0.0025 U	0.0025 U	0.0025 U	20	—	—	—	—	—	—
B-1	7 - 8.5	12/12/1990	SEACOR	0.1 U	0.1 U	0.1 U	0.1 U	31,000	3.5	—	—	—	—	—
	10	12/12/1990	SEACOR	0.1 U	0.1 U	0.1 U	0.1 U	—	1 U	—	—	—	—	—
B-2	5	12/12/1990	SEACOR	0.1 U	0.1 U	0.1 U	0.1 U	1 U	—	—	—	—	—	—
	10	12/12/1990	SEACOR	0.1 U	0.1 U	0.1 U	0.1 U	26	—	—	—	—	—	—
B-3	7.5	12/12/1990	SEACOR	0.1 U	0.1 U	0.1 U	0.1 U	77,000	—	—	—	—	—	—
	10	12/12/1990	SEACOR	0.1 U	0.1 U	0.1 U	0.1 U	3.5	—	—	—	—	—	—
B-4	10	12/12/1990	SEACOR	0.1 U	0.1 U	0.1 U	0.1 U	15	—	—	—	—	—	—
HA1A	8.5	2/13/1991	SECOR	—	—	—	—	5 U	—	—	—	—	—	—
HA1B	7.2	1/24/1991	SECOR	—	—	—	—	14	—	—	—	—	—	—
HA2	7.2	1/24/1991	SECOR	—	—	—	—	39,000	—	—	—	—	—	—
HA3	10.3	1/24/1991	SECOR	—	—	—	—	11,000	—	—	—	—	—	—
HA4	9.2	12/12/1990	SECOR	—	—	—	—	29	—	—	—	—	—	—
IB1	1.5 - 2	8/29/1992	SECOR	—	—	—	—	6,100	—	—	—	—	—	—
IB2	4.5 - 5	8/29/1992	SECOR	—	—	—	—	15,000	—	—	—	—	—	—
	9 - 9.5	8/29/1992		—	—	—	—	33,000	—	—	—	—	—	—
Source Control Evaluation Screening Level Values				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

Table 5-3
Summary of Soil Analytical Results for Petroleum Hydrocarbons

				Analytical Results (milligrams per kilogram) [1]										
Sample Location	Sample Depth (feet)	Sample Date	Sampled by	Benzene[1]	Ethylbenzene[1]	Toluene[1]	Xylenes Total[1]	TPH - Undifferentiated [2]	GRO[3]	DRO[4]	ORO[5]	MS[6]	HF[7]	Ker[8]
IB3	1.5 - 2	8/29/1992	SECOR	—	—	—	—	49,000	—	—	—	—	—	—
	5.5 - 6	8/29/1992		—	—	—	—	10 U	—	—	—	—	—	—
	9 - 9.5	8/29/1992		—	—	—	—	12,000	—	—	—	—	—	—
MW-10	NA	3/19/1992	SECOR	—	—	—	—	34	—	—	—	—	—	—
MW-12	6 - 6.5	8/27/1992	SECOR	—	—	—	—	10 U	—	—	—	—	—	—
	9 - 9.5	8/27/1992		—	—	—	—	10 U	—	—	—	—	—	—
MW-13	6 - 6.5	8/27/1992	SECOR	0.1 U	0.1 U	0.1 U	0.1 U	10 U	—	—	—	—	—	—
	9 - 9.5	8/27/1992						10 U	—	—	—	—	—	—
MW-14	6 - 6.5	8/27/1992	SECOR	—	—	—	—	10 U	—	—	—	—	—	—
	9 - 9.5	8/27/1992		—	—	—	—	10 U	—	—	—	—	—	—
MW-15	6 - 6.5	8/27/1992	SECOR	—	—	—	—	10 U	—	—	—	—	—	—
	9 - 9.5	8/27/1992		—	—	—	—	10 U	—	—	—	—	—	—
MW-16	1.5 - 2	8/29/1992	SECOR	—	—	—	—	10 U	—	—	—	—	—	—
	5.5 - 6	8/29/1992		—	—	—	—	10 U	—	—	—	—	—	—
	8.5 - 9	8/29/1992		—	—	—	—	10 U	—	—	—	—	—	—
	10.5-11	8/29/1992		0.1 U	0.1 U	0.1 U	0.1 U	—	—	—	—	—	—	—
	8.5 - 9	9/23/1992		—	—	—	—	—	—	—	—	—	—	480
MW-17	1.5 - 2	8/29/1992	SECOR	—	—	—	—	400	—	—	—	—	—	—
MW-18	1 - 1.5	8/29/1992	SECOR	—	—	—	—	10 U	—	—	—	—	—	—
	5.5 - 6	8/29/1992		—	—	—	—	10 U	—	—	—	—	—	—
	10 - 10.5	8/29/1992		—	—	—	—	10 U	—	—	—	—	—	—
MW-19	1 - 1.5	8/28/1992	SECOR	—	—	—	—	41	—	—	—	—	—	—
	7.5 - 8	8/28/1992		—	—	—	—	44	—	—	—	—	—	—
	9 - 9.5	8/28/1992		—	—	—	—	1,600	—	—	—	—	—	—
MW-20	1.5 - 2	8/28/1992	SECOR	—	—	—	—	10 U	—	—	—	—	—	—
	6 - 6.5	8/28/1992		—	—	—	—	10 U	—	—	—	—	—	—
	10 - 10.5	8/28/1992		—	—	—	—	15,000	—	—	—	—	—	—
MW-21	1.5 - 2	8/28/1992	SECOR	—	—	—	—	710	—	—	—	—	—	—
	5.5 - 6	8/28/1992		—	—	—	—	400	—	—	—	—	—	—
	9.5 - 10	8/28/1992		—	—	—	—	76	—	—	—	—	—	—
Source Control Evaluation Screening Level Values				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

Table 5-3
Summary of Soil Analytical Results for Petroleum Hydrocarbons

Sample Location	Sample Depth (feet)	Sample Date	Sampled by	Analytical Results (milligrams per kilogram)[1]										
				Benzene[1]	Ethylbenzene[1]	Toluene[1]	Xylenes Total[1]	TPH - Undifferentiated[2]	GRO[3]	DRO[4]	ORO[5]	MS[6]	HF[7]	Ker[8]
MW-22	2 - 2.5	8/28/1992	SECOR	—	—	—	—	10 U	—	—	—	—	—	—
	5 - 5.5	8/28/1992		—	—	—	—	10 U	—	—	—	—	—	—
	9.5 - 10	8/28/1992		—	—	—	—	10 U	—	—	—	—	—	—
MW-23	2 - 2.5	8/28/1992	SECOR	—	—	—	—	10 U	—	—	—	—	—	—
	5 - 5.5	8/28/1992		—	—	—	—	10 U	—	—	—	—	—	—
	9.5 - 10	8/28/1992		—	—	—	—	10 U	—	—	—	—	—	—
MW-24	3.5 - 4	9/14/1992	SECOR	0.1 U	0.1 U	0.1 U	0.1 U	10 U	—	—	—	—	—	—
	8.5 - 9	9/14/1992		0.1 U	0.1 U	0.1 U	0.1 U	10 U	—	—	—	—	—	—
	10.5 - 11	9/14/1992		—	—	—	—	12	—	—	—	—	—	—
MW-25	3.5 - 4	8/14/1992	SECOR	—	—	—	—	10 U	—	—	—	—	—	—
	8 - 8.5	8/14/1992		0.1 U	0.1 U	0.1 U	0.1 U	10	—	—	—	—	—	—
	11 - 11.5	8/14/1992		—	—	—	—	10 U	—	—	—	—	—	—
MW-30	4.5 - 5	1/30/1994	SECOR	—	—	—	—	—	—	10	37	—	—	—
	9 - 9.5	1/30/1994		—	—	—	—	—	—	21	80	—	—	—
MW-31	5 - 5.5	1/30/1994	SECOR	—	—	—	—	—	—	10 U	25 U	—	—	—
	9.5 - 10	1/30/1994		—	—	—	—	—	—	10 U	25 U	—	—	—
MW-32	NA	12/5/1994	SECOR	0.05 U	0.1 U	0.1 U	0.3	—	13	—	—	—	—	—
	NA	12/8/1994		—	—	—	—	—	—	33	100 U	—	—	—
MW-33	NA	12/5/1994	SECOR	0.16	52.2	25.4	192	—	9,400	—	—	—	—	—
	NA	12/8/1994		—	—	—	—	—	—	308	100 U	—	—	—
OB2	2 - 2.5	8/28/1992	SECOR	—	—	—	—	10 U	—	—	—	—	—	—
	5 - 5.5	8/28/1992		—	—	—	—	120,000	—	—	—	—	—	—
	8 - 8.5	8/28/1992		—	—	—	—	110,000	—	—	—	—	—	—
OB3	2 - 2.5	8/31/1992	SECOR	—	—	—	—	1,000	—	—	—	—	—	—
	5 - 5.5	8/31/1992		—	—	—	—	10 U	—	—	—	—	—	—
	8 - 8.5	8/31/1992		—	—	—	—	10 U	—	—	—	—	—	—
OB4	2 - 2.5	8/31/1992	SECOR	—	—	—	—	200	—	—	—	—	—	—
	5 - 5.5	8/31/1992		—	—	—	—	16,000	—	—	—	—	—	—
	9 - 9.5	8/31/1992		—	—	—	—	46,000	—	—	—	—	—	—
	9 - 9.5	9/23/1992		—	—	—	—	—	—	—	—	—	—	1,600
Source Control Evaluation Screening Level Values				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

Table 5-3
Summary of Soil Analytical Results for Petroleum Hydrocarbons

				Analytical Results (milligrams per kilogram)[1]										
Sample Location	**Sample Depth (feet)**	**Sample Date**	**Sampled by**	**Benzene[1]**	**Ethylbenzene[1]**	**Toluene[1]**	**Xylenes Total[1]**	**TPH - Undifferentiated[2]**	**GRO[3]**	**DRO[4]**	**ORO[5]**	**MS[6]**	**HF[7]**	**Ker[8]**
OB5	2 - 2.5	8/31/1992	SECOR	—	—	—	—	10 U	—	—	—	—	—	—
	5 - 5.5	8/31/1992		—	—	—	—	14	—	—	—	—	—	—
	9.5 - 10	8/31/1992		—	—	—	—	19,000	—	—	—	—	—	—
OB6	2 - 2.5	8/31/1992	SECOR	—	—	—	—	10 U	—	—	—	—	—	—
	5 - 5.5	8/31/1992		—	—	—	—	18	—	—	—	—	—	—
	9.5 - 10	8/31/1992		—	—	—	—	10 U	—	—	—	—	—	—
P-1	7 - 10	12/23/1998	Dames and Moore	—	—	—	—	—	—	6,400	40 U	—	—	—
P-2	7 - 10	12/23/1998	Dames and Moore	—	—	—	—	—	—	530	40 U	—	—	—
P-3	7 - 10	12/23/1998	Dames and Moore	—	—	—	—	—	—	14,000	40 U	—	—	—
P-4	7 - 10	12/23/1998	Dames and Moore	—	—	—	—	—	—	15,000	40 U	—	—	—
P-7	7 - 10	12/23/1998	Dames and Moore	—	—	—	—	—	—	34	40 U	—	—	—
PL2-JF04A	6 - 8	2/16/2005	Weston	—	—	—	—	—	—	7 U	14 U	15	—	—
	8 - 10	2/16/2005		—	—	—	—	—	—	34 U	70 J	34 U	—	—
	10 - 12	2/16/2005		—	—	—	—	—	—	140	390 J	33 U	—	—
	12 - 14	2/16/2005		—	—	—	—	—	—	32 U	65 U	32 U	—	—
	14 - 16	2/16/2005		—	—	—	—	—	—	6.6 U	14 J	6.6 U	—	—
	16 - 18	2/16/2005		—	—	—	—	—	—	11	26 J	6.5 U	—	—
SB-07220	12 - 14	6/10/2003	Weston	—	—	—	—	—	68	50 U	100 U	—	—	—
SB-07228	12 - 14	6/10/2003	Weston	—	—	—	—	—	1,700	300	550	—	—	—
SB-07229	8 - 10	6/11/2003		—	—	—	—	—	350	160	280	—	—	—
	10 - 12	6/11/2003		—	—	—	—	—	5,200	1,200	1,700	—	—	—
SB-07229r	6 - 8	2/14/2005	Weston	—	—	—	—	—	—	130	260 J	75	—	—
	8 - 10	2/14/2005		—	—	—	—	—	—	40	190 J	5.4 U	—	—
	10 - 12	2/14/2005		—	—	—	—	—	—	7 U	15 J	7 U	—	—
	12 - 14	2/14/2005		—	—	—	—	—	—	6.8 U	14 U	6.8 U	—	—
	14 - 16	2/14/2005		—	—	—	—	—	—	6.6 U	13 U	6.6 U	—	—
SB-07230r	6 - 8	2/14/2005	Weston	—	—	—	—	—	—	5.4 U	11 U	5.4 U	—	—
	8 - 10	2/14/2005		—	—	—	—	—	—	6.6	29 J	6 U	—	—
	10 - 12	2/14/2005		—	—	—	—	—	—	71	180 J	55	—	—
	12 - 14	2/14/2005		—	—	—	—	—	—	6.8	20 J	14	—	—
	14 - 16	2/14/2005		—	—	—	—	—	—	6.7 U	13 U	6.7 U	—	—
Source Control Evaluation Screening Level Values				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

Table 5-3
Summary of Soil Analytical Results for Petroleum Hydrocarbons

Sample Location	Sample Depth (feet)	Sample Date	Sampled by	Analytical Results (milligrams per kilogram)[1]										
				Benzene[1]	Ethylbenzene[1]	Toluene[1]	Xylenes Total[1]	TPH - Undifferentiated[2]	GRO[3]	DRO[4]	ORO[5]	MS[6]	HF[7]	Ker[8]
SB-07231r	6 - 8	2/14/2005	Weston	—	—	—	—	—	—	5.4 U	11 U	5.4 U	—	—
	8 - 10	2/14/2005		—	—	—	—	—	—	6	34 J	5.9 U	—	—
	10 - 12	2/14/2005		—	—	—	—	—	—	6.9 U	25 J	6.9 U	—	—
	12 - 14	2/14/2005		—	—	—	—	—	—	6.6 U	13 U	6.6 U	—	—
	14 - 16	2/14/2005		—	—	—	—	—	—	6.7 U	19 J	6.7 U	—	—
SB-07232	8 - 10	6/11/2003	Weston	—	—	—	—	—	160	62	100 U	—	—	—
	10 - 12	6/11/2003		—	—	—	—	—	660	210	280	—	—	—
	12 - 14	6/11/2003		—	—	—	—	—	4,700	1,400	1,900	—	—	—
SB-07232r	6 - 8	2/14/2005	Weston	—	—	—	—	—	—	7.7 J	31 J	5.5 U	—	—
	8 - 10	2/14/2005		—	—	—	—	—	—	7.1 U	14 U	7.1 U	—	—
	10 - 12	2/14/2005		—	—	—	—	—	—	960	2400 J	370	—	—
	12 - 14	2/14/2005		—	—	—	—	—	—	650	1700 J	240	—	—
	14 - 16	2/14/2005		—	—	—	—	—	—	1400	3700 J	230	—	—
SB-07233	10 - 12	6/11/2003	Weston	—	—	—	—	—	710	510	800	—	—	—
	12 - 14	6/11/2003		—	—	—	—	—	360	300	450	—	—	—
	14 - 16	6/11/2003		—	—	—	—	—	34 U	50 U	100 U	—	—	—
SB-07233r	6 - 8	2/14/2005	Weston	—	—	—	—	—	—	9,000	19,000 J	2900	—	—
	8 - 10	2/14/2005		—	—	—	—	—	—	7,600	16,000 J	2200	—	—
	10 - 12	2/14/2005		—	—	—	—	—	—	7.7	21 J	6.9 U	—	—
	12 - 14	2/14/2005		—	—	—	—	—	—	1,400	3,700 J	350	—	—
	14 - 16	2/14/2005		—	—	—	—	—	—	310	870 J	32 U	—	—
SB-07234	12 - 14	6/10/2003	Weston	—	—	—	—	—	280	130	280	—	—	—
SB-07235	10 - 12	6/11/2003	Weston	—	—	—	—	—	42	50 U	100 U	—	—	—
	12 - 14	6/11/2003		—	—	—	—	—	34 U	50 U	100 U	—	—	—
SB-07236	10 - 12	6/13/2003	Weston	—	—	—	—	—	1,700	710	1,200	—	—	—
SB-07237	10 - 12	6/12/2003	Weston	—	—	—	—	—	35 U	50 U	100 U	—	—	—
SB-07244	10 - 12	6/11/2003	Weston	—	—	—	—	—	110	50 U	100 U	—	—	—
	14 - 16	6/11/2003		—	—	—	—	—	36 U	50 U	100 U	—	—	—
SB-07245	10 - 12	6/10/2003	Weston	—	—	—	—	—	140	81	160	—	—	—
	12 - 14	6/10/2003		—	—	—	—	—	360	260	500	—	—	—
SB-07247	10 - 12	6/10/2003	Weston	—	—	—	—	—	1,000	360	430	—	—	—
Source Control Evaluation Screening Level Values				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

Table 5-3
Summary of Soil Analytical Results for Petroleum Hydrocarbons

Sample Location	Sample Depth (feet)	Sample Date	Sampled by	Analytical Results (milligrams per kilogram)[1]										
				Benzene[1]	Ethylbenzene[1]	Toluene[1]	Xylenes Total[1]	TPH - Undifferentiated[2]	GRO[3]	DRO[4]	ORO[5]	MS[6]	HF[7]	Ker[8]
SB-07250	0 - 2	2/14/2005	Weston	—	—	—	—	—	—	46	110 J	5.6 U	—	—
	2 - 4	2/14/2005		—	—	—	—	—	—	280	380 J	12	—	—
	4 - 6	2/14/2005		—	—	—	—	—	—	6.5 U	13 U	6.5 U	—	—
	6 - 8	2/14/2005		—	—	—	—	—	—	6.7 U	20 J	6.7 U	—	—
	8 - 10	2/14/2005		—	—	—	—	—	—	98	140 J	8	—	—
	10 - 12	2/14/2005		—	—	—	—	—	—	6 U	12 U	6 U	—	—
	12 - 14	2/14/2005		—	—	—	—	—	—	6.5 U	13 U	6.5 U	—	—
	14 - 16	2/14/2005		—	—	—	—	—	—	6.6 U	13 U	6.6 U	—	—
SB-07253	0 - 2	2/15/2005	Weston	—	—	—	—	—	—	19	110 J	11 U	—	—
	2 - 4	2/15/2005		—	—	—	—	—	—	5.7 U	11 U	11 U	—	—
	4 - 6	2/15/2005		—	—	—	—	—	—	5.7 U	11 U	11 U	—	—
	6 - 8	2/15/2005		—	—	—	—	—	—	5.6 U	11 U	11 U	—	—
	8 - 10	2/15/2005		—	—	—	—	—	—	6 U	12 U	12 U	—	—
	10 - 12	2/15/2005		—	—	—	—	—	—	7.1 U	14 U	14 U	—	—
SB-08916	2	9/13/1994	Weston	0.0011 U	0.0011 U	0.0011 U	0.0022 U	—	—	—	—	—	—	—
	5	9/13/1994		0.0013 U	0.0013 U	0.0015	0.0025 U	—	—	—	—	—	—	—
	12.5	9/13/1994		0.0013 U	0.0013 U	0.0013 U	0.0027 U	—	—	—	—	—	—	—
SB-08918	2	9/13/1994	Weston	0.0011 U	0.0011 U	0.0011 U	0.0022 U	—	—	—	—	—	—	—
	5	9/13/1994		0.0012 U	0.0012 U	0.002	0.0023 U	—	—	—	—	—	—	—
	12.5	9/13/1994		0.0013 U	0.0013 U	0.0013 U	0.0026 U	—	—	—	—	—	—	—
SB-08921	2	9/13/1994	Weston	0.001 U	0.001 U	0.001 U	0.0021 U	—	—	—	—	—	—	—
	5	9/13/1994		0.001 U	0.001 U	0.001 U	0.0021 U	—	—	—	—	—	—	—
	12.5	9/13/1994		0.0013 U	0.0013 U	0.0013 U	0.0026 U	—	—	—	—	—	—	—
SB-08923	2	9/13/1994	Weston	0.0011 U	0.0011 U	0.0011 U	0.0022 U	—	—	—	—	—	—	—
	5	9/13/1994		0.0012 U	0.0012 U	0.0012 U	0.0025 U	—	—	—	—	—	—	—
	12.5	9/13/1994		0.0013 U	0.0013 U	0.0013 U	0.0026 U	—	—	—	—	—	—	—
SB-09101	2	9/12/1994	Weston	0.001 U	0.001 U	0.001 U	0.0021 U	—	20 U	25 U	50 U	—	—	—
	5	9/12/1994		0.0011 U	0.0011 U	0.0011 U	0.0023 U	—	20 U	25 U	50 U	—	—	—
	12.5	9/12/1994		0.0013 U	0.0013 U	0.0013 U	0.0027 U	—	20 U	25 U	50 U	—	—	—
Source Control Evaluation Screening Level Values				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

Table 5-3
Summary of Soil Analytical Results for Petroleum Hydrocarbons

Sample Location	Sample Depth (feet)	Sample Date	Sampled by	Analytical Results (milligrams per kilogram)[1]										
				Benzene[1]	Ethylbenzene[1]	Toluene[1]	Xylenes Total[1]	TPH - Undifferentiated[2]	GRO[3]	DRO[4]	ORO[5]	MS[6]	HF[7]	Ker[8]
SB-09105	2	9/12/1994	Weston	0.0011 U	0.0011 U	0.0011 U	0.0021 U	—	20 U	25 U	50 U	—	—	—
	5	9/12/1994		0.0014 U	0.0014 U	0.0014 U	0.0028 U	—	20 U	25 U	50 U	—	—	—
	12.5	9/12/1994		0.0013 U	0.0013 U	0.0013 U	0.0027 U	—	20 U	25 U	50 U	—	—	—
SB-09106	2	9/12/1994	Weston	0.0011 U	0.0011 U	0.0021	0.0021 U	430	20 U	90	380	—	—	—
	5	9/12/1994		0.0012 U	0.0012 U	0.0012 U	0.0024 U	—	20 U	25 U	50 U	—	—	—
	12.5	9/12/1994		0.0013 U	0.0013 U	0.0013 U	0.0026 U	—	20 U	25 U	50 U	—	—	—
SB-09107	3.5	3/10/1995	Weston	—	—	—	—	10 U	—	—	—	—	—	—
	5.5	3/10/1995		—	—	—	—	15 U	—	—	—	—	—	—
	8.5	3/10/1995		—	—	—	—	16 U	—	—	—	—	—	—
SB-1	3	8/5/1996	SECOR	0.005 U	0.005 U	0.005 U	0.005 U	—	—	11	—	—	61	—
	9	8/5/1996		0.0625 U	2.13	0.194	10.2	—	—	32,400	—	—	3,000 U	—
	10.5	8/5/1996		0.005 U	0.005 U	0.005 U	0.005 U	—	—	122	—	—	78	—
SB-2	3	8/5/1996	SECOR	0.005 U	0.005 U	0.005 U	0.005 U	—	—	5 U	—	—	46	—
	7.5	8/5/1996		0.0625 U	0.14	0.0625 U	1.49	—	—	13,400	—	—	750 U	—
	9	8/5/1996		0.25 U	2.03	1.34	9.45	69,300	—	77,500	—	—	5,000 U	—
SB-3	3	8/5/1996	SECOR	0.005 U	0.005 U	0.005 U	0.005 U	—	—	10 U	—	—	125	—
	9	8/5/1996		0.005 U	0.005 U	0.005 U	0.005 U	—	—	300	—	—	92	—
	10.5	8/5/1996		0.0625 U	0.608	0.0625 U	3.22	—	—	6,700	—	—	700 U	—
SB-4	4	8/5/1996	SECOR	0.005 U	0.005 U	0.005 U	0.005 U	—	—	75	—	—	57	—
	8.5	8/5/1996		0.289	2.49	3.32	18.7	—	—	67,000	—	—	5,500 U	—
	10	8/5/1996		0.0625 U	0.0625 U	0.0625 U	0.184	—	—	968	—	—	100 U	—
SB-5	3.5	8/5/1996	SECOR	0.005 U	0.005 U	0.005 U	0.005 U	—	—	63	—	—	50 U	—
	7	8/5/1996		0.005 U	0.005 U	0.005 U	0.005 U	—	—	954	—	—	450 U	—
	8.5	8/5/1996		0.05 U	0.258	0.05 U	1.07	—	—	15,700	—	—	1,500 U	—
SB-6	4	8/5/1996	SECOR	0.005 U	0.005 U	0.005 U	0.005 U	—	—	35 U	—	—	662	—
	8.5	8/5/1996		0.05 U	0.74	0.433	4.56	—	—	17,400	—	—	1,500 U	—
SB-7	3	8/5/1996	SECOR	0.005 U	0.005 U	0.005 U	0.005 U	—	—	10 U	—	—	60 U	—
	7	8/5/1996		0.005 U	0.005 U	0.005 U	0.005 U	—	—	95	—	—	60 U	—
	8.5	8/5/1996		0.025 U	0.17	0.025 U	0.58	—	—	7,180	—	—	500 U	—
SB-8	3	8/5/1996	SECOR	0.005 U	0.005 U	0.005 U	0.005 U	—	—	16	—	—	33	—
	7.5	8/5/1996		1 U	6.22	3.13	34.2	—	—	43,500	—	—	3,300	—
	9	8/5/1996		0.025 U	0.025 U	0.025 U	0.144	—	—	283	—	—	60 U	—
Source Control Evaluation Screening Level Values				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

Table 5-3
Summary of Soil Analytical Results for Petroleum Hydrocarbons

Sample Location	Sample Depth (feet)	Sample Date	Sampled by	Analytical Results (milligrams per kilogram) [1]										
				Benzene[1]	Ethylbenzene[1]	Toluene[1]	Xylenes Total[1]	TPH - Undifferentiated [2]	GRO[3]	DRO[4]	ORO[5]	MS[6]	HF[7]	Ker[8]
SB-9	3	8/6/1996	SECOR	0.005 U	0.005 U	0.005 U	0.005 U	—	—	4,800	—	—	400 U	—
	8	8/6/1996		0.25 U	3.11	1.01	20.8	—	—	46,200	—	—	3,400	—
	9.5	8/6/1996		0.25 U	3.78	3.28	22.1	—	—	47,100	—	—	3,100 U	—
SB-10	3	8/6/1996	SECOR	0.005 U	0.005 U	0.005 U	0.005 U	—	—	11	—	—	188	—
	9.5	8/6/1996		0.005 U	0.005 U	0.005 U	0.005 U	—	—	100 U	—	—	600 U	—
	11	8/6/1996		0.005 U	0.005 U	0.005 U	0.005 U	—	—	429	—	—	80 U	—
SB-11	2.5	8/6/1996	SECOR	0.005 U	0.005 U	0.005 U	0.005 U	—	—	10 U	—	—	60 U	—
	7	8/6/1996		0.005 U	0.005 U	0.005 U	0.021	—	—	5,020	—	—	900 U	—
	8.5	8/6/1996		0.005 U	0.005 U	0.005 U	0.02	—	—	417	—	—	122	—
SB-12	1	8/6/1996	SECOR	0.005 U	0.005 U	0.005 U	0.005 U	—	—	5 U	—	—	56	—
	8.5	8/6/1996		0.005 U	0.005 U	0.005 U	0.005 U	—	—	10 U	—	—	113	—
Source Control Evaluation Screening Level Values				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

NOTES:

[1] Analyzed by U.S. Environmental Protection Agency (EPA) Method 8020, 8240, or 8260.
[2]Analyzed by EPA Method 418.1.
[3]Analyzed by EPA Method 8015 or Northwest Methods NWTPH-G or TPH-HCID.
[4]Analyzed by EPA Method 8015 or Northwest Method NWTPH-Dx, WTPH-D or TPH-HCID.
[5]Analyzed by Northwest Method NWTPH-Dx, WTPH-D or TPH-HCID.
[6]Analyzed by Northwest Method NWTPH-Dx.
[7]Analyzed by Northwest Method 8015.
[8]Analyzed by Northwest Method WTPH-D.

DRO = total petroleum hydrocarbons as diesel-range organics
GRO = total petroleum hydrocarbons as gasoline-range organics
HF = total petroleum hydrocarbons as hydraulic fluid
J = the reported value is an estimate
Ker = total petroleum hydrocarbons as kerosene
MS = total petroleum hydrocarbons as mineral spirits
NA = Not available
ORO = total petroleum hydrocarbons as heavy oil-range organics
TPH = total petroleum hydrocarbons
U = no detectable concentrations above the listed laboratory practical quantitation limit

Table 5-4
Summary of Soil Analytical Data for Non-SMS Metals

Sample Location	Sample Depth (ft)	Sample Date	Sampled by	Analytical Results (milligrams per kilogram) [1]								
				Aluminum	Antimony	Barium	Beryllium	Cobalt	Nickel	Selenium	Thallium	Vanadium
Surface Soil Samples												
5-1	0	3/1/1990	Dames and Moore	—	—	32.4	—	—	—	0.02 U	—	—
9-1	0	3/1/1990	Dames and Moore	—	—	20.6	—	—	—	0.2	—	—
9-2	0	3/1/1990	Dames and Moore	—	—	25	—	—	—	0.1	—	—
9-3	0	3/1/1990	Dames and Moore	—	—	58.9	—	—	—	0.2	—	—
9-4	0	3/1/1990	Dames and Moore	—	—	162	—	—	—	0.05	—	—
16-1	0	3/1/1990	Dames and Moore	—	—	59	—	—	—	0.02 U	—	—
16-2	0	3/1/1990	Dames and Moore	—	—	53.7	—	—	—	0.09	—	—
17-1	0	3/1/1990	Dames and Moore	—	—	130	—	—	—	0.1	—	—
17-2	0	3/1/1990	Dames and Moore	—	—	49.2	—	—	—	0.02 U	—	—
17-3	0	3/1/1990	Dames and Moore	—	—	39.5	—	—	—	0.1	—	—
17-4	0	3/1/1990	Dames and Moore	—	—	82.2	—	—	—	2.6	—	—
Subsurface Soil Samples												
DM-B-12	13.5	3/1/1990	Dames and Moore	—	—	30.5	—	—	—	0.6 U	—	—
DM-B-15	10	2/28/1990	Dames and Moore	—	—	19.8	—	—	—	0.02	—	—
DM-B-16	11.5	2/28/1990	Dames and Moore	—	—	14.8	—	—	—	0.02 U	—	—
JSA-HA-1	7.5	3/6/1992	SECOR	—	—	—	—	—	6	—	—	—
MW-13	6 - 6.5	8/27/1992	SECOR	—	—	—	—	—	—	—	—	—
SB-08916	2	9/13/1994	Weston	9,500	5 UJ	28.8	0.1	3.8	11	5 U	5 U	39.3
	5	9/13/1994		13,400	6 UJ	41.4	0.1	4.8	9	6 U	6 U	40.8
	12.5	9/13/1994		11,800	6 UJ	41.4	0.1 U	4.1	10	6 U	6 U	50.3
SB-08918	2	9/13/1994	Weston	8,550	5 UJ	32.4	0.1 U	3.7	13	5 U	5 U	39.7
	5	9/13/1994		14,500	6 UJ	48	0.2	5.2	12	6 U	6 U	47.7
	12.5	9/13/1994		20,200	6 UJ	78	0.3	7.8	16	6 U	6 U	61.6
SB-08921	2	9/13/1994	Weston	9,070	5 UJ	26.4	0.1 U	4.7	10	5 U	5 U	39.6
	5	9/13/1994		9,630	5 UJ	25.8	0.1	5.8	12	6	5 U	38.4
	12.5	9/13/1994		13,800	6 UJ	45.4	0.2	5.2	11	6 U	6 U	50.6
Source Control Evaluation Screening Level Value [2]				**32,600**	**NA**	**NA**	**0.6**	**NA**	**48**	**NA**	**NA**	**NA**

Table 5-4
Summary of Soil Analytical Data for Non-SMS Metals

Sample Location	Sample Depth (ft)	Sample Date	Sampled by	Analytical Results (milligrams per kilogram)[1]								
				Aluminum	Antimony	Barium	Beryllium	Cobalt	Nickel	Selenium	Thallium	Vanadium
SB-08923	2	9/13/1994	Weston	13,300	6 UJ	48.3	0.1	4.9	11	6 U	6 U	49.8
	5	9/13/1994		13,200	6 UJ	42.5	0.2	5.2	12	6 U	6 U	45.9
	12.5	9/13/1994		18,600	6 UJ	66.1	0.3	5.2	13	6 U	6 U	59.8
SB-09101	2	9/12/1994	Weston	11,100	R	36.7	0.1	5.8	35	5 U	5 U	42.8
	5	9/12/1994		9,460	R	26.9	0.1 U	4.6	14	5 U	5 U	35.8
	12.5	9/12/1994		24,200	R	97.5	0.3	6.6	19	7 U	7 U	54.9
SB-09105	2	9/12/1994	Weston	8,900	R	25.8	0.1 U	4.2	10	5 U	5 U	37.8
	5	9/12/1994		18,700	R	63.9	0.2	6.3	15	7 U	7 U	55.9
	12.5	9/12/1994		16,100	R	59.2	0.2	5.7	13	6 U	6 U	56.9
SB-09106	2	9/12/1994	Weston	10,100	R	38.9	0.1 U	15.5	**501**	5 U	5 U	52.7
	5	9/12/1994		18,600	R	74.7	0.3	6.9	15	7 U	7 U	54.8
	12.5	9/12/1994		12,300	R	40.7	0.1 U	4.5	9	6 U	6 U	51.4
SB1	0 - 2	8/26/2004	Farallon	—	—	—	—	—	**1,130 B2**	—	—	—
	2 - 4	8/26/2004		—	—	—	—	—	**62.5 B2**	—	—	—
SB2	0 - 2	8/26/2004	Farallon	—	—	—	—	—	**125 B2**	—	—	—
	2 - 4	8/26/2004		—	—	—	—	—	**243 B2**	—	—	—
	4 - 6	8/26/2004		—	—	—	—	—	**173**	—	—	—
	6 - 8	8/26/2004		—	—	—	—	—	**189**	—	—	—
SB3	0 - 2	8/26/2004	Farallon	—	—	—	—	—	**159 B2**	—	—	—
	2 - 4	8/26/2004		—	—	—	—	—	**3,410 B2**	—	—	—
	4 - 6	8/26/2004		—	—	—	—	—	**584**	—	—	—
	6 - 8	8/26/2004		—	—	—	—	—	**207**	—	—	—
SB4	0 - 2	8/26/2004	Farallon	—	—	—	—	—	**290 B2**	—	—	—
	2 - 4	8/26/2004		—	—	—	—	—	**98.1 B2**	—	—	—
	4 - 6	8/26/2004		—	—	—	—	—	**99.1**	—	—	—
	6 - 8	8/26/2004		—	—	—	—	—	**62.2**	—	—	—
SB5	0 - 2	8/26/2004	Farallon	—	—	—	—	—	**28.6 B2**	—	—	—
	2 - 4	8/26/2004		—	—	—	—	—	**73.1 B2**	—	—	—
	4 - 6	8/26/2004		—	—	—	—	—	**61**	—	—	—
	6 - 8	8/26/2004		—	—	—	—	—	**95.2**	—	—	—
Source Control Evaluation Screening Level Value[2]				**32,600**	**NA**	**NA**	**0.6**	**NA**	**48**	**NA**	**NA**	**NA**

Table 5-4
Summary of Soil Analytical Data for Non-SMS Metals

Sample Location	Sample Depth (ft)	Sample Date	Sampled by	Analytical Results (milligrams per kilogram) [1]								
				Aluminum	Antimony	Barium	Beryllium	Cobalt	Nickel	Selenium	Thallium	Vanadium
SB6	0 - 2	8/27/2004	Farallon	—	—	—	—	—	**433 B2**	—	—	—
	2 - 4	8/27/2004		—	—	—	—	—	**5,560 B2**	—	—	—
	4 - 6	8/27/2004		—	—	—	—	—	**2,340**	—	—	—
	6 - 8	8/27/2004		—	—	—	—	—	**1,430**	—	—	—
SB7	0 - 2	8/27/2004	Farallon	—	—	—	—	—	**1,060 B2**	—	—	—
	2 - 4	8/27/2004		—	—	—	—	—	**158 B2**	—	—	—
	4 - 6	8/27/2004		—	—	—	—	—	**521**	—	—	—
	6 - 8	8/27/2004		—	—	—	—	—	**374**	—	—	—
Source Control Evaluation Screening Level Value [2]				**32,600**	**NA**	**NA**	**0.6**	**NA**	**48**	**NA**	**NA**	**NA**
Catch Basin Solids												
CB1	0	8/31/2004	Farallon	—	—	—	—	—	**1,770**	—	—	—
CB2	0	8/31/2004	Farallon	—	—	—	—	—	**3,620**	—	—	—
CB3	0	8/31/2004	Farallon	—	—	—	—	—	**2,470**	—	—	—
CB4	0	8/31/2004	Farallon	—	—	—	—	—	**3,230**	—	—	—
Source Control Evaluation Screening Level Value [2]				**32,600**	**NA**	**NA**	**0.6**	**NA**	**48**	**NA**	**NA**	**NA**

NOTES:

(highlighted) Indicates detected concentration exceeds the Source Control Evaluation Screening Level Value.

[1]Analyzed by U.S. Environmental Protection Agency 6000/7000 Series Methods.

[2] Washington State Department of Ecology (Ecology) Natural Background Soil Metals Concentrations in Washington State, October 1994.

B1 = The analyte was detected in the associated method blank at a level above one-tenth the sample concentration.

B2 = The analyte was detected in the associated method blank at a level below one-tenth the sample concentration.

J = the analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity

NE = not established

R = the result was rejected as unusable

U = no detectable concentrations above the listed laboratory practical quantitation limit

UJ = estimated detection limit

Table 5-5
Summary of Soil Analytical Results for SMS Metals

Sample Location	Sample Depth (ft)	Sample Date	Sampled by	Analytical Results (milligrams per kilogram)[1]							
				Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Silver	Zinc
Surface Soil											
5-1	0	3/1/1990	Dames and Moore	2	1.15	37.2	—	57.7	0.05	0.2 U	—
9-1	0	3/1/1990	Dames and Moore	2	1.75	**914**	—	25.5	0.04 U	0.2 U	—
9-2	0	3/1/1990	Dames and Moore	3	2.58	**6,500**	—	25.9	0.04 U	0.2 U	—
9-3	0	3/1/1990	Dames and Moore	3	2.98	**1,910**	—	32.4	0.04 U	1.6	—
9-4	0	3/1/1990	Dames and Moore	3	4.92	**504**	—	282	0.05	1.1	—
16-1	0	3/1/1990	Dames and Moore	6	4.31	**1,740**	—	69.4	0.04 U	1.1	—
16-2	0	3/1/1990	Dames and Moore	5	2.33	**913**	—	67.9	0.04 U	0.87	—
17-1	0	3/1/1990	Dames and Moore	6.1	**5.13**	**780**	—	241	0.3	3.62	—
17-2	0	3/1/1990	Dames and Moore	6.5	3.8	**282**	—	127	0.04 U	0.2 U	—
17-3	0	3/1/1990	Dames and Moore	7.1	2.86	**301**	—	134	0.1	0.7	—
17-4	0	3/1/1990	Dames and Moore	5	**7.02**	**3,720**	—	208	0.09	0.93	—
Natural Background Concentrations[2]				**7**	**1**	**48**	**36**	**24**	**0.07**	**NA**	**85**
Source Control Evaluation Screening Level Values[3]				**57**	**5.1**	**260**	**390**	**450**	**0.4**	**6.1**	**410**

Table 5-5
Summary of Soil Analytical Results for SMS Metals

Sample Location	Sample Depth (ft)	Sample Date	Sampled by	Analytical Results (milligrams per kilogram) [1]							
				Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Silver	Zinc
Subsurface Soil											
DM-B-12	13.5	3/1/1990	Dames and Moore	4	1.3	8.85	—	0.98 U	0.04 U	0.2 U	—
DM-B-15	10	2/28/1990	Dames and Moore	3	0.9	7.57	—	29.4	0.04 U	0.2 U	—
DM-B-16	11.5	2/28/1990	Dames and Moore	2	0.8	6.17	—	1 U	0.04 U	0.2 U	—
JSA-HA-1	7.5	3/6/1992	SECOR	20 U	1 U	7	5	10 U	—	—	20
MW-13	6 - 6.5	8/27/1992	SECOR	10 U	0.5 U	9.7	—	5 U	—	—	—
SB-08916	2	9/13/1994	Weston	5 U	0.2 U	14.6	12.1	10	0.05 U	0.3 U	64.1
	5	9/13/1994		6 U	0.2 U	13.8	11.1	3	0.06 U	0.3 U	27.2
	12.5	9/13/1994		6 U	0.3 U	14.3	21.9 J	3 U	0.06 U	0.4 U	24.7
SB-08918	2	9/13/1994	Weston	5 U	0.3	13.5	20	20	0.05 U	0.3 U	124
	5	9/13/1994		8	0.2 U	15.9	14.8	6	0.05 U	0.3 U	32.1
	12.5	9/13/1994		9	0.3 U	21.1	24	7	0.06 U	0.4 U	37.5
SB-08921	2	9/13/1994	Weston	8	0.2 U	11.7	11.2	14	0.05 U	0.3 U	41.8
	5	9/13/1994		5 U	0.2 U	12.6	9	5	0.05 U	0.3 U	28.1
	12.5	9/13/1994		6 U	0.3 U	16.9	14.8	3 U	0.06 U	0.4 U	27.1
SB-08923	2	9/13/1994	Weston	7	0.2 U	16.1	17.4	9	0.06 U	0.3 U	33.1
	5	9/13/1994		6 U	0.2 U	15.2	14	7	0.05 U	0.3 U	30.4
	12.5	9/13/1994		6 U	0.3 U	19.4	22.6	5	0.06 U	0.4 U	27.4
SB-09101	2	9/12/1994	Weston	5 U	0.2 U	20.8	15.5	16	0.16	0.3 U	54.9
	5	9/12/1994		5 U	0.2 U	14.4	11.9	5	0.05 U	0.3 U	31.5
	12.5	9/12/1994		12	0.3 U	24	27.2	18	0.08	0.4 U	72.3
SB-09105	2	9/12/1994	Weston	6	0.2 U	11.5	9.6	6	0.05 U	0.3 U	31.7
	5	9/12/1994		8	0.3 U	21.8	21.6	7	0.09	0.4 U	36.9
	12.5	9/12/1994		7	0.3 U	18.5	18.8	5	0.06 U	0.4 U	28.8
SB-09106	2	9/12/1994	Weston	13	0.6	111	91.8	117	0.05 U	0.3 U	169
	5	9/12/1994		7 U	0.3 U	20.5	21.6	7	0.05 U	0.4 U	36.5
	12.5	9/12/1994		6 U	0.3 U	15.9	12.4	3	0.05 U	0.4 U	25.8
Natural Background Concentrations [2]				**7**	**1**	**48**	**36**	**24**	**0.07**	**NA**	**85**
Source Control Evaluation Screening Level Values [3]				**57**	**5.1**	**260**	**390**	**450**	**0.4**	**6.1**	**410**

Table 5-5
Summary of Soil Analytical Results for SMS Metals

Sample Location	Sample Depth (ft)	Sample Date	Sampled by	Analytical Results (milligrams per kilogram)[1]							
				Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Silver	Zinc
SB1	0 - 2	8/26/2004	Farallon	25.7	4.5	**515**	334 B2	111 B2	0.065	0.281 J	**1,320 B2**
	2 - 4	8/26/2004		5.98	1.06 U	209	59.6 B2	20.8 B2	0.0501	0.136 J	129 B2
SB2	0 - 2	8/26/2004	Farallon	16.6	1.15 U	**829**	169 B2	226 B2	0.0542	0.421 J	370 B2
	2 - 4	8/26/2004		14.6	1.06 U	**707**	104 B2	278 B2	0.0205 U	0.351 J	231 B2
	4 - 6	8/26/2004		9.47	0.283 U	**588 B2**	74.5	323	0.0074 J	0.381	215 B2
	6 - 8	8/26/2004		8.14	0.265 U	**618 B2**	115	274	0.0192 U	0.325	162 B2
SB3	0 - 2	8/26/2004	Farallon	20.3	2.2	**282**	156 B2	**1,530 B2**	0.0422	0.379 J	**476 B2**
	2 - 4	8/26/2004		**61.7**	1.02 U	**1,170**	**541 B2**	95.4 B2	0.0193 U	0.171 J	118 B2
	4 - 6	8/26/2004		20.1	0.266 U	**765 B2**	188	180	0.0058 J	0.28	197 B2
	6 - 8	8/26/2004		7.65	0.252 U	**772 B2**	72.9	179	0.009 J	0.274	191 B2
SB4	0 - 2	8/26/2004	Farallon	14.1	0.584 J	**507**	216 B2	**1,130 B2**	**0.694**	0.381 J	319 B2
	2 - 4	8/26/2004		9.17	1.1 U	**476**	72.9 B2	312 B2	0.123	0.372 J	230 B2
	4 - 6	8/26/2004		16	0.289 U	**666 B2**	171	**732**	0.0239 U	0.4	200 B2
	6 - 8	8/26/2004		7.67	0.288 U	**691 B2**	68.8	**460**	0.0352	0.332	136 B2
SB5	0 - 2	8/26/2004	Farallon	3.47	0.967 U	**560**	40.2 B2	109 B2	0.0128 J	0.188 J	102 B2
	2 - 4	8/26/2004		6.44	1.25 U	**961**	77.3 B2	327 B2	0.0208 J	0.331 J	289 B2
	4 - 6	8/26/2004		3.75	0.282 U	**799 B2**	69.1	192	0.0098 J	0.259 J	255 B2
	6 - 8	8/26/2004		9.1	0.319 U	**889 B2**	102	256	0.0244 U	0.35	253 B2
SB6	0 - 2	8/27/2004	Farallon	7.25	0.892 U	**593**	220 B2	96 B2	0.0226	0.65 J	267 B2
	2 - 4	8/27/2004		**62.7**	0.0799 J	**1,170**	**955 B2**	112 B2	0.0055 J	0.627 J	87 B2
	4 - 6	8/27/2004		33.4	0.219 U	**1,550 B2**	**717**	132	0.0183 U	0.747	110 B2
	6 - 8	8/27/2004		19.1	0.252 U	**606 B2**	264	92.9	0.0159 U	0.315	100 B2
SB7	0 - 2	8/27/2004	Farallon	8.47	1.09 U	**3,200**	262 B2	110 B2	0.0192 J	0.553 J	170 B2
	2 - 4	8/27/2004		15.8	1.97	**410**	130 B2	**543 B2**	0.0673	1 J	**507 B2**
	4 - 6	8/27/2004		15.1	3.19	**1,950 B2**	271	**1460**	0.118	1.61	**1,380 B2**
	6 - 8	8/27/2004		14.2	0.446	**1,000 B2**	205	**657**	0.0573	1.39	**414 B2**
Natural Background Concentrations [2]				**7**	**1**	**48**	**36**	**24**	**0.07**	**NA**	**85**
Source Control Evaluation Screening Level Values [3]				**57**	**5.1**	**260**	**390**	**450**	**0.4**	**6.1**	**410**

Table 5-5
Summary of Soil Analytical Results for SMS Metals

Sample Location	Sample Depth (ft)	Sample Date	Sampled by	Analytical Results (milligrams per kilogram) [1]							
				Arsenic	Cadmium	Chromium	Copper	Lead	Mercury	Silver	Zinc
Catch Basin Solids											
CB1	0	8/31/2004	Farallon	4.17 U	**3 B2**	**5,660**	**2,090 B2**	301	0.119	2.08 J B2	**1,090 B2**
CB2	0	8/31/2004	Farallon	3.88 U	**3.38 B2**	**10,100**	**2,080 B2**	178	0.11	2.83 B2	**1,030 B2**
CB3	0	8/31/2004	Farallon	2.74 U	**2.03 B2**	**4,550**	**1,060 B2**	220	0.182	2.86 B2	**1,040 B2**
CB4	0	8/31/2004	Farallon	7.26	1.15 B2	**3,110 B2**	**1,330**	52.7 B2	0.0455	1.01 J B1	380 B2
Source Control Evaluation Screening Level Values [3]				**57**	**5.1**	**260**	**390**	**450**	**0.4**	**6.1**	**410**

NOTES:

Shaded cells indicate detected concentrations of metals exceeding the Puget Sound Region Natural Background Soil Metals Concentrations (Ecology 1994).

Results in **BOLD** indicates sample result exceeds the Source Control Evaluation Screening Level Value.

[1]Analyzed by U.S. Environmental Protection Agency 6000/7000 Series Methods.

[2] Washington State Department of Ecology (Ecology) Natural Background Soil Metals Concentrations in Washington State, October 1994.

[3] Ecology Sediment Management Standards (SMS) Sediment Quality Standards (SQS), Chapter 173-204 of the Washington Administrative Code (WAC 173-204), December 1995, All analytes expressed in terms of dry weight.

B1 = The analyte was detected in the associated method blank at a level above one-tenth the sample concentration.

B2 = The analyte was detected in the associated method blank at a level below one-tenth the sample concentration.

J = the analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity

NE = not established

R = the result was rejected as unusable

U = no detectable concentrations above the listed laboratory practical quantitation limit

UJ = estimated detection limit

Table 5-6
Summary of Soil Analytical Results for Polycyclic Aromatic Hydrocarbons

Sample Location	Sample Date	Sampled by	Sample Depth (ft)	Analytical Results (micrograms per kilogram)[1]																	
				LPAH							HPAH										
				Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	2-Methylnaphthalene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Total Benzofluoranthenes	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene
DM-B-1	3/1/1990	D&M	11	2.50 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
DM-SB-1	3/1/1990	D&M	0-3.5	2.50 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
DM-SB-2	3/1/1990	D&M	0-3.5	2.50 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
SB-08918	9/13/1994	Boeing	2	72 U	72 U	72 U	72 U	160	72 U	72 U	93	81	72 U	72 U	72 U	72 U	72 U	72 U	72 U	72 U	72 U
	9/13/1994	Boeing	5	80 U	80 U	80 U	80 U	80 U	80 U	80 U	80 U	80 U	80 U	80 U	80 U	80 U	80 U	80 U	80 U	80 U	80 U
	9/13/1994	Boeing	12.5	87 U	87 U	87 U	87 U	87 U	87 U	87 U	87 U	87 U	87 U	87 U	87 U	87 U	87 U	87 U	87 U	87 U	87 U
	9/13/1994	Boeing	12.5	89 U	89 U	89 U	89 U	89 U	89 U	89 U	89 U	89 U	89 U	89 U	89 U	89 U	89 U	89 U	89 U	89 U	89 U
Source Control Evaluation Screening Level Value [2]				**2,100**	**1,300**	**500**	**540**	**1,500**	**960**	**670**	**1,700**	**2,600**	**1,300**	**1,400**	**NE**	**NE**	**3,200**	**1,600**	**600**	**230**	**670**

NOTES:

[1]Analyzed by U.S. Environmental Protection Agency Method 8240 or 8270 .

[2] Washington State Department of Ecology Sediment Management Standards (SMS) Sediment Quality Standards (SQS), Chapter 173-204 of the Washington Administrative Code (WAC 173-204), December 1995, All analytes expressed in terms of dry weight.

— = not analyzed
bgs = below ground surface
NA = not available
U = no detectable concentrations above the listed laboratory practical quantitation limit
LPAH = low molecular weight polycyclic hydrocarbons
HPAH = high molecular weight polycyclic hydrocarbons
NE = not established

Table 5-7
Summary of Soil Analytical Results for Semivolatile Organic Compounds

Sample Location	Sample Date	Sampled by	Sample Depth (ft)	Analytical Results																			
				Chlorinated Benzenes				Phthalate Esters						Phenols					Misc Extractables				
				1,4-Dichlorobenzene	1,2-Dichlorobenzene	1,2,4-Trichlorobenzene	Hexachlorobenzene	Dimethylphthalate	Diethylphthalate	Di-n-butylphthalate	Butylbenzylphthalate	bis(2-Ethylhexyl)phthalate	Di-n-octylphthalate	Phenol	2-Methylphenol	4-Methylphenol	2,4-Dimethylphenol	Pentachlorophenol	Benzyl alcohol	Benzoic acid	Dibenzofuran	Hexachlorobutadiene	n-Nitrosodiphenylamine
DM-B-1	3/1/1990	D&M	11	2.5 U	2.5 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
DM-SB-1	3/1/1990	D&M	0 - 3.5	2.5 U	2.5 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
DM-SB-2	3/1/1990	D&M	0 - 3.5	2.5 U	2.5 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-24	9/14/1992	SECOR	3.5-4	100 U	**100 U**	**100 U**	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	9/14/1992	SECOR	8.5-9	100 U	**100 U**	**100 U**	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-25	9/14/1992	SECOR	8-5.8	100 U	**100 U**	**100 U**	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-30	1/30/1994	SECOR	4.5-5	50 U	**50 U**	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	1/30/1994	SECOR	9-9.5	50 U	**50 U**	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-31	1/30/1994	SECOR	5.0-5.5	50 U	**50 U**	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	1/30/1994	SECOR	9.5-10	50 U	**50 U**	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
SB-08918	9/13/1994	Boeing	2	72 U	**72 U**	**72 U**	**72 U**	**72 U**	**72 U**	72 U	**72 U**	120	72 U	140 U	**72 U**	72 U	**140 U**	360 U	**360 U**	**720 U**	**72 U**	**140 U**	**72 U**
	9/13/1994	Boeing	5	80 U	**80 U**	**80 U**	**80 U**	**80 U**	**80 U**	80 U	**80 U**	80 U	80 U	160 U	**80 U**	80 U	**160 U**	**400 U**	**400 U**	**800 U**	**80 U**	**160 U**	**80 U**
	9/13/1994	Boeing	12.5	87 U	**87 U**	**87 U**	**87 U**	**87 U**	**87 U**	87 U	**87 U**	140	87 U	170 U	**87 U**	87 U	**170 U**	**430 U**	**430 U**	**870 U**	**87 U**	**170 U**	**87 U**
	9/13/1994	Boeing	12.5	89 U	**89 U**	**89 U**	**89 U**	**89 U**	**89 U**	89 U	**89 U**	120 N	89 U	180 U	**89 U**	89 U	**180 U**	**450 U**	**450 U**	**890 U**	**89 U**	**180 U**	**89 U**
Source Control Evaluation Screening Level Values [2]				**110**	**35**	**31**	**22**	**71**	**48**	**1,400**	**63**	**1,300**	**420**	**420**	**63**	**670**	**29**	**360**	**57**	**650**	**540**	**11**	**28**

NOTES:

Results in **BOLD** indicate that the laboratory practical quantitation limit exceeds the screening level value.

Indicates detected concentration exceeds the Source Control Evaluation Screening Level Value.

[1]Analyzed by U.S. Environmental Protection Agency Methods 8010, 8240, 8260, or 8270.

[2] Washington State Department of Ecology Sediment Management Standards (SMS) Sediment Quality Standards (SQS), Chapter 173-204 of the Washington Administrative Code (WAC 173-204), December 1995, All analytes expressed in terms of dry weight.

— = not analyzed

bgs = below ground surface

NA = not available

U = no detectable concentrations above the listed laboratory practical quantitation limit

N = presumptive evidence of compound

Table 5-8
Summary of Soil Analytical Results for Halogenated Volatile Organic Compounds

Sample Location	Sample Depth (feet)	Sample Date	Sampled by	Analytical Results (milligrams per kilogram) [1]							
				PCE	TCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,1-DCA	1,2-DCA
DM-B-1	11	3/1/1990	Dames and Moore	0.0025 U	0.0025 U	0.0025 U	0.0051	0.0025 U	0.005 U	0.0025 U	0.0025 U
DM-SB-1	0 - 3.5	3/1/1990	Dames and Moore	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.005 U	0.0025 U	0.0025 U
DM-SB-2	0 - 3.5	3/1/1990	Dames and Moore	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.0025 U	0.005 U	0.0025 U	0.0025 U
MW-13	6 - 6.5	8/27/1992	SECOR	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-16	10.5 - 11	8/29/1992	SECOR	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-24	3.5 - 4	8/14/1992	SECOR	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-24	8.5 - 9	8/14/1992	SECOR	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
MW-30	NA	1/30/1994	SECOR	0.05 U	0.05 U	—	—	0.05 U	0.05 U	0.05 U	0.05 U
MW-31	NA	1/30/1994	SECOR	0.05 U	0.05 U	—	—	0.05 U	0.05 U	0.05 U	0.05 U
SB-08916	2	9/13/1994	Weston	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0022 U	0.0011 U	0.0011 U
	5	9/13/1994		0.0013 U	0.058	0.0013 U	0.0013 U	0.0013 U	0.0025 U	0.0013 U	0.0013 U
	12.5	9/13/1994		0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.01 J	0.0013 U	0.0013 U
SB-08918	2	9/13/1994	Weston	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0022 U	0.0011 U	0.0011 U
	5	9/13/1994		0.0012 U	0.004	0.0012 U	0.0012 U	0.0012 U	0.0023 U	0.0012 U	0.0012 U
	12.5	9/13/1994		0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0026 U	0.0013 U	0.0013 U
SB-08921	2	9/13/1994	Weston	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0021 U	0.001 U	0.001 U
	5	9/13/1994		0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0021 U	0.001 U	0.001 U
	12.5	9/13/1994		0.0013 U	0.0013 U	0.0013 U	0.0056	0.0013 U	0.0026 U	0.0013 U	0.0013 U
SB-08923	2	9/13/1994	Weston	0.0011 U	0.0065	0.0011 U	0.0011 U	0.0011 U	0.0022 U	0.0011 U	0.0011 U
	5	9/13/1994		0.0013	0.052	0.0012 U	0.0012 U	0.0012 U	0.0025 U	0.0012 U	0.0012 U
	12.5	9/13/1994		0.0013 U	0.0013 U	0.0013 U	0.07	0.0027	0.009	0.0013 U	0.0013 U
SB-09101	2	9/12/1994	Weston	0.001 U	0.001 U	0.001 U	0.001 U	0.001 U	0.0021 U	0.001 U	0.001 U
	5	9/12/1994		0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0023 U	0.0011 U	0.0011 U
	12.5	9/12/1994		0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0027 U	0.0013 U	0.0013 U
SB-09105	2	9/12/1994	Weston	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0021 U	0.0011 U	0.0011 U
	5	9/12/1994		0.0014 U	0.021	0.0014 U	0.0014 U	0.0014 U	0.0028 U	0.0014 U	0.0014 U
	12.5	9/12/1994		0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0027 U	0.0013 U	0.0013 U
SB-09106	2	9/12/1994	Weston	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0011 U	0.0021 U	0.0011 U	0.0011 U
	5	9/12/1994		0.0012 U	0.014	0.0012 U	0.0012 U	0.0012 U	0.0024 U	0.0012 U	0.0012 U
	12.5	9/12/1994		0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0013 U	0.0026 U	0.0013 U	0.0013 U
Source Control Evaluation Screening Level Values				**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

NOTES:

[1]Analyzed using U.S. Environmental Protection Agency (EPA) Methods 8010, 8240, or 8260.

— = not analyzed

DCA = dichloroethane

DCE = dichloroethene

J = the analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity

NA = Not available

PCE = tetrachloroethene

TCE = trichloroethene

U = no detectable concentrations above the listed laboratory practical quantitation limit

NE = not established

Table 5-9
Summary of Groundwater Analytical Results for Polychlorinated Biphenyls

				Analytical Results (micrograms per liter) [1]										
				Aroclor										
Sample Location	**Sample Date**	**Sampled by**	**Sample Depth/Screened Interval (feet bgs)**	**1016**	**1016/1242**	**1221**	**1232**	**1242**	**1248**	**1254**	**1260**	**1262**	**1268**	**Total PCBs**
GP-06601	9/12/1994	Weston	13	—	1 U	—	—	—	1 U	1 U	1 U	—	—	**1 U**
GP-06602	9/13/1994	Weston	14	—	1 U	—	—	—	1 U	1 U	1 U	—	—	**1 U**
GP-06603	9/12/1994	Weston	14	—	1 U	—	—	—	1 U	1 U	1 U	—	—	**1 U**
GP-06604	9/13/1994	Weston	14	—	17 UY	—	—	—	1 U	1 U	1 U	—	—	**17 UY**
GP-09101	9/12/1994	Weston	15	—	1 U	—	—	—	1 U	1 U	1 U	—	—	**1 U**
GP-09102	9/8/1994	Weston	14	—	1 U	—	—	—	1 U	1 U	1 U	—	—	**1 U**
GP-09103	9/8/1994	Weston	14	—	1 U	—	—	—	1 U	1 U	1 U	—	—	**1 U**
MW-5	4/10/2003	Farallon	10-20	0.0478 U	—	0.0478 U	0.0478 U	0.0478 U	0.0478 U	0.0478 U	0.0478 U	—	—	0.0478 U
MW-6	4/11/2003	Farallon	10-20	0.0478 U	—	0.0478 U	0.0478 U	0.0478 U	0.0478 U	0.0478 U	0.0478 U	—	—	0.0478 U
	6/16/2003	Weston		0.01 UY	—	0.02 UY	0.01 UY	0.01 UY	0.01 UY	0.13	0.28	0.01 UY	0.01 UY	0.41
MW-7	4/11/2003	Farallon	10-20	0.0477 U	—	0.0477 U	0.0477 U	0.0477 U	0.0477 U	0.0477 U	0.0477 U	—	—	0.0477 U
	6/16/2003	Weston		0.01 UY	—	0.02 UY	0.01 UY	0.01 UY	0.01 UY	0.01 UY	0.01 UY	0.01 UY	0.01 UY	0.02 UY
MW-13	9/10/1992	SECOR	5-20	0.1 U	—	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	—	—	0.1 U
MW-15	4/11/2003	Farallon	5-20	0.0476 U	—	0.0476 U	0.0476 U	0.0476 U	0.0476 U	0.0476 U	0.0476 U	—	—	0.0476 U
MW-24	4/11/2003	Farallon	6-19.75	0.0478 UZ	—	0.0478 UZ	0.0478 UZ	0.0478 UZ	0.0478 UZ	0.0478 UZ	0.0478 UZ	—	—	0.0478 UZ
MW-25	4/11/2003	Farallon	6-19.75	0.0475 U	—	0.0475 U	0.0475 U	0.0475 U	0.0475 U	0.0475 U	0.0475 U	—	—	0.0475 U
MW-31	5/7/1993	SECOR	5-19	0.021 U	—	0.052 U	0.052 U	0.021 U	0.021 U	0.021 U	0.021 U	—	—	0.052 U
	4/11/2003	Farallon		0.0476 U	—	0.0476 U	0.0476 U	0.0476 U	0.0476 U	0.0476 U	0.0476 U	—	—	0.0476 U
MW-36	4/11/2003	Farallon	NA	0.0478 U	—	0.0478 U	0.0478 U	0.0478 U	0.0478 U	0.0478 U	0.0478 U	—	—	0.0478 U
PL2-JF01A	9/27/1995	Boeing	NA	1 U	—	—	—	1 U	1 U	1 U	1 U	—	—	1 U
	11/17/1995	Boeing		1 U	—	—	—	1 U	1 U	1 U	1 U	—	—	1 U
	3/1/1996	Boeing		1 U	—	—	—	1 U	1 U	1 U	1 U	—	—	1 U
	5/23/1996	Boeing		1 U	—	—	—	1 U	1 U	1 U	1 U	—	—	1 U
	8/26/1996	Boeing		1 U	—	—	—	1 U	1 U	1 U	1 U	—	—	1 U
	11/21/1996	Boeing		1 U	—	—	—	1 U	1 U	1 U	1 U	—	—	1 U
PL2-JF01AR	6/16/2003	Boeing	23-27	0.01 U	—	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.02 U
	7/31/2006	Boeing		0.01 U	—	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	—	—	0.01 U
PL2-JF02A	4/10/2003	Farallon	8-22.75	0.0476 U	—	0.0476 U	0.0476 U	0.0476 U	0.0476 U	0.0476 U	0.0476 U	—	—	0.0476 U
	6/16/2003	Boeing		0.01 U	—	0.02 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.02 U
PL2-JF03A	4/10/2003	Farallon	8-22.75	0.0477 U	—	0.0477 U	0.0477 U	0.0477 U	0.0477 U	0.0477 U	0.0477 U	—	—	0.0477 U
PL2-JF04A	2/18/2005	Boeing	8-18	0.02 UY	—	0.01 U	0.05 UY	0.03 UY	0.04 UY	0.01 U	0.01 UY	—	—	0.05 UY
Source Control Evaluation Screening Level Value [2]														**0.27**

Table 5-9
Summary of Groundwater Analytical Results for Polychlorinated Biphenyls

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]										
				Aroclor										Total PCBs
				1016	1016/1242	1221	1232	1242	1248	1254	1260	1262	1268	
SB-07220	6/10/2003	Weston	4-6	1 U	—	2 U	1 U	1 U	1 U	1 U	1 U	1.2 U	1 U	**2 U**
SB-07228	6/10/2003	Weston	6-8	1 U	—	2 U	1 U	1 U	1 U	1 U	1 U	1.2 U	1 U	**2 U**
SB-07230	6/11/2003	Weston	6-8	1 U	—	2 U	1 U	1 U	1 U	1 U	1 U	1.2 U	1 U	**2 U**
SB-07233	6/11/2003	Weston	6-8	1 U	—	2 U	1 U	1 U	1 U	1 U	1 U	1.2 U	1 U	**2 U**
SB-07234	6/10/2003	Weston	2-4	1 U	—	2 U	1 U	1 U	1 U	1 U	1 U	1.2 U	1 U	**2 U**
SB-07238	6/13/2003	Weston	6-8	1 U	—	2 U	1 U	1 U	1 U	1 U	1 U	1.2 U	1 U	**2 U**
SB-07239	6/12/2003	Weston	6-8	1 U	—	2 U	1 U	1 U	1 U	1 U	1 U	1.2 U	1 U	**2 U**
SB-07242	6/13/2003	Weston	6-8	1 U	—	2 U	1 U	1 U	1 U	1 U	1 U	1.2 U	1 U	**2 U**
SB-07243	6/12/2003	Weston	6-8	1 U	—	2 U	1 U	1 U	1 U	1 U	1 U	1.2 U	1 U	**2 U**
SB-07244	6/11/2003	Weston	6-8	1 U	—	2 U	1 U	1 U	1 U	1 U	1 U	1.2 U	1 U	**2 U**
Source Control Evaluation Screening Level Value [2]														**0.27**

NOTES:

Results in **BOLD** indicate that the laboratory practical quantitation limit exceeds the screening level value.

Indicates detected concentration exceeds the Source Control Evaluation Screening Level Value.

[1]Analyzed by U.S. Environmental Protection Agency Method 608, 8080, 8081, or 8082.

[2] Source Control Evaluation Screening Level Value Protective of Sediment Quality

— = not analyzed

bgs = below ground surface

NA = not available

U = no detectable concentrations above the listed laboratory practical quantitation limit

Y = The analyte reporting limit is raised due to a positive chromatographic interference. The compound is not detected above the raised limit but may be present at or below the limit.

Z = Sample extract treated with mercury cleanup procedure.

Table 5-10
Summary of Groundwater Analytical Results for Petroleum Hydrocarbons

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter)								
				Benzene [1]	Ethylbenzene [1]	Toluene [1]	Xylenes Total [1]	TPH - Undifferentiated [2]	GRO [3]	DRO [4]	ORO [5]	MS [6]
GP-06601	9/12/1994	Weston	13	1 U	1 U	1 U	2 U	—	—	250 U	—	—
	9/12/1994	Weston	23	1 U	1 U	1 U	2 U	—	—	—	—	—
	9/12/1994	Weston	45	1 U	1 U	1 U	2 U	—	—	—	—	—
GP-06602	9/13/1994	Weston	14	32	170	8.1	110	—	—	250 U	—	—
	9/13/1994	Weston	24	1 U	1 U	1 U	2 U	—	—	—	—	—
	9/13/1994	Weston	45	1 U	1 U	1 U	2 U	—	—	—	—	—
GP-06603	9/12/1994	Weston	14	1 U	1 U	1 U	2 U	—	—	250 U	—	—
	9/12/1994	Weston	24	1.8	1 U	1 U	2 U	—	—	—	—	—
	9/12/1994	Weston	45	5.2	1 U	1 U	2 U	—	—	—	—	—
GP-06604	9/13/1994	Weston	14	300	48	8.1	620	—	—	250 U	—	—
	9/13/1994	Weston	24	1 U	1 U	4.6	2 U	—	—	—	—	—
	9/13/1994	Weston	45	1 U	1 U	9.5	2 U	—	—	—	—	—
GP-06633	11/28/1994	Boeing	15	1 U	1 U	1 U	2 U	—	—	—	—	—
	11/28/1994	Boeing	25	29	4.2	46 J	32 J	—	—	—	—	—
	11/28/1994	Boeing	45	1 UJH	1 UJH	1 UJH	2 UJH	—	—	—	—	—
	11/28/1994	Boeing	65	1 UJH	1 UJH	1 UJH	2 UJH	—	—	—	—	—
GP-06634	11/22/1994	Weston	15	1 U	1 U	1 U	2 U	—	—	—	—	—
	11/22/1994	Weston	25	1 U	1 U	1 U	2 U	—	—	—	—	—
	11/22/1994	Weston	45	1 UJ	1 UJ	1 UJ	2 UJ	—	—	—	—	—
	11/22/1994	Weston	65	1 U	1 U	1 U	2 U	—	—	—	—	—
GP-06635	11/22/1994	Weston	15	1 U	1 U	1 U	2 U	—	—	—	—	—
	11/22/1994	Weston	25	1 UJ	1 UJ	1 UJ	2 UJ	—	—	—	—	—
	11/22/1994	Weston	45	2.3	1 U	1 U	2 U	—	—	—	—	—
	11/22/1994	Weston	65	1 U	1 U	1 U	2 U	—	—	—	—	—
GP-06636	11/21/1994	Weston	15	1.2 J	1 U	1 U	2 U	—	—	—	—	—
	11/21/1994	Weston	25	7.8	1 U	1 U	2 U	—	—	—	—	—
	11/21/1994	Weston	45	12.0	1 U	1 U	2 U	—	—	—	—	—
	11/21/1994	Weston	65	1 U	1 U	1 U	2 U	—	—	—	—	—
GP-06637	3/15/1995	Weston	14	1 U	1 U	1 U	1 U	—	—	—	—	—
	3/15/1995	Weston	25	1.0	1 U	1 U	1 U	—	—	—	—	—
	3/15/1995	Weston	45	1 U	1 U	1 U	1 U	—	—	—	—	—
GP-06638	3/16/1995	Weston	14	1 U	1 U	1 U	1 U	—	—	—	—	—
	3/16/1995	Weston	25	4.4	1 U	1 U	1 U	—	—	—	—	—
	3/16/1995	Weston	45	1 U	1 U	1 U	1 U	—	—	—	—	—
GP-06639	3/16/1995	Weston	14	1 U	1 U	1 U	4	—	—	—	—	—
	3/16/1995	Weston	25	16	1 U	1 U	1 U	—	—	—	—	—
	3/16/1995	Weston	45	7.2	1 U	1 U	1 U	—	—	—	—	—
GP-06640	3/15/1995	Weston	14	1 U	1 U	1 U	1 U	—	—	—	—	—
	3/15/1995	Weston	25	1 U	1 U	1 U	1 U	—	—	—	—	—
	3/15/1995	Weston	45	1 U	1 U	1 U	1 U	—	—	—	—	—
GP-08901	9/14/1994	Boeing	14	1 U	1 U	1.2 UB	2 U	—	—	—	—	—
	9/14/1994	Boeing	24	12.0	1 U	3 UB	2 U	—	—	—	—	—
GP-08902	9/14/1994	Weston	14	1 U	1 U	1.9 UB	2 U	—	—	—	—	—
	9/14/1994	Weston	24	1 U	1 U	1.9 UB	2 U	—	—	—	—	—
GP-08903	9/14/1994	Weston	14	1 U	1 U	1.9 UB	2 U	—	—	—	—	—
	9/14/1994	Weston	24	1 U	1 U	5.2 UB	2 U	—	—	—	—	—
Source Control Evaluation Screening Level Values [7]				**22.7**	**69,100**	**48,500**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

Table 5-10
Summary of Groundwater Analytical Results for Petroleum Hydrocarbons

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter)								
				Benzene [1]	Ethylbenzene [1]	Toluene [1]	Xylenes Total [1]	TPH - Undifferentiated [2]	GRO [3]	DRO [4]	ORO [5]	MS [6]
GP-08904	9/14/1994	Weston	14	1 U	1 U	1.9 UB	2 U	—	—	—	—	—
	9/14/1994	Weston	24	1 U	1 U	1 U	2 U	—	—	—	—	—
GP-08905	9/13/1994	Weston	14	1 U	1 U	3.4	2 U	—	—	—	—	—
	9/13/1994	Weston	24	1 U	1 U	7.4	2 U	—	—	—	—	—
GP-08906	11/29/1994	Weston	15	1 U	1 U	1 U	2 U	—	—	—	—	—
	11/29/1994	Weston	25	1 U	1 U	1 U	2 U	—	—	—	—	—
	11/29/1994	Weston	45	1 U	1 U	1 U	2 U	—	—	—	—	—
	11/29/1994	Weston	65	1 U	1 U	1 U	2 U	—	—	—	—	—
GP-08907	11/28/1994	Weston	15	1 U	1 U	1 U	2 U	—	—	—	—	—
	11/28/1994	Weston	25	1 U	1 U	1 U	2 U	—	—	—	—	—
	11/28/1994	Weston	45	1 U	1 U	1 U	2 U	—	—	—	—	—
	11/29/1994	Weston	63	1 U	1 U	1 U	2 U	—	—	—	—	—
GP-08908	3/17/1995	Boeing	14	1 U	1 U	1 U	1 U	—	—	—	—	—
	3/17/1995	Boeing	25	1 U	1 U	1 U	1 U	—	—	—	—	—
	3/17/1995	Boeing	45	1 U	1 U	1 U	1 U	—	—	—	—	—
GP-09101	9/12/1994	Weston	15	1 U	1 U	1 U	2 U	—	10,000 U	10,000 U	25,000 U	—
GP-09102	9/8/1994	Weston	14	1 U	1 U	1 U	2 U	—	10,000 U	10,000 U	25,000 U	—
GP-09103	9/8/1994	Boeing	14	1 U	1 U	1 U	2 U	—	10,000 U	10,000 U	25,000 U	—
GP-09104	11/23/1994	Weston	15	1 U	1 U	1 U	2 U	—	—	—	—	—
	11/23/1994	Weston	25	2.7	1 U	1 U	2 U	—	—	—	—	—
	11/23/1994	Weston	45	1 U	1 U	1 U	2 U	—	—	—	—	—
GP-09105	11/23/1994	Weston	15	1 U	1 U	1 U	2 U	—	—	—	—	—
	11/23/1994	Weston	25	4.1	1 U	1 U	2 U	—	—	—	—	—
	11/23/1994	Weston	45	1 U	1 U	1 U	2 U	—	—	—	—	—
GP-09106	3/14/1995	Weston	14	1 U	1 U	1 U	1 U	—	—	—	—	—
	3/14/1995	Weston	25	1 U	1 U	1 U	1 U	—	—	—	—	—
	3/14/1995	Weston	45	1 U	1 U	1 U	1 U	—	—	—	—	—
GP-09107	3/14/1995	Weston	14	1 U	1 U	1 U	1 U	—	—	—	—	—
	3/14/1995	Weston	25	7.2	1 U	1 U	1 U	—	—	—	—	—
	3/14/1995	Weston	45	1 U	1 U	1 U	1 U	—	—	—	—	—
GP-09108	3/14/1995	Weston	14	1 U	1 U	1 U	1 U	—	—	—	—	—
	3/14/1995	Weston	25	5.4	1 U	1 U	1 U	—	—	—	—	—
	3/14/1995	Weston	45	1 U	1 U	1 U	1 U	—	—	—	—	—
GP-09109	3/15/1995	Weston	14	1 U	1	1 U	2	—	—	—	—	—
	3/15/1995	Weston	25	5.8	1 U	1 U	1 U	—	—	—	—	—
	3/15/1995	Weston	45	1 U	1 U	1 U	1 U	—	—	—	—	—
GP-09110	9/19/1995	Weston	15	1 U	1 U	1 U	1 U	—	—	—	—	—
	9/19/1995	Weston	25	1 U	1 U	1 U	1 U	—	—	—	—	—
	9/19/1995	Weston	45	1 U	1 U	1 U	1 U	—	—	—	—	—
GP-09111	9/20/1995	Weston	15	1 U	1 U	1 U	1 U	—	—	—	—	—
	9/20/1995	Weston	25	1 U	1 U	1 U	1 U	—	—	—	—	—
	9/20/1995	Weston	45	1 U	1 U	1 U	1 U	—	—	—	—	—
GP-09112	9/19/1995	Weston	15	1 U	1 U	1 U	1 U	—	—	—	—	—
	9/19/1995	Weston	25	1 U	1 U	1 U	1 U	—	—	—	—	—
	9/19/1995	Weston	45	1 U	1 U	1 U	1 U	—	—	—	—	—
Source Control Evaluation Screening Level Values [7]				**22.7**	**69,100**	**48,500**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

Table 5-10
Summary of Groundwater Analytical Results for Petroleum Hydrocarbons

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter)								
				Benzene [1]	Ethylbenzene [1]	Toluene [1]	Xylenes Total [1]	TPH - Undifferentiated [2]	GRO [3]	DRO [4]	ORO [5]	MS [6]
GP-09113	9/19/1995	Weston	15	1 U	1 U	1 U	1 U	—	—	—	—	—
	9/19/1995	Weston	25	1 U	1 U	1 U	1 U	—	—	—	—	—
	9/19/1995	Weston	45	1 U	1 U	1 U	1 U	—	—	—	—	—
GP-09114	9/20/1995	Weston	15	1.3	1 U	1 U	1 U	—	—	—	—	—
	9/20/1995	Weston	25	1 U	1 U	1 U	1 U	—	—	—	—	—
	9/20/1995	Weston	45	1 U	1 U	1 U	1 U	—	—	—	—	—
GP-09115	9/19/1995	Weston	15	1 U	1 U	1 U	1 U	—	—	—	—	—
	9/19/1995	Weston	25	1 U	1 U	1 U	1 U	—	—	—	—	—
	9/19/1995	Weston	45	1.5	1 U	1 U	1 U	—	—	—	—	—
MW-1	2/13/1991	SECOR	5-15	—	—	—	—	1,000 U	—	—	—	—
MW-2	4/17/1995	SECOR	5-15	—	—	—	—	—	—	61,000	320,000	—
MW-3	5/23/1991	SECOR	4.5-19.75	72	480	1,800	3,400	8,300	22,000	—	—	—
	4/13/1993	SECOR		—	—	—	—	—	3,400	900	—	—
	2/16/2001	URS		1U	3.7	1U	1U	—	110	200 U	500 U	100 U
MW-4	5/23/1991	SECOR	4.75-20	1200	1,900	14,000	9,500	14,000	59,000	—	—	—
	4/13/1993	SECOR		—	—	—	—	—	12,600	1,500	—	—
	2/6/1995	SECOR		—	—	—	—	—	—	250 U	750 U	—
	4/13/1995	SECOR		4.0	34	8	112	—	630	720	750 U	—
	8/23/2000	URS		1U	1U	1U	1U	—	140	200 U	500 U	100 U
	2/16/2001	URS		1U	4.3	1U	3.9	—	910	200 U	500 U	100 U
MW-5	8/8/1994	SECOR	10-20	—	—	—	—	—	—	500 U	—	—
	8/28/1996	SECOR		—	—	—	—	500 U	—	—	—	—
	11/26/1996	SECOR		—	—	—	—	500 U	—	—	—	—
	1/23/1997	SECOR		—	—	—	—	—	—	—	500 U	—
MW-6	12/14/2005	Farallon	10-20	2 U	2 U	2 U	2 U	—	100 U	240 U	480 U	—
	5/19/2006	Farallon		1 U	1 U	1 U	2 U	—	100 U	240 U	480 U	—
	1/11/2007	Farallon		1.0 U	1.0 U	1.0 U	2.0 U	—	19 J B	120 U	240 U	—
	7/31/2007	Farallon		1 U	1 U	1 U	2 U	—	12 J B	59 J B	240 U	—
MW-7	8/8/1994	SECOR	10-20	—	—	—	—	—	—	500 U	—	—
	11/1/1994	SECOR		—	—	—	—	500 U	—	—	—	—
	4/13/1995	SECOR		—	—	—	—	—	—	250 U	750 U	—
	1/23/1997	SECOR		—	—	—	—	—	—	250 U	750 U	—
	12/14/2005	Farallon		2 U	2 U	2 U	2 U	—	100 U	240 U	480 U	—
	5/18/2006	Farallon		1 U	1 U	1 U	2 U	—	100 U	240 U	480 U	—
	1/11/2007	Farallon		1.0 U	1.0 U	1.0 U	2.0 U	—	50 U	120 U	240 U	—
	8/1/2007	Farallon		1 U	1 U	1 U	2 U	—	14 J B	48 J B	240 U	—
MW-8	10/14/1991	SECOR	5-20	390	110	40	200	1,000	3,900	—	—	—
	4/13/1993	SECOR		—	—	—	—	—	990	300	—	—
	2/6/1995	SECOR		—	—	—	—	—	—	310	750 U	—
	4/13/1995	SECOR		18.9	3	2	6	—	200	250 U	750 U	—
	2/16/2001	URS		1.0	1.0	1.0	1.0	—	100 U	200 U	200 U	100 U
Source Control Evaluation Screening Level Values [7]				**22.7**	**69,100**	**48,500**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

Table 5-10
Summary of Groundwater Analytical Results for Petroleum Hydrocarbons

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter)								
				Benzene [1]	Ethylbenzene [1]	Toluene [1]	Xylenes Total [1]	TPH - Undifferentiated [2]	GRO [3]	DRO [4]	ORO [5]	MS [6]
MW-9	3/24/1992	SECOR	5-20	0.5 U	0.5 U	0.5 U	0.5 U	1,800	—	—	—	—
	4/13/1993	SECOR		—	—	—	—	—	50 U	300 U	—	—
	2/6/1995	SECOR		—	—	—	—	—	—	250 U	750 U	—
	4/13/1995	SECOR		0.5 U	1 U	1 U	1 U	—	50 U	250 U	750 U	—
	8/23/2000	URS		1U	1U	1U	1U	—	100 U	200 U	500 U	100 U
	2/16/2001	URS		1U	1U	1U	1U	—	100 U	200 U	500 U	100 U
	5/18/2005	Farallon		0.5 U	1 U	1 U	2 U	—	100 U	237 U	474 U	—
	12/14/2005	Farallon		2 U	2 U	2 U	2 U	—	100 U	240 U	480 U	—
	5/19/2006	Farallon		1 U	1 U	1 U	2 U	—	100 U	240 U	490 U	—
	1/12/2007	Farallon		1.0 U	1.0 U	1.0 U	2.0 U	—	13 J B	47 J	79 J	—
	8/1/2007	Farallon		1 U	1 U	1 U	2 U	—	11 J B	51 J B	240 U	—
MW-10	3/24/1992	SECOR	5-20	0.5 U	0.5 U	0.5 U	0.5 U	1,000 U	—	—	—	—
	4/13/1993	SECOR		—	—	—	—	—	50 U	300 U	—	—
	11/1/1994	SECOR		—	—	—	—	500 U	—	—	—	—
	2/6/1995	SECOR		—	—	—	—	—	—	700	750 U	—
	4/13/1995	SECOR		—	—	—	—	—	—	700	750 U	—
	1/23/1997	SECOR		—	—	—	—	—	—	590	750 U	—
	8/23/2000	URS		1U	1U	1U	1U	—	100 U	200 U	500 U	100 U
	2/16/2001	URS		1U	1U	1U	1U	—	100 U	200 U	500 U	100 U
	5/18/2005	Farallon		0.5 U	1 U	1 U	2 U	—	100 U	2,620 X1	18,100	—
	12/14/2005	Farallon		2 U	2 U	2 U	2 U	—	100 U	1,700	1,200	—
	5/19/2006	Farallon		1 U	1 U	1 U	2 U	—	100 U	9,600	3600	—
	8/1/2007	Farallon		1 U	1 U	0.15 J B	2 U	—	15 J B	1800 B	2700	—
MW-11	3/24/1992	SECOR	5-20	0.7	0.5 U	1	1	1,600	—	—		—
	4/13/1993	SECOR		—	—	—	—	—	50 U	300 U	—	—
	2/6/1995	SECOR		—	—	—	—	—	—	4,960	1,940	—
	4/13/1995	SECOR		—	—	—	—	—	—	980	750 U	—
	1/23/1997	SECOR		—	—	—	—	—	—	4,470	1,720	—
	10/27/1999	D & M		1U	1U	1U	1U	—	—	200 U	500 U	—
	2/16/2001	URS		1U	1U	1U	1U	—	100 U	200 U	500 U	100 U
	5/19/2006	Farallon		1 U	1 U	1 U	2 U	—	100 U	1,600	1200	—
	1/11/2007	Farallon		1.0 U	1.0 U	1.0 U	2.0 U	—	19 J B	740	420	—
	8/1/2007	Farallon		1 U	1 U	1 U	2 U	—	56 B	540 B	290	—
MW-12	3/24/1992	SECOR	5-20	—	—	—	—	29,000	—	—		—
	9/10/1992	SECOR		—	—	—	—	—	—	—	1,000 U	—
	11/10/1993	SECOR		2 U	5 U	2 U	5 U	—	—	—	1,000 U	—
	3/2/1994	SECOR		—	—	—	—	3,800	—	—	—	—
	11/1/1994	SECOR		—	—	—	—	500 U	—	—	—	—
	4/17/1995	SECOR		—	—	—	—	—	—	58,000	990	—
MW-13	9/10/1992	SECOR	5-20	2 U	2 U	2 U	2 U	—	—	—	7,300	—
	4/17/1995	SECOR		—	—	—	—	—	—	160,000	340,000	—
Source Control Evaluation Screening Level Values [7]				**22.7**	**69,100**	**48,500**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

Table 5-10
Summary of Groundwater Analytical Results for Petroleum Hydrocarbons

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter)								
				Benzene [1]	Ethylbenzene [1]	Toluene [1]	Xylenes Total [1]	TPH - Undifferentiated [2]	GRO [3]	DRO [4]	ORO [5]	MS [6]
MW-14	9/10/1992	SECOR	5-20	—	—	—	—	—	—	—	1,000 U	—
	11/10/1993	SECOR		2 U	5 U	2 U	5 U	—	—	—	1,000 U	—
	3/2/1994	SECOR		—	—	—	—	4,800	—	—	—	—
	8/8/1994	SECOR		—	—	—	—	—	—	2,700	—	—
	10/31/1994	SECOR		—	—	—	—	700	—	—	—	—
	2/6/1995	SECOR		—	—	—	—	—	—	2,620	1,240	—
	4/13/1995	SECOR		—	—	—	—	—	—	1,450	1,070	—
	1/23/1997	SECOR		—	—	—	—	—	—	7,890	6,730	—
	1/6/2000	D & M		1U	1U	1U	1U	—	—	200 U	500 U	—
	5/4/2000	D & M		1U	1U	1U	1U	—	—	200 U	500 U	—
	8/23/2000	URS		1U	1U	1U	1U	—	100 U	—	—	100 U
	12/14/2000	URS		1U	1U	1U	1U	—	100 U	200 U	500 U	100 U
	2/16/2001	URS		1U	1U	1U	1U	—	—	200 U	500 U	—
	12/14/2005	Farallon		2 U	2 U	2 U	2 U	—	100 U	540	920	—
	5/19/2006	Farallon		1 U	1 U	1 U	2 U	—	100 U	620	890	—
	1/12/2007	Farallon		1.0 U	1.0 U	1.0 U	2.0 U	—	17 J B	1,800	2900	—
	8/1/2007	Farallon		1 U	1 U	1 U	2 U	—	28 J B	430 B	390	—
MW-15	9/10/1992	SECOR	5-20	—	—	—	—	—	—	—	1,000 U	—
	11/10/1993	SECOR		2 U	5 U	2 U	5 U	—	—	—	1,000 U	—
	3/2/1994	SECOR		—	—	—	—	2,600	—	—	—	—
	8/8/1994	SECOR		—	—	—	—	—	—	500 U	—	—
	11/1/1994	SECOR		—	—	—	—	500 U	—	—	—	—
	2/6/1995	SECOR		—	—	—	—	—	—	250 U	750 U	—
	4/13/1995	SECOR		—	—	—	—	—	—	250 U	750 U	—
	1/23/1997	SECOR		—	—	—	—	—	—	250 U	750 U	—
	10/20/1999	D & M		1U	1U	1U	1U	—	—	200 U	500 U	—
	1/6/2000	D & M		1U	1U	1U	1U	—	—	200 U	500 U	—
	5/4/2000	D & M		1U	1U	1U	1U	—	—	200 U	500 U	—
	8/23/2000	URS		1U	1U	1U	1U	—	100 U	—	—	100 U
	12/14/2000	URS		1U	1U	1U	1U	—	100 U	200 U	500 U	100 U
	2/16/2001	URS		1U	1U	1U	1U	—	—	200 U	500 U	—
	12/14/2005	Farallon		2 U	2 U	2 U	2 U	—	100 U	240 U	480 U	—
	5/19/2006	Farallon		1 U	1 U	1 U	2 U	—	100 U	250 U	480 U	—
	1/12/2007	Farallon		1.0 U	1.0 U	1.0 U	2.0 U	—	11 J B	120 U	240 U	—
	8/1/2007	Farallon		1 U	1 U	1 U	2 U	—	8.9 J B	65 J B	240 U	—
MW-18	9/10/1992	SECOR	6-15.75	—	—	—	—	—	—	—	**4,800**	—
MW-22	9/10/1992	SECOR	6-15.75	—	—	—	—	—	—	—	1,000 U	—
	9/17/1992	SECOR		2 U	2 U	2 U	2 U	—	—	—	—	—
	4/13/1993	SECOR		1 U	1 U	1 U	1 U	—	—	300 U	—	—
	11/10/1993	SECOR		2 U	5 U	2 U	5 U	—	—	—	1,000 U	—
	8/8/1994	SECOR		—	—	—	—	—	—	500 U	—	—
	3/7/1995	SECOR		—	—	—	—	1,000	—	—	—	—
	8/28/1996	SECOR		—	—	—	—	500 U	—	—	—	—
	11/26/1996	SECOR		—	—	—	—	500 U	—	—	—	—
	1/23/1997	SECOR		—	—	—	—	—	—	—	500 U	—
	10/18/1999	D & M		—	—	—	—	—	—	200 U	500 U	—
Source Control Evaluation Screening Level Values [7]				**22.7**	**69,100**	**48,500**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

Table 5-10
Summary of Groundwater Analytical Results for Petroleum Hydrocarbons

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter)								
				Benzene [1]	Ethylbenzene [1]	Toluene [1]	Xylenes Total [1]	TPH - Undifferentiated [2]	GRO [3]	DRO [4]	ORO [5]	MS [6]
	9/10/1992	SECOR		2 U	2 U	2 U	2 U	—	—	—	1,000 U	—
	11/20/1992	SECOR		1 U	1 U	1 U	1 U	—	500 U	—	—	—
	11/10/1993	SECOR		2 U	5 U	2 U	5 U	—	—	—	1,000 U	—
	8/8/1994	SECOR		—	—	—	—	—	—	500 U	—	—
	8/28/1996	SECOR		—	—	—	—	500 U	—	—	—	—
	11/26/1996	SECOR		—	—	—	—	500 U	—	—	—	—
	10/18/1999	D & M		—	—	—	—	—	—	200 U	200 U	—
MW-23	8/23/2000	URS	6-15.75	—	—	—	—	—	—	200 U	500 U	—
	2/16/2001	URS		—	—	—	—	—	—	200 U	200 U	—
	12/29/2004	Farallon		1 U	0.0227 J	0.0908 J	2 U	—	—	—	—	—
	5/18/2005	Farallon		0.5 U	1 U	1 U	2 U	—	100 U	236 U	472 U	—
	12/14/2005	Farallon		2 U	2 U	2 U	2 U	—	100 U	240 U	480 U	—
	5/19/2006	Farallon		1 U	1 U	1 U	2 U	—	100 U	240 U	510 U	—
	1/11/2007	Farallon		1.0 U	1.0 U	1.0 U	2.0 U	—	50 U	33 J	240 U	—
	8/1/2007	Farallon		0.15 J	0.092 J B	0.24 J B	0.42 J B	—	11 J B	53 J B	240 U	—
	9/17/1992	SECOR		100 U	100 U	100 U	100 U	—	—	200 U	—	—
	11/10/1993	SECOR		2 U	5 U	2 U	5 U	—	—	—	1,000 U	—
	8/8/1994	SECOR		—	—	—	—	—	—	500 U	—	—
	8/28/1996	SECOR		—	—	—	—	500 U	—	—	—	—
	11/26/1996	SECOR		—	—	—	—	500 U	—	—	—	—
	10/18/1999	D & M		—	—	—	—	—	—	200 U	200 U	—
MW-24	8/23/2000	URS	6-19.75	—	—	—	—	—	—	200 U	500 U	—
	2/16/2001	URS		—	—	—	—	—	—	200 U	200 U	—
	5/18/2005	Farallon		0.5 U	1 U	1 U	2 U	—	100 U	121 J	200 J	—
	12/14/2005	Farallon		2 U	2 U	2 U	2 U	—	100 U	390	610	—
	5/19/2006	Farallon		1 U	1 U	1 U	2 U	—	100 U	240 U	470 U	—
	1/11/2007	Farallon		1.0 U	1.0 U	1.0 U	2.0 U	—	50 U	100 J	260	—
	8/1/2007	Farallon		1 U	1 U	1 U	2 U	—	33 J B	83 J B	240 U	—
	9/17/1992	SECOR		2,000 U	2,000 U	2,000 U	2,000 U	—	—	200 U	—	—
	4/13/1993	SECOR		1 U	1 U	1 U	1 U	—	—	1,400	—	—
	11/10/1993	SECOR		2 U	5 U	2 U	5 U	—	—	—	1,000 U	—
	8/8/1994	SECOR		—	—	—	—	—	—	500 U	—	—
	8/28/1996	SECOR		—	—	—	—	500 U	—	—	—	—
	11/26/1996	SECOR		—	—	—	—	500 U	—	—	—	—
	1/23/1997	SECOR		—	—	—	—	—	—	—	500 U	—
	10/18/1999	D & M		—	—	—	—	—	—	200 U	200 U	—
	8/23/2000	URS		—	—	—	—	—	—	200 U	500 U	—
MW-25	2/16/2001	URS	6-19.75	—	—	—	—	—	—	200 U	200 U	—
	4/10/2002	Kane		—	—	—	—	—	—	250 U	400 U	—
	12/5/2002	Kane		—	—	—	—	—	—	260 U	410 U	—
	4/24/2004	Kane		—	—	—	—	—	—	200 U	320 U	—
	12/29/2004	Farallon		1 U	0.0284 J	0.087 J	2.0304 J	—	—	—	—	—
	5/18/2005	Farallon		0.5 U	1 U	1 U	2 U	—	100 U	238 U	475 U	—
	12/14/2005	Farallon		2 U	2 U	2 U	2 U	—	100 U	240 U	480 U	—
	5/19/2006	Farallon		1 U	1 U	1 U	2 U	—	100 U	240 U	480 U	—
	1/11/2007	Farallon		1.0 U	1.0 U	1.0 U	2.0 U	—	21 J B	120 U	240 U	—
	8/1/2007	Farallon		1 U	1 U	1 U	2 U	—	17 J B	64 J B	240 U	—
Source Control Evaluation Screening Level Values [7]				**22.7**	**69,100**	**48,500**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

Table 5-10
Summary of Groundwater Analytical Results for Petroleum Hydrocarbons

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter)								
				Benzene [1]	Ethylbenzene [1]	Toluene [1]	Xylenes Total [1]	TPH - Undifferentiated [2]	GRO [3]	DRO [4]	ORO [5]	MS [6]
MW-30	8/8/1994	SECOR	5-19.5	—	—	—	—	—	—	500 U	—	—
	3/7/1995	SECOR		—	—	—	—	500 U	—	—	—	—
	8/28/1996	SECOR		—	—	—	—	500 U	—	—	—	—
	11/26/1996	SECOR		—	—	—	—	500 U	—	—	—	—
	1/23/1997	SECOR		—	—	—	—	—	—	—	500 U	—
	10/18/1999	D & M		—	—	—	—	—	—	200 U	500 U	—
	2/16/2001	URS		—	—	—	—	—	—	200 U	500 U	—
	12/14/2005	Farallon		2 U	2 U	2 U	2 U	—	100 U	240 U	480 U	—
	5/19/2006	Farallon		1 U	1 U	1 U	2 U	—	100 U	240 U	480 U	—
	1/12/2007	Farallon		1.0 U	1.0 U	1.0 U	2.0 U	—	27 J B	—	—	—
	8/2/2007	Farallon		1 U	1 U	1 U	0.46 J B	—	39 J B	100 J B	240 U	—
MW-31	8/8/1994	SECOR	5-19	—	—	—	—	500 U	—	—	—	—
	3/7/1995	SECOR		—	—	—	—	600	—	—	—	—
	10/26/1995	SECOR		—	—	—	—	—	—	**540**	750 U	—
	8/28/1996	SECOR		—	—	—	—	500 U	—	—	—	—
	11/26/1996	SECOR		—	—	—	—	500 U	—	—	—	—
	1/23/1997	SECOR		—	—	—	—	—	—	—	500 U	—
	10/18/1999	D & M		—	—	—	—	—	—	200 U	200 U	—
	8/23/2000	URS		—	—	—	—	—	—	200 U	500 U	—
	2/16/2001	URS		—	—	—	—	—	—	200 U	200 U	—
	4/10/2002	Kane		—	—	—	—	—	—	250 U	400 U	—
	4/24/2004	Kane		—	—	—	—	—	—	—	—	—
	12/29/2004	Farallon		0.0826 J	1	0.0651 J	2.0798 J	—	—	—	—	—
	5/18/2005	Farallon		0.5 U	1 U	1 U	2 U	—	76.9 J	849 X2	195 J	—
	12/14/2005	Farallon		2 U	2 U	2 U	2 U	—	100 U	500	480 U	—
	5/19/2006	Farallon		1 U	1 U	1 U	2 U	—	100 U	510	480 U	—
	1/11/2007	Farallon		0.11 J	1.0 U	0.071 J	0.090 J	—	23 J B	570	150 J	—
	8/2/2007	Farallon		1 U	1 U	1 U	0.11 J B	—	27 J B	33 J B	240 U	—
MW-32	10/26/1995	SECOR	5-15	—	—	—	—	—	—	1,110	2,000	—
	10/20/1999	D & M		1U	1U	1U	3.7	—	—	200 U	500 U	—
	1/6/2000	D & M		1U	1U	1U	1U	—	—	200 U	500 U	—
	5/4/2000	D & M		1U	1U	1U	1U	—	—	200 U	500 U	—
	8/23/2000	URS		1U	1U	1U	1U	—	100 U	—	—	100 U
	12/14/2000	URS		1U	1U	1U	1U	—	100 U	200 U	500 U	100 U
	2/16/2001	URS		1U	1U	1U	2.2	—	—	200 U	500 U	—
	8/2/2007	Farallon		0.29 J	0.12 J B	0.42 J B	0.68 J B	—	88 B	420 B	91 J	—
MW-33	4/30/1993	SECOR	5-15	—	—	—	—	—	—	40,000 U	—	—
	10/26/1995	SECOR		—	—	—	—	—	—	99,200	203,000	—
MW-34	10/26/1995	SECOR	5-15	—	—	—	—	—	—	5,080	9,730	—
	10/27/1999	D & M		12	37	1U	130	—	—	3,700	500 U	—
	8/23/2000	URS		9	22	1U	97	—	1,500	—	—	100 U
	12/14/2000	URS		6.9	1.8	1U	94	—	1,700	200 U	500 U	100 U
	2/16/2001	URS		6.6	15	1U	74	—	—	200 U	500 U	—
	5/18/2005	Farallon		0.5 U	1 U	1 U	2 U	—	375	4,930 X2	690 X2	—
	12/14/2005	Farallon		2 U	2 U	2 U	2 U	—	520	3,900	490	—
	5/19/2006	Farallon		1 U	0.2 J	1 U	0.086 J	—	450	4,600	880	—
	1/12/2007	Farallon		1.0 U	0.15 J	1.0 U	0.13 J	—	230 B	9,800	2400	—
	8/2/2007	Farallon		1 U	0.11 J B	0.15 J B	0.65 J B	—	89 B	6500 B	1100	—
Source Control Evaluation Screening Level Values [7]				**22.7**	**69,100**	**48,500**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

Table 5-10
Summary of Groundwater Analytical Results for Petroleum Hydrocarbons

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) Benzene [1]	Ethylbenzene [1]	Toluene [1]	Xylenes Total [1]	TPH - Undifferentiated [2]	GRO [3]	DRO [4]	ORO [5]	MS [6]
MW-35	10/26/1995	SECOR	5-15	—	—	—	—	—	—	1,820	2,890	—
MW-36	10/20/1999	D & M	NA	1U	1U	1U	13	—	—	200 U	500 U	—
	1/6/2000	D & M		1U	1U	1U	1U	—	—	200 U	500 U	—
	5/4/2000	D & M		2.9	1U	1U	2.4	—	—	200 U	500 U	—
	8/2/2007	Farallon		1 U	1 U	1 U	2 U	—	13 J B	300 B	140 J	—
PL2-JF01A	3/10/1995	Boeing	NA	4.1	1 U	1 U	1 U	—	—	—	—	—
	9/27/1995	Boeing		5.9	1 U	1 U	1 U	—	480	—	—	—
	11/17/1995	Boeing		2.2	1 U	1 U	1 U	—	360	—	—	—
	3/1/1996	Boeing		1 U	1 U	1 U	1 U	—	250 U	—	—	—
	5/23/1996	Boeing		—	—	—	—	—	440	—	—	—
	5/23/1996	Boeing		2.2	1 U	1 U	1 U	—	450	—	—	—
	5/23/1996	Boeing		—	—	—	—	—	250 U	—	—	—
	8/26/1996	Boeing		3.9	1 U	1 U	1 U	—	460	—	—	—
	11/21/1996	Boeing		1.2	1 U	1 U	1 U	—	250 U	—	—	—
PL2-JF01AR	5/17/2001	Boeing	23-27	5 UD	5 UD	5 UD	5 UD	—	—	—	—	—
	7/25/2001	Boeing		4	1 U	1 U	3	—	—	—	—	—
	10/24/2001	Boeing		1	1 U	1 U	1 U	—	—	—	—	—
	1/21/2002	Boeing		29	92	680	156	—	—	—	—	—
	6/16/2003	Boeing		**100 U**	100 U	100 U	100 U	—	—	—	—	—
	9/2/2003	Boeing		**25 U**	25 U	25 U	25 U	—	—	—	—	—
	12/8/2003	Boeing		**30 U**	30 U	30 U	30 U	—	—	—	—	—
	12/19/2003	Boeing		5 U	20 UJ	20 UJ	20 UJ	—	—	—	—	—
	2/2/2004	Boeing		20 U	20 U	55 J	20 U	—	—	—	—	—
	5/10/2004	Boeing		**50 U**	50 U	50 U	50 U	—	—	—	—	—
	8/2/2004	Boeing		**50 U**	50 U	50 U	50 U	—	—	—	—	—
	11/1/2004	Boeing		5.6	8.5	110	32	—	—	—	—	—
	2/1/2005	Boeing		**50 UJ**	50 UJ	50 UJ	50 UJ	—	—	—	—	—
	8/1/2005	Boeing		**75 U**	75 U	75 U	75 U	—	—	—	—	—
	10/31/2005	Boeing		10 U	10 U	10 U	10 U	—	—	—	—	—
	2/6/2006	Boeing		10 U	10 U	10 U	10 U	—	—	—	—	—
	5/1/2006	Boeing		15 U	18	200	51	—	—	—	—	—
	7/31/2006	Boeing		15 U	15 U	15 U	15 U	—	—	—	—	—
	11/6/2006	Boeing		8.5	5 U	5 U	5 U	—	—	—	—	—
	2/1/2007	Boeing		5.3	23	84	40	—	—	—	—	—
	5/2/2007	Boeing		4.4	1.9	5.1	17	—	—	—	—	—
Source Control Evaluation Screening Level Values [7]				**22.7**	**69,100**	**48,500**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

Table 5-10
Summary of Groundwater Analytical Results for Petroleum Hydrocarbons

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter)								
				Benzene [1]	Ethylbenzene [1]	Toluene [1]	Xylenes Total [1]	TPH - Undifferentiated [2]	GRO [3]	DRO [4]	ORO [5]	MS [6]
PL2-JF01B	3/31/1995	Boeing	40-50	1 U	1 U	1 U	1 U	—	—	—	—	—
	9/27/1995	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	11/17/1995	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	3/1/1996	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	5/23/1996	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	8/26/1996	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	11/21/1996	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	4/26/2001	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	7/25/2001	Boeing		2 U	2 U	2 U	2 U	—	—	—	—	—
	10/24/2001	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	1/21/2002	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	6/16/2003	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	9/2/2003	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	12/8/2003	Boeing		5 U	5 U	5 U	5 U	—	—	—	—	—
	12/19/2003	Boeing		5 U	5 U	5 U	5 U	—	—	—	—	—
	2/2/2004	Boeing		5 U	5 U	5 U	5 U	—	—	—	—	—
	5/10/2004	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	8/2/2004	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	11/1/2004	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	2/1/2005	Boeing		1 UJ	1 UJ	1 UJ	1 UJ	—	—	—	—	—
	8/1/2005	Boeing		1 UJ	1 UJ	1 UJ	1 UJ	—	—	—	—	—
	10/31/2005	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	2/6/2006	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	5/1/2006	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	7/31/2006	Boeing		1 U	1 U	1 U	2 U	—	—	—	—	—
	11/6/2006	Boeing		0.2 U	0.2 U	0.2 U	0.4 U	—	—	—	—	—
	2/1/2007	Boeing		0.2 U	0.2 U	0.2 U	0.4 U	—	—	—	—	—
	5/2/2007	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
PL2-JF01C	5/17/2001	Boeing	74-78	1 UJ	1 UJ	1 UJ	1 UJ	—	—	—	—	—
	7/25/2001	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	10/24/2001	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	1/21/2002	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	6/16/2003	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	12/8/2003	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	12/19/2003	Boeing		0.2 UJ	0.2 UJ	0.2 UJ	0.4 UJ	—	—	—	—	—
	5/10/2004	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	11/1/2004	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	10/31/2005	Boeing		1 UJ	1 UJ	1 UJ	1 UJ	—	—	—	—	—
	2/6/2006	Boeing		1 UJ	1 UJ	1 UJ	1 UJ	—	—	—	—	—
	5/1/2006	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	11/6/2006	Boeing		1 U	1 U	1 U	2 U	—	—	—	—	—
	5/2/2007	Boeing		1 U	1 U	1 U	2 U	—	—	—	—	—
Source Control Evaluation Screening Level Values [7]				**22.7**	**69,100**	**48,500**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

Table 5-10
Summary of Groundwater Analytical Results for Petroleum Hydrocarbons

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter)								
				Benzene [1]	Ethylbenzene [1]	Toluene [1]	Xylenes Total [1]	TPH - Undifferentiated [2]	GRO [3]	DRO [4]	ORO [5]	MS [6]
PL2-JF02A	9/27/1995	Boeing	8-22.75	1.3	1 U	1 U	1 U	—	—	—	—	—
	11/17/1995	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	3/1/1996	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	5/23/1996	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	8/26/1996	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	11/21/1996	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	11/21/1996	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	4/26/2001	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	7/25/2001	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	10/24/2001	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	1/21/2002	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	6/16/2003	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	9/2/2003	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	12/8/2003	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	2/2/2004	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	5/10/2004	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	8/2/2004	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	11/1/2004	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	2/1/2005	Boeing		1 UJ	1 UJ	1 UJ	1 UJ	—	—	—	—	—
	8/1/2005	Boeing		1 UJ	1 UJ	1 UJ	1 UJ	—	—	—	—	—
	10/31/2005	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	2/6/2006	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	5/1/2006	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	7/31/2006	Boeing		0.2 U	0.2 U	0.2 U	0.4 U	—	—	—	—	—
	11/6/2006	Boeing		0.2 U	0.2 U	0.2 U	0.4 U	—	—	—	—	—
	2/1/2007	Boeing		0.2 U	0.2 U	0.2 U	0.4 U	—	—	—	—	—
	5/2/2007	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
Source Control Evaluation Screening Level Values [7]				**22.7**	**69,100**	**48,500**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

Table 5-10
Summary of Groundwater Analytical Results for Petroleum Hydrocarbons

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter)								
				Benzene [1]	Ethylbenzene [1]	Toluene [1]	Xylenes Total [1]	TPH - Undifferentiated [2]	GRO [3]	DRO [4]	ORO [5]	MS [6]
PL2-JF03A	9/28/1995	Boeing	8-22.75	1 U	1 U	1 U	1 U	—	—	—	—	—
	11/17/1995	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	3/1/1996	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	5/23/1996	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	8/26/1996	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	11/21/1996	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	4/26/2001	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	7/25/2001	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	10/24/2001	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	1/21/2002	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	6/16/2003	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	12/8/2003	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	5/10/2004	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	11/1/2004	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
	10/31/2005	Boeing		1 U	1 U	1 U	1 U	—	—	—	—	—
PL2-JF04A	2/18/2005	Weston	8-18	—	—	—	—	—	—	730	500 U	350
Source Control Evaluation Screening Level Values [7]				**22.7**	**69,100**	**48,500**	**NE**	**NE**	**NE**	**NE**	**NE**	**NE**

NOTES:

Results in **BOLD** indicate that the laboratory practical quantitation limit exceeds the screening level value.

Indicates detected concentration exceeds the Source Control Evaluation Screening Level Value.

[1]Analyzed by U.S. Environmental Protection Agency (EPA) Method 8020, 8021b, 8240, 8260, or 8260B.

[2]Analyzed by EPA Method 418.1 or 8015.

[3]Analyzed by EPA Method 8015 or Northwest Method NWTPH-Gx, WTPH-G, or TPH-HCID.

[4]Analyzed by EPA Method 8015 or Northwest Method NWTPH-Dx, WTPH-D, or TPH-HCID.

[5]Analyzed by Northwest Method NWTPH-Dx, WTPH-D, or TPH-HCID.

[6]Analyzed by Northwest Method NWTPH-Dx.

[7] Washington State Department of Ecology Cleanup Levels and Risk Calculations (CLARC) under the Model Toxics Control Act (MTCA) Cleanup Regulation, Standard Method B Formula Values for Surface Water, November 2001.

bgs = below ground surface
D = the reported result for this analyte was calculated based on a secondary dilution factor.
DRO = total petroleum hydrocarbons as diesel-range organics
GRO = total petroleum hydrocarbons as gasoline-range organics
NA = not available
ORO = total petroleum hydrocarbons as heavy oil-range organics
MS = total petroleum hydrocarbons as mineral spirits
J = The reported value is an estimate
TPH = total petroleum hydrocarbons
U = no detectable concentrations above the listed laboratory practical quantitation limit
XI = Contaminant does not appear to be "typical" product
X2 = Contaminant does not appear to be "typical" product
NE = not estabilshed

Table 5-11
Summary of Groundwater Analytical Results for Total and Dissolved SMS Metals

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]															
				Arsenic		Cadmium		Chromium		Copper		Lead		Mercury		Silver		Zinc	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
GP-06637	3/15/1995	Weston	14	3	2	2 U	2 U	45	5 U	47	4	8 JB	1 UJ	0.1	**0.1 U**	3 U	**3 U**	421	**91**
	3/15/1995	Weston	25	2	1 U	2 U	2 U	45	5 U	45	2 U	6 JB	1 UJ	0.1 U	**0.1 U**	3 U	**3 U**	490	**76**
	3/15/1995	Weston	45	4	1 U	2 U	2 U	19	5 U	22	2 U	4 JB	1 UJ	0.1 U	**0.1 U**	3 U	**3 U**	85	**59**
GP-06638	3/16/1995	Weston	14	10	7	2 U	2 U	70	5 U	88	2	10	1	0.1	**0.1 U**	3 U	**3 U**	654	**111**
	3/16/1995	Weston	25	4	1	2 U	2 U	70	5 U	55	2 U	8	1	0.1 U	**0.1 U**	3 U	**3 U**	2,440	**293**
	3/16/1995	Weston	45	6	1 U	2 U	2 U	82	5 U	116	2 U	8	1 U	0.1 U	**0.1 U**	3 U	**3 U**	170	18 B
GP-06639	3/16/1995	Weston	14	13	7	2 U	2 U	47 JB	9	67 J	6	8 J	1 U	0.1	**0.1 U**	3 U	**3 U**	240 J	40 B
	3/16/1995	Weston	25	2	1 U	2 U	2 U	80	5 U	67	2 U	9	1	0.5	**0.1 U**	3 U	**3 U**	137	6 B
	3/16/1995	Weston	45	3	1 U	2 U	2 U	13 B	5 U	16 B	2 U	2	1 U	0.1 U	**0.1 U**	3 U	**3 U**	29 B	4 U
GP-06640	3/15/1995	Weston	14	1 U	1 U	2 U	2 U	5 UJ	5 U	3 J	2 U	2 JB	1 J	0.1 U	**0.1 U**	3 U	**3 U**	116 J	106
	3/15/1995	Weston	25	9	2	2 U	2 U	53	5 U	45	2 U	7 JB	1 UJ	0.1 U	**0.1 U**	3 U	**3 U**	101	10 B
	3/15/1995	Weston	45	9	1 U	2 U	2 U	55	5 U	60	2 U	7 JB	1 J	0.1	**0.1 U**	3 U	**3 U**	173	68
GP-08901	9/14/1994	Boeing	14	25	24	2 U	2 U	30	5 U	16	2	7	1 U	0.2	**0.1 U**	3 U	**3 U**	38	4 U
GP-08902	9/14/1994	Weston	14	50	50	2 U	2 U	19	5 U	15	2 U	7	2	0.1 U	**0.1 U**	3 U	**3 U**	20	4 U
GP-08903	9/14/1994	Weston	14	11	9	2 U	2 U	16	5 U	19	2 U	4 UB	2	0.1 U	**0.1 U**	3 U	**3 U**	36	4
GP-08904	9/14/1994	Weston	14	3	1 U	2 U	2 U	13	5 U	12	2	3 UB	3	0.1 U	**0.1 U**	3 U	**3 U**	25	7
GP-08905	9/13/1994	Weston	14	3	2 U	2 U	2	20	5 U	17	2 U	3	2	0.1 U	**0.1 U**	3 U	**3 U**	30	6
GP-08906	11/29/1994	Weston	15	25	16	2 U	2 U	42 UB	5 U	51	2 UB	12	3 UB	0.1	**0.1 U**	3 U	**3 U**	65 UB	4 UB
	11/29/1994	Weston	25	4	4	2 U	2 U	6 UB	5 U	5 UJB	2 U	3 UB	1 UB	0.1 U	**0.1 U**	3 U	**3 U**	13 UB	4 U
	11/29/1994	Weston	45	3	1	2 U	2 U	15 UB	5 U	19	2 U	4 UB	1 UB	0.1 U	**0.1 U**	3 U	**3 U**	27 UB	5 UB
	11/29/1994	Weston	65	6	1 U	2 U	2 U	30 UB	5 U	16	2 U	4 UB	1 U	0.1 U	**0.1 U**	3 U	**3 U**	27 UB	4 U
GP-08907	11/28/1994	Weston	15	10	7	2 U	2 U	100	5 U	100	3	16	3 UB	0.2	**0.1 U**	3 U	**3 U**	188	9
	11/28/1994	Weston	25	8	4	2 U	2 U	60	5 U	62	2 U	9	2 UB	0.1	**0.1 U**	3 U	**3 U**	109	6
	11/28/1994	Weston	45	3	1 U	2 U	2 U	23	5 U	26	2 U	6	3 UB	0.1 U	**0.1 U**	3 U	**3 U**	39	4
	11/29/1994	Weston	63	18	1 U	2 U	2 U	301	5 U	350	2 U	29	3 UB	0.3	**0.1 U**	3 U	**3 U**	430	4 UB
GP-08908	3/17/1995	Boeing	14	4	1	2 U	2 U	18	5 U	25	2 U	4	1 U	0.1 U	**0.1 U**	3 U	**3 U**	43	4
	3/17/1995	Boeing	25	9	6	2 U	2 U	14	5 U	20	6	4	1	0.1 U	**0.1 U**	3 U	**3 U**	34	7
	3/17/1995	Boeing	45	1 U	1 U	2 U	2 U	5	5 U	6	2 U	1	1	0.1 U	**0.1 U**	3 U	**3 U**	16	4 U
GP-09101	9/12/1994	Weston	15	24	23	2 U	2 U	11	6	6	2 U	3 UB	3 UB	0.1 U	**0.1 U**	3 U	**3 U**	9 UB	7
GP-09102	9/8/1994	Weston	14	30	34	2 U	2 U	5 U	5 U	2 U	2 U	3 UB	2	0.1 U	**0.1 U**	3 U	**3 U**	7	5
GP-09103	9/8/1994	Boeing	14	8	7	2 U	2 U	9	5 U	9	2 U	4 UB	4	0.1 U	**0.1 U**	3 U	**3 U**	20	4
GP-09104	11/23/1994	Weston	15	21	7	2	2 U	307	7	517	2 U	83	2	0.9	**0.1 U**	3 U	**3 U**	527	4 U
	11/23/1994	Weston	25	4	1 U	2 U	2 U	73	5 U	65	2 U	10	2	0.1 U	**0.1 U**	3 U	**3 U**	123	4 U
	11/23/1994	Weston	45	10	1	2 U	2 U	60	5 U	101	2 U	8 UB	1 U	0.1 U	**0.1 U**	3 U	**3 U**	98	4 U
Source Control Evaluation Screening Level Values[2]				**NE**	**227**	**NE**	**2.6**	**NE**	**306**	**NE**	**123**	**NE**	**11**	**NE**	**0.0052**	**NE**	**1.5**	**NE**	**33**

Table 5-11
Summary of Groundwater Analytical Results for Total and Dissolved SMS Metals

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]															
				Arsenic		Cadmium		Chromium		Copper		Lead		Mercury		Silver		Zinc	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
GP-09105	11/23/1994	Weston	15	61	92	2 U	2 U	300	5 U	398	2 U	59	2	0.8	**0.1 U**	3 U	**3 U**	509	4 U
	11/23/1994	Weston	25	2	1 U	2 U	2 U	34	5 U	39	2 U	7 UB	2	0.1 U	**0.1 U**	3 U	**3 U**	54	4 U
	11/23/1994	Weston	45	3	1 U	2 U	2 U	51	5 U	122	2 U	7 UB	1	0.1 U	**0.1 U**	3 U	**3 U**	92	7
GP-09106	3/14/1995	Weston	14	46	31	2 U	2 U	5 U	28	3	43	7	7	0.1 U	**0.1 U**	3 U	**3 U**	4 U	46
	3/14/1995	Weston	25	4	1 U	2 U	2 U	48	5 U	40	2 U	6	1 U	0.1 U	**0.1 U**	3 U	**3 U**	71	4 U
	3/14/1995	Weston	45	5	1 U	2 U	2 U	29	5 U	25	2 U	5	1 U	0.3	**0.1 U**	3 U	**3 U**	54	4 U
GP-09107	3/14/1995	Weston	14	86	76	2 U	2 U	45	5 U	53	2 U	9	1 U	0.2	**0.1 U**	3 U	**3 U**	73	4 U
	3/14/1995	Weston	25	2	1 U	2 U	2 U	69	5 U	63	2 U	11	1 U	0.1	**0.1 U**	3 U	**3 U**	108	4 U
	3/14/1995	Weston	45	4	1 U	2 U	2 U	66	5 U	97	2 U	7	1 U	0.1 U	**0.1 U**	3 U	**3 U**	78	4 U
GP-09108	3/14/1995	Weston	14	85	72	2 U	2 U	47	6	56	3	8	1	0.1	**0.1 U**	3 U	**3 U**	66	4 U
	3/14/1995	Weston	25	3	2	2 U	2 U	21	5 U	12	2 U	4	1 U	0.1 U	**0.1 U**	3 U	**3 U**	27	4 U
	3/14/1995	Weston	45	4	1 U	2 U	2 U	8	5 U	13	2 U	4	1 U	0.1 U	**0.1 U**	3 U	**3 U**	16	4 U
GP-09109	3/15/1995	Weston	14	13	11	2 U	2 U	38	15	37	7	6 JB	1 J	0.1 U	**0.1 U**	3 U	**3 U**	39 B	6 B
	3/15/1995	Weston	25	12	8	2 U	2 U	40	5 U	37	2 U	8 JB	1 UJ	0.1 U	**0.1 U**	3 U	**3 U**	79	4 U
	3/15/1995	Weston	45	4	1 U	2 U	2 U	30	5 U	46	2 U	8 JB	1 UJ	0.1 U	**0.1 U**	3 U	**3 U**	50 B	5 B
GP-09110	9/19/1995	Weston	15	14	14	2 U	2 U	19	17	15	7	4 UB	4 UB	0.1 U	**0.1 U**	3 U	**3 U**	10	5
	9/19/1995	Weston	25	1 U	1	2 U	2 U	6	5 U	6	2 U	2 UB	1 UB	0.1 U	**0.1 U**	3 U	**3 U**	15	4 U
	9/19/1995	Weston	45	1	1	2 U	2 U	5 U	5 U	3	2 U	2 UB	2 UB	0.1 U	**0.1 U**	3 U	**3 U**	7	4 U
GP-09111	9/20/1995	Weston	15	12	9	2 U	2 U	45 UB	20	63	14 UB	10	2 UB	0.1 U	**0.1 U**	3 U	**3 U**	66 UB	4 U
	9/20/1995	Weston	25	2	2	2 U	2 U	5 U	5 U	3	2 U	2	1 U	0.1 U	**0.1 U**	3 U	**3 U**	7 UB	4 U
	9/20/1995	Weston	45	1	1 U	2 U	2 U	5 U	5 U	3	2 U	2	1 UB	0.1 U	**0.1 U**	3 U	**3 U**	4 U	4 U
GP-09112	9/19/1995	Weston	15	29	32	2 U	2 U	33	5 U	30	2 U	8	1 U	0.1 U	**0.1 U**	3 U	**3 U**	59	4 U
	9/19/1995	Weston	25	1 U	1	2 U	2 U	9	5 U	9	2 U	2 UB	1 U	0.1 U	**0.1 U**	3 U	**3 U**	13	4 U
	9/19/1995	Weston	45	3	1	2 U	2 U	17	5 U	25	2	5 UB	1 UB	0.1 U	**0.1 U**	3 U	**3 U**	29	4 U
GP-09113	9/19/1995	Weston	15	4	2	2 U	2 U	25	5 U	45	2 U	12	2 UB	0.1 U	**0.1 U**	3 U	**3 U**	44	4 U
	9/19/1995	Weston	25	49	46	2 U	2 U	5 U	5 U	3	2 U	3 UB	1 U	0.1 U	**0.1 U**	3 U	**3 U**	6	4 U
	9/19/1995	Weston	45	1 U	1	2 U	2 U	5 U	5 U	4	2 U	2 UB	1 U	0.1 U	**0.1 U**	3 U	**3 U**	6	4 U
GP-09114	9/20/1995	Weston	15	6	2	2 U	2 U	14 UB	7	16	3 UB	6	2 UB	0.1 U	**0.1 U**	3 U	**3 U**	33 UB	4 U
	9/20/1995	Weston	25	11	4	2 U	2 U	13 UB	5 U	15	2 U	8	8	0.1 U	**0.1 U**	3 U	**3 U**	37 UB	4 U
	9/20/1995	Weston	45	2	1	2 U	2 U	5 U	8	6	2 UB	1	3 UB	0.1 U	**0.1 U**	3 U	**3 U**	14 UB	4 U
GP-09115	9/19/1995	Weston	15	8	5 U	2 U	2 U	5 U	5 U	5	2 U	9	6	0.1 U	**0.1 U**	3 U	**3 U**	11 UB	4 U
	9/19/1995	Weston	25	10	7	2 U	2 U	5	5 U	5	2 U	2	1 UB	0.1 U	**0.1 U**	3 U	**3 U**	12 UB	4 U
	9/19/1995	Weston	45	1	1 U	2 U	2 U	5 U	5 U	5	2 U	1	2 UB	0.1 U	**0.1 U**	3 U	**3 U**	9 UB	4 U
Source Control Evaluation Screening Level Values[2]				**NE**	**227**	**NE**	**2.6**	**NE**	**306**	**NE**	**123**	**NE**	**11**	**NE**	**0.0052**	**NE**	**1.5**	**NE**	**33**

Table 5-11
Summary of Groundwater Analytical Results for Total and Dissolved SMS Metals

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]															
				Arsenic		Cadmium		Chromium		Copper		Lead		Mercury		Silver		Zinc	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
MW-9	3/24/1992	SECOR	5-20	—	—	—	—	—	—	110	—	—	—	—	—	—	—	90	—
MW-11	3/24/1992	SECOR	5-20	—	—	—	—	—	—	38	—	—	—	—	—	—	—	78	—
MW-13	9/10/1992	SECOR	5-20	19	—	0.1 U	—	90	—	—	—	30	—	—	—	—	—	—	—
MW-23	11/20/1992	SECOR	6-15.75	50 U	—	25 U	—	100 U	—	100 U	—	500 U	—	500 U	—	100 U	—	100 U	—
PL2-JF01A	3/10/1995	Boeing	NA	1	1	2 U	2 U	5 U	5 U	2 U	2 U	1 UB	1 UB	0.1 U	**0.1 U**	3 U	**3 U**	4 U	5
	9/27/1995	Boeing		2	—	2 U	—	5 U	—	2 U	—	1 UB	—	0.1 U	—	3 U	—	4 U	—
	11/17/1995	Boeing		1 U	—	2 U	—	5 U	—	2 U	—	1 U	—	0.1 U	—	3 U	—	4 U	—
	3/1/1996	Boeing		1	—	2 U	—	5 U	—	2	—	2 UB	—	0.1 U	—	3 U	—	4 U	—
	5/23/1996	Boeing		2	—	2 U	—	5 U	—	2 U	—	1 U	—	0.1 U	—	3 U	—	4 U	—
	8/26/1996	Boeing		1 U	—	2 U	—	5 U	—	2 U	—	1 U	—	0.1 U	—	3 U	—	4	—
	11/21/1996	Boeing		1 U	—	2 U	—	5 U	—	2 U	—	1 U	—	0.1 U	—	3 U	—	4 U	—
PL2-JF01AR	5/17/2001	Boeing	23-27	0.5 U	0.5 U	2 U	2 U	5 U	5 U	2	0.5 U	1 U	1 U	0.000917	0.000401 J	0.5 UJ	0.5 UJ	8	6 UJ
	7/25/2001	Boeing		0.7	0.5 U	2 U	2 U	5 U	5 U	0.5 U	0.5 U	1 U	1 U	0.000544 J	0.000588 J	0.5 U	0.5 U	6 U	6 U
	10/24/2001	Boeing		0.8	1 U	2 U	2 U	5 U	5 U	0.6	0.5	1 U	1 U	0.000334 J	0.000296 J	0.5 U	0.5 U	6 U	6 U
	1/21/2002	Boeing		0.6	0.7	2 U	2 U	5 U	5 U	0.5 U	0.5	1 U	1 U	0.000227 J	0.000254 J	0.5 U	2 U	6 U	6 U
	6/16/2003	Boeing		0.5 U	0.4	2 U	2 U	5 U	5 U	0.5 U	0.5	1 U	1 U	0.025 U	**0.025 U**	0.5 U	0.5 U	6 U	6 U
	9/2/2003	Boeing		0.4	0.4	2 U	2 U	5 U	5 U	0.9	0.9	1 U	1 U	0.025 U	**0.025 U**	0.5 U	0.5 U	4	6
	12/8/2003	Boeing		0.4	0.3	2 U	2 U	5 U	5 U	0.7	0.5 U	1 U	1 U	0.025 U	**0.025 U**	0.5 U	0.5 U	6 U	6 U
	12/19/2003	Boeing		0.3	—	2 U	—	5 U	—	0.6	—	1 U	—	0.025 U	—	0.5 U	—	6 U	—
	2/2/2004	Boeing		0.4	0.5 U	2 U	2 U	6	8	1	0.5	1 U	1 U	0.025 U	**0.025 U**	0.5 U	0.5 U	6 U	6 U
	5/10/2004	Boeing		0.4	0.4	2 U	2 U	5 U	5 U	0.5 U	0.5 U	1 U	1 U	0.025 U	**0.025 U**	0.5 U	0.5 U	6 U	6 U
	8/2/2004	Boeing		0.4	0.4	2 U	2 U	5 U	5 U	0.5 U	0.5 U	1 U	1 U	0.025 U	**0.025 U**	0.2 U	0.2 U	6 U	6 U
	11/1/2004	Boeing		0.5 U	0.8	2 U	2 U	5 U	5 U	0.7 U	0.5 U	1 U	1 U	0.025 U	**0.025 U**	0.2 U	0.2 U	6 U	6 U
	2/1/2005	Boeing		0.4	0.5 U	2 U	2 U	5 U	5 U	0.5	0.5 U	1 U	1 U	0.025 U	**0.025 U**	0.2 U	0.2 U	7	6 U
	8/1/2005	Boeing		0.4	0.5	2 U	2 U	6	6	1.4 U	0.5 U	1 U	1 U	0.025 U	**0.025 U**	0.2 U	0.2 U	6 U	6 U
	10/31/2005	Boeing		0.5 U	0.5 U	2 U	2 U	5 U	5 U	0.5 U	0.5 U	1 U	1 U	0.02 U	**0.02 U**	0.2 U	0.2 U	6 U	6 U
	2/6/2006	Boeing		0.5 U	1.8	2 U	2 U	5 U	5 U	0.5 U	1	1 U	2 U	0.025 U	**0.025 U**	0.2 U	0.5 U	6 U	6 U
	5/1/2006	Boeing		0.5 U	0.4	2 U	2 U	5 U	5 U	0.5 U	0.7	1 U	1 U	0.02U	**0.02 U**	0.2 U	0.5 U	6 U	6 U
	7/31/2006	Boeing		0.4	0.4	2 U	2 U	5 U	5 U	0.5 U	0.5 U	1 U	1 U	0.02 U	**0.02 U**	0.2	0.2 U	6 U	6 U
	11/6/2006	Boeing		1 U	0.8	2 U	2 U	6	5	1 U	1 U	2 U	2 U	0.02 U	**0.02 U**	0.5 U	0.5 U	12	6 U
	2/1/2007	Boeing		0.5	1.7	0.5 U	0.5 U	2	1 U	1 U	2	2 U	2 U	0.02 U	**0.02 U**	0.5 U	0.5 U	10	10 U
	5/2/2007	Boeing		0.4	0.5 U	2 U	2 U	5 U	5 U	0.5 U	0.5 U	1 U	1 U	0.02 U	**0.02 U**	0.2 U	0.2 U	10	10 U
Source Control Evaluation Screening Level Values[2]				**NE**	**227**	**NE**	**2.6**	**NE**	**306**	**NE**	**123**	**NE**	**11**	**NE**	**0.0052**	**NE**	**1.5**	**NE**	**33**

Table 5-11
Summary of Groundwater Analytical Results for Total and Dissolved SMS Metals

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]															
				Arsenic		Cadmium		Chromium		Copper		Lead		Mercury		Silver		Zinc	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
PL2-JF01B	3/31/1995	Boeing	40-50	1 U	1	2 U	2 U	5 U	5 U	2 U	2 U	1 U	1 U	0.1 U	0.1 U	3 U	**3 U**	4 U	4 U
	9/27/1995	Boeing		2	—	2 U	—	5 U	—	2 U	—	1 UB	—	0.1 U	—	3 U	—	4 U	—
	11/17/1995	Boeing		1 U	—	2 U	—	5 U	—	2 U	—	1	—	0.1 U	—	3 U	—	4 U	—
	3/1/1996	Boeing		1 U	—	2 U	—	5 U	—	2 U	—	4 UB	—	0.1 U	—	3 U	—	4 U	—
	5/23/1996	Boeing		1	—	2 U	—	5 U	—	2 U	—	1 U	—	0.1 U	—	3 U	—	4 U	—
	8/26/1996	Boeing		1 U	—	2 U	—	5 U	—	2 U	—	1 U	—	0.1 U	—	3 U	—	4 U	—
	11/21/1996	Boeing		1 U	—	2 U	—	5 U	—	2 U	—	1	—	0.1 U	—	3 U	—	4 U	—
	4/26/2001	Boeing		1	1	2 U	2 U	5 U	5 U	2.5 B	1.1	1 U	1 U	0.0002 U	0.0002 U	0.5 UJ	0.5 UJ	6 UJ	6 UJ
	7/25/2001	Boeing		1 U	1 U	2 U	2 U	5 U	5 U	3	1	2 U	2 U	0.0002 UJ	0.0002 UJ	1 U	1 U	6 U	6 U
	10/24/2001	Boeing		2.9	2 U	2 U	2 U	5 U	5 U	1.5	1.2	1 U	1 U	0.000274 J	0.0002 U	0.5 U	0.5 U	6 U	6 U
	1/21/2002	Boeing		2	1	2 U	2 U	5 U	5 U	1	1	2 U	2 U	0.0002 U	0.000234 J	2	1 U	6 U	6 U
	6/16/2003	Boeing		0.5 U	0.5 U	2 U	2 U	5 U	5 U	1.8	0.8	1 U	1 U	0.025 U	**0.025 U**	0.5 U	0.5 U	6 U	6 U
	9/2/2003	Boeing		2.2	3.5	2 U	2 U	5 U	5 U	1.7	1.5	1 U	1 U	0.025 U	**0.025 U**	0.5 U	0.5 U	4 U	4 U
	12/8/2003	Boeing		1 U	1 U	2 U	2 U	5 U	5 U	1 U	1 U	2 U	2 U	0.025 U	**0.025 U**	1 U	1 U	6 U	6 U
	12/19/2003	Boeing		1.6	—	2 U	—	5 U	—	3	—	2 U	—	0.025 U	—	1 U	—	16	—
	2/2/2004	Boeing		1	0.5 U	2 U	2 U	5 U	5 U	4.4	1.7	1 U	1 U	0.025 U	**0.025 U**	0.5 U	0.5 U	9	6 U
	5/10/2004	Boeing		1 U	1 U	4 U	**4 U**	10 U	10 U	2	1 U	2 U	2 U	0.0365	**0.025 U**	1 U	1 U	10 U	10 U
	8/2/2004	Boeing		0.7	1.3	2 U	2 U	5 U	5 U	2 U	1.4 U	1 U	1 U	0.025 U	**0.025 U**	0.2 U	0.2 U	6 U	6 U
	11/1/2004	Boeing		2.2	2.4	2 U	2 U	5 U	5 U	2	2	2 U	2 U	0.025 U	**0.025 U**	0.5 U	0.5 U	6 U	6
	2/1/2005	Boeing		1 U	1 U	2 U	2 U	5 U	5 U	2	2	2 U	2 U	0.025 U	**0.025 U**	0.5 U	0.4 U	6 U	6 U
	8/1/2005	Boeing		0.5	0.6	2 U	2 U	10	12	1.7 U	1.3 U	1 U	1 U	0.025 U	**0.025 U**	0.2 U	0.2 U	6 U	6 U
	10/31/2005	Boeing		2 U	2 U	2 U	2 U	5 U	5 U	2 U	2 U	5 U	5 U	0.02 U	**0.02 U**	1 U	1 U	6 U	6 U
	2/6/2006	Boeing		0.7	1	2 U	**10 U**	5 U	20 U	1.3	4	1 U	5 U	0.025 U	**0.025 U**	0.2 U	1 U	6 U	30 U
	5/1/2006	Boeing		1 U	1 U	2 U	2 U	5 U	5 U	3	3	2 U	2 U	0.02 U	**0.02 U**	0.5 U	0.5 U	6 U	6 U
	7/31/2006	Boeing		1.6	1 U	2 U	2 U	5 U	5 U	2	1 U	2 U	2 U	0.02 U	**0.02 U**	0.5 U	0.5 U	6 U	6 U
	11/6/2006	Boeing		2.4	1.8	2 U	2 U	8	8	2	1	2 U	2 U	0.02 U	**0.02 U**	0.5 U	0.5 U	6 U	6 U
	2/1/2007	Boeing		2	1 U	0.5 U	0.5 U	1 U	1 U	1 U	1 U	2 U	2 U	0.02 U	**0.02 U**	0.5 U	0.5 U	10 U	10 U
	5/2/2007	Boeing		0.5 U	0.5 U	2 U	2 U	5 U	5 U	1.3 U	1.1 U	1 U	1 U	0.02 U	**0.02 U**	0.2 U	0.2 U	10 U	10 U
Source Control Evaluation Screening Level Values[2]				**NE**	**227**	**NE**	**2.6**	**NE**	**306**	**NE**	**123**	**NE**	**11**	**NE**	**0.0052**	**NE**	**1.5**	**NE**	**33**

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Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]															
				Arsenic		Cadmium		Chromium		Copper		Lead		Mercury		Silver		Zinc	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
PL2-JF01C	5/17/2001	Boeing	74-78	8	4	4 U	**4 U**	10	10 U	30	2 U	5 U	5 U	0.0248	0.0002 U	2 UJ	**2 UJ**	130	60
	7/25/2001	Boeing		3	2 U	2 U	2 U	8	5 U	23	2 U	5 U	5 U	0.0224 J	0.0002 UJ	2 U	**2 U**	48	6 U
	10/24/2001	Boeing		10	6	2 U	2 U	5 U	5 U	14	3	5 U	5 U	0.0082	0.00045 J	2 U	**5 U**	18	6 U
	1/21/2002	Boeing		5 U	6	2 U	2 U	5 U	5 U	15	5 U	10 U	10 U	0.0114	0.0002 U	5 U	**5 U**	20	6 U
	6/16/2003	Boeing		6	3	4 U	**4 U**	10 U	10 U	36	2 U	5 U	5 U	0.025 U	**0.025 U**	2 U	**2 U**	50	10 U
	12/8/2003	Boeing		4	2 U	4 U	**4 U**	10	10 U	28	2 U	5 U	5 U	0.0276	**0.025 U**	2 U	**2 U**	30	10 U
	12/19/2003	Boeing		4	—	4 U	—	10 U	—	3	—	5 U	—	0.025 U	—	2 U	—	20	—
	11/1/2004	Boeing		—	—	4 U	**4 U**	10 U	10 U	20	4	6	5 U	0.025 U	**0.025 U**	1 U	1 U	10	10 U
	11/3/2004	Boeing		0.4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	10/31/2005	Boeing		2.15	0.297	4 U	**4 U**	10 U	10 U	28	2 U	**17**	5 U	0.02 U	**0.02 U**	1 U	1 U	30	10 U
	2/6/2006	Boeing		1.72	0.291	10 U	2 U	20 U	5 U	19.7	1.3 U	10	1 U	0.025 U	**0.025 U**	0.2 U	0.2 U	30 U	7
	11/6/2006	Boeing		0.912	0.174	4 U	**4 U**	10	10 U	13	2	2 U	2 U	0.02 U	**0.02 U**	0.8	0.5 U	10 U	10 U
Source Control Evaluation Screening Level Values[2]				**NE**	**227**	**NE**	**2.6**	**NE**	**306**	**NE**	**123**	**NE**	**11**	**NE**	**0.0052**	**NE**	**1.5**	**NE**	**33**

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Summary of Groundwater Analytical Results for Total and Dissolved SMS Metals

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]															
				Arsenic		Cadmium		Chromium		Copper		Lead		Mercury		Silver		Zinc	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
	9/27/1995	Boeing		5	—	2 U	—	5 U	—	2 U	—	2 UB	—	0.1 U	—	3 U	—	4 U	—
	11/17/1995	Boeing		2	—	2 U	—	5 U	—	2 U	—	1	—	0.1 U	—	3 U	—	4 U	—
	3/1/1996	Boeing		4	—	2 U	—	5 U	—	2 U	—	1 U	—	0.1 U	—	3 U	—	4 U	—
	5/23/1996	Boeing		4	—	2 U	—	5 U	—	2 U	—	1 U	—	0.1 U	—	3 U	—	4 U	—
	8/26/1996	Boeing		4	—	2 U	—	5 U	—	2 U	—	1	—	0.1 U	—	3 U	—	5	—
	11/21/1996	Boeing		2	—	2 U	—	5 U	—	2 U	—	1 U	—	0.1 U	—	3 U	—	4 U	—
	11/21/1996	Boeing		2	—	2 U	—	5 U	—	2 U	—	1 U	—	0.1 U	—	3 U	—	4 U	—
	4/26/2001	Boeing		0.7	0.4	2 U	2 U	5 U	5 U	4.6 B	0.6	1 U	1 U	0.00104	0.00103	0.5 UJ	0.5 UJ	6 UJ	6 UJ
	7/25/2001	Boeing		0.9	0.7	2 U	2 U	5 U	5 U	0.7	0.5 U	1 U	1 U	0.000899 J	0.000964 J	0.5 U	0.5 U	6 U	6 U
	10/24/2001	Boeing		0.5 U	0.5 U	2 U	2 U	5 U	5 U	0.5 U	0.5 U	1 U	1 U	0.000668	0.00064	0.5 U	0.5 U	6 U	6 U
	1/21/2002	Boeing		3.8	3.9	2 U	2 U	5 U	5 U	1.7	1.5	1 U	1 U	0.00177	0.00084	0.5 U	0.5 U	6 U	6 U
	6/16/2003	Boeing		0.5 U	0.5	2 U	2 U	5 U	5 U	0.9	1	1 U	1 U	0.025 U	**0.025 U**	0.5 U	0.5 U	6 U	9
	9/2/2003	Boeing		0.5 U	0.8	2 U	2 U	5 U	5 U	1.1	0.8	1 U	1 U	0.025 U	**0.025 U**	0.5 U	0.5 U	4 U	4 U
PL2-JF02A	12/8/2003	Boeing	8-22.75	1	0.8	2 U	2 U	5 U	5 U	0.9	0.6	1 U	1 U	0.025 U	**0.025 U**	0.5 U	0.5 U	6 U	6 U
	2/2/2004	Boeing		1.4	0.8	2 U	2 U	6	6	1.2	0.7	1 U	1 U	0.025 U	**0.025 U**	0.5 U	0.5 U	6 U	6 U
	5/10/2004	Boeing		1.1	0.6	2 U	2 U	5 U	5 U	1.3	0.5 U	1 U	1 U	0.025 U	**0.025 U**	0.5 U	0.5 U	6 U	6 U
	8/2/2004	Boeing		1.1	1	2 U	2 U	5 U	5 U	1.6	0.7	1 U	1 U	0.025 U	**0.025 U**	0.2 U	0.2 U	6 U	6 U
	11/1/2004	Boeing		1.3	0.4	2 U	2 U	5 U	5 U	1 U	0.5 U	1 U	1 U	0.025 U	**0.025 U**	0.2 U	0.2 U	6 U	6 U
	2/1/2005	Boeing		1.1	0.3	2 U	2 U	5 U	5 U	1.1	0.5 U	1 U	1 U	0.025 U	**0.025 U**	0.2 U	0.2 U	7	6 U
	8/1/2005	Boeing		0.4	0.4	2 U	2 U	6	6	2	0.5 U	1 U	1 U	0.025 U	**0.025 U**	0.2 U	0.2 U	6 U	6 U
	10/31/2005	Boeing		0.5	0.2	2 U	2 U	5 U	5 U	0.7	0.6	1 U	1 U	0.02 U	**0.02 U**	0.2 U	0.2 U	10	6 U
	2/6/2006	Boeing		0.9	0.5 U	2 U	2 U	5 U	5 U	0.7 U	0.5 U	1 U	1 U	0.025 U	**0.025 U**	0.2 U	0.2 U	6 U	7
	5/1/2006	Boeing		0.4	0.3	2 U	2 U	5 U	5 U	1	0.6	1 U	1 U	0.02 U	**0.02 U**	0.2 U	0.2 U	6 U	6 U
	7/31/2006	Boeing		0.5	0.2	2 U	2 U	5 U	5 U	1.8	0.6	1 U	1 U	0.02 U	**0.02 U**	0.2 U	0.2 U	12	6 U
	11/6/2006	Boeing		0.5 U	0.5 U	2 U	2 U	5	5 U	1	1 U	2 U	2 U	0.02 U	**0.02 U**	0.5 U	0.5 U	12	6 U
	2/1/2007	Boeing		0.5 U	0.5 U	0.5 U	0.5 U	1 U	1 U	1 U	1 U	2 U	2 U	0.02 U	**0.02 U**	0.5 U	0.5 U	10 U	10 U
	5/2/2007	Boeing		0.4	0.3	2 U	2 U	5 U	5 U	0.5 U	1.3	1 U	1 U	0.02 U	**0.02 U**	0.2 U	0.2 U	10 U	10 U
Source Control Evaluation Screening Level Values[2]				**NE**	**227**	**NE**	**2.6**	**NE**	**306**	**NE**	**123**	**NE**	**11**	**NE**	**0.0052**	**NE**	**1.5**	**NE**	**33**

Table 5-11
Summary of Groundwater Analytical Results for Total and Dissolved SMS Metals

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]															
				Arsenic		Cadmium		Chromium		Copper		Lead		Mercury		Silver		Zinc	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
PL2-JF03A	9/28/1995	Boeing	8-22.75	2	—	2 U	—	5 U	—	2 U	—	1 U	—	0.1 U	—	3 U	—	4 U	—
	11/17/1995	Boeing		2	—	2 U	—	5 U	—	2 U	—	1	—	0.1 U	—	3 U	—	4 U	—
	3/1/1996	Boeing		1 U	—	2 U	—	5 U	—	2 U	—	1 U	—	0.1 U	—	3 U	—	4 U	—
	5/23/1996	Boeing		1	—	2 U	—	5 U	—	8	—	2	—	0.1 U	—	3 U	—	7	—
	8/26/1996	Boeing		1	—	2 U	—	5 U	—	7	—	2	—	0.1 U	—	3 U	—	14	—
	11/21/1996	Boeing		1 U	—	2 U	—	5 U	—	2 U	—	1 U	—	0.1 U	—	3 U	—	4 U	—
	4/26/2001	Boeing		0.4	0.4	2 U	2 U	5 U	5 U	2.2 B	2.9	1 U	1 U	0.000426 J	0.0002 U	0.5 UJ	0.5 UJ	14	6 UJ
	7/25/2001	Boeing		0.6	0.6	2 U	2 U	5 U	5 U	0.7	0.5 U	2	1 U	0.00514 J	0.0002 UJ	0.5 U	0.5 U	6 U	6 U
	10/24/2001	Boeing		0.7	0.6	2 U	2 U	5 U	5 U	0.5 U	0.5 U	1 U	1 U	0.0002 U	0.000283 J	0.5 U	0.5 U	6 U	6 U
	1/21/2002	Boeing		0.8	0.8	2 U	2 U	5 U	5 U	1	0.6	1 U	1 U	0.000422 J	0.0002 U	0.5 U	0.5 U	6 U	6 U
	6/16/2003	Boeing		1.1	1	2 U	2 U	5 U	5 U	1.3	0.5 U	1 U	1 U	0.025 U	**0.025 U**	0.5 U	0.5 U	6 U	6 U
	12/8/2003	Boeing		0.4	0.4	2 U	2 U	5 U	5 U	2.1	0.5 U	1 U	1 U	0.025 U	**0.025 U**	0.5 U	0.5 U	6 U	6 U
	11/1/2004	Boeing		0.5	0.5	2 U	2 U	5 U	5 U	2.1	0.6 U	1 U	1 U	0.025 U	**0.025 U**	0.2 U	0.2 U	6 U	6 U
	10/31/2005	Boeing		—	—	5 U	**5 U**	—	—	1 U	1 U			0.02 U	**0.02 U**	0.2 U	0.2 U	6 U	6 U
Seep Sample																			
Seep 20	7/1/2004	Windward	NA	1.58	1.35	0.114	0.111	11.4 U	8.8 U	10.2 J	8.16 J	1.44	0.096	0.00061	0.00062	0.086	0.112	10.8	8.08
Source Control Evaluation Screening Level Values[2]				**NE**	**227**	**NE**	**2.6**	**NE**	**306**	**NE**	**123**	**NE**	**11**	**NE**	**0.0052**	**NE**	**1.5**	**NE**	**33**

NOTES:

Results in **BOLD** indicate that the laboratory practical quantitation limit exceeds the screening level value.

[Shaded cell] Indicates detected concentration exceeds the Source Control Evaluation Screening Level Value.

[1] Analyzed by U.S. Environmental Protection Agency 6000/7000 Series Methods.

[2] SAIC. 2007. Draft Source Control Action Plan - Slip 4 Duwamish Waterway. Prepared for the Washington State Department of Ecology. February 2007.

— = not analyzed

B = the analyte was detected in the associated method blank.

bgs = below ground surface

J = denotes result reported is an estimate

NA = not available

NE = not established

U = no detectable concentrations above the listed laboratory practical quantitation limit

Table 5-12
Summary of Groundwater Analytical Results for Total and Dissolved Non-SMS Metals

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter)[1]																		
				Aluminum		Antimony		Barium		Beryllium		Bromide	Cobalt		Nickel		Selenium		Thallium		Vanadium	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
GP-06637	3/15/1995	Weston	14	52,700	150	1 U	1 U	167	6 B	1	1 U	—	9	3 U	110	60	50 U	**50 U**	50 U	50 U	184	27
	3/15/1995	Weston	25	46,500	50	1	1	181	13	1 U	1 U	—	16	3 U	30	**10 U**	50 U	**50 U**	50 U	50 U	133	12
	3/15/1995	Weston	45	17,600	40	3	2	55	10 B	1 U	1 U	—	6	3 U	10	10	50 U	**50 U**	50 U	50 U	39	2 U
GP-06638	3/16/1995	Weston	14	72,800	180	1 U	2	229	5	1	1 U	—	14	3 U	50	10	50 U	**50 U**	50 U	50 U	212	12
	3/16/1995	Weston	25	70,300	200	1	2	292	12	1 U	1 U	—	25	3 U	50	**10 U**	50 U	**50 U**	50 U	50 U	213	18
	3/16/1995	Weston	45	51,300	60	2	2	151	10	1 U	1 U	—	17	3 U	60	**10 U**	50 U	**50 U**	50 U	50 U	105	6
GP-06639	3/16/1995	Weston	14	39,100 J	310 J	2	2	166 J	16	1 U	1 U	—	10	3 U	30	**10 U**	50 U	**50 U**	50 U	50 U	177 J	54
	3/16/1995	Weston	25	81,100	60	1 U	1	279	11	1 U	1 U	—	23	3 U	50	**10 U**	50 U	**50 U**	50 U	50 U	201	5
	3/16/1995	Weston	45	11,700	50	1 U	1	41	6	1 U	1 U	—	5	3 U	10	**10 U**	50 U	**50 U**	50 U	50 U	32	5
GP-06640	3/15/1995	Weston	14	2,320 J	20	1	2 U	31 J	23	1 U	1 U	—	12 J	10	20 J	20	50 U	**50 U**	50 U	50 U	25 J	20
	3/15/1995	Weston	25	51,100	30	1 U	1 U	196	14	1	1 U	—	20	3 U	40	**10 U**	50 U	**50 U**	50 U	50 U	191	2 U
	3/15/1995	Weston	45	31,700	90	2	2	84	6 B	1 U	1 U	—	11	3 U	50	20	50 U	**50 U**	50 U	50 U	67	2
GP-08901	9/14/1994	Boeing	14	21,400	40	1 U	5	82	12	1 U	1 U	—	6	3 U	10	**10 U**	50 U	**50 U**	50 U	50 U	62	10
GP-08902	9/14/1994	Weston	14	16,500	30	1 U	5	67	13	1 U	1 U	—	5	3 U	10	**10 U**	50 U	**50 U**	50 U	50 U	57	21
GP-08903	9/14/1994	Weston	14	27,300	40	1 U	5	93	1	1 U	1 U	—	4	3 U	10	**10 U**	50 U	**50 U**	50 U	50 U	53	2 U
GP-08904	9/14/1994	Weston	14	14,700	20 U	1 U	8	49	1	1 U	1 U	—	7	3	10	**10 U**	50 U	**50 U**	50 U	50 U	39	6
GP-08905	9/13/1994	Weston	14	17,300	40	1 U	8	72	4	1 U	1 U	—	5	3 U	20	**10 U**	50 U	**50 U**	50 U	50 U	35	2 U
GP-08906	11/29/1994	Weston	15	—	—	1 U	1 U	—	—	1 U	1 U	—	—	—	30 UB	**10 U**	50 U	**50 U**	50 U	50 U	—	—
	11/29/1994	Weston	25	—	—	1 U	1 U	—	—	1 U	1 U	—	—	—	10 U	**10 U**	50 U	**50 U**	50 U	50 U	—	—
	11/29/1994	Weston	45	—	—	1 U	1 U	—	—	1 U	1 U	—	—	—	20 UB	**10 U**	50 U	**50 U**	50 U	50 U	—	—
	11/29/1994	Weston	65	—	—	5 U	5 U	—	—	1 U	1 U	—	—	—	10 UB	**10 U**	50 U	**50 U**	50 U	50 U	—	—
GP-08907	11/28/1994	Weston	15	—	—	1 U	1 U	—	—	1	1 U	—	—	—	60	**10 U**	50 U	**50 U**	50 U	50 U	—	—
	11/28/1994	Weston	25	—	—	1 U	1 U	—	—	1 U	1 U	—	—	—	40	**10 U**	50 U	**50 U**	50 U	50 U	—	—
	11/28/1994	Weston	45	—	—	1 U	1 U	—	—	1 U	1 U	—	—	—	10	**10 U**	50 U	**50 U**	50 U	50 U	—	—
	11/29/1994	Weston	63	—	—	1	3	—	—	2	1 U	—	—	—	150	**10 U**	60	**50 U**	50 U	50 U	—	—
GP-08908	3/17/1995	Boeing	14	23,600	20	1 U	1 U	114	30	1 U	1 U	—	14	6	30	**10 U**	50 U	**50 U**	50 U	50 U	64	2 U
	3/17/1995	Boeing	25	19,200	170	1 U	1 U	90	9	1 U	1 U	—	8	3 U	30	20	50 U	**50 U**	50 U	50 U	43	7
	3/17/1995	Boeing	45	6,800	40	1 U	1 U	32	15	1 U	1 U	—	3 U	3 U	10 U	**10 U**	50 U	**50 U**	50 U	50 U	15	2
GP-09101	9/12/1994	Weston	15	5,150	100	1 U	6 UB	31	15	1 U	1 U	—	3	3 U	10 U	**10 U**	50 U	**50 U**	50 U	50 U	41	29
GP-09102	9/8/1994	Weston	14	1,590	20 U	1 U	3	16	6	1 U	1 U	—	3 U	3 U	10 U	**10 U**	50 U	**50 U**	50 U	50 U	15	10
GP-09103	9/8/1994	Boeing	14	11,000	20 U	1 U	4	48	10	1 U	1 U	—	3 U	3 U	10 U	**10 U**	50 U	**50 U**	50 U	50 U	27	3
Source Control Evaluation Screening Level Values				**NE**	**NE**	**NE**	**1,040** [2]	**NE**	**NE**	**NE**	**273** [2]	**NE**	**NE**	**NE**	**NE**	**8.2** [2]	**NE**	**71** [3]	**NE**	**NE**	**NE**	**NE**

Table 5-12
Summary of Groundwater Analytical Results for Total and Dissolved Non-SMS Metals

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter)[1] Aluminum		Antimony		Barium		Beryllium		Bromide	Cobalt		Nickel		Selenium		Thallium		Vanadium	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
GP-09104	11/23/1994	Weston	15	31,900	170	1	2	1,110	23	5	1 U	—	89	3 U	210	**10 U**	70	**50 U**	80	50 U	1,020	40
	11/23/1994	Weston	25	78,400	50	1 U	2	284	7	1 U	1 U	—	20	3 U	60	**10 U**	50 U	**50 U**	50 U	50 U	179	9
	11/23/1994	Weston	45	34,400	60	1 U	1 U	101	4	1 U	1 U	—	13	3 U	30	**10 U**	50 U	**50 U**	50 U	50 U	69	2 U
GP-09105	11/23/1994	Weston	15	313,000	120	2	4	1,100	17	5	1 U	—	90	3 U	210	**10 U**	60	**50 U**	60	50 U	865	29
	11/23/1994	Weston	25	28,500	20	1 U	4	141	13	1 U	1 U	—	7	3 U	30	**10 U**	50 U	**50 U**	50 U	50 U	63	5
	11/23/1994	Weston	45	21,400	40	1 U	3	74	7	1 U	1 U	—	7	3 U	40	**10 U**	50 U	**50 U**	50 U	50 U	34	2 U
GP-09106	3/14/1995	Weston	14	130	26,600	2	1 U	28	132	1 U	1 U	—	10	19	10 U	20	50 U	**50 U**	50 U	50 U	18	90
	3/14/1995	Weston	25	47,200	50	1	1 U	187	15	1 U	1 U	—	13	3 U	30	20	50 U	**50 U**	50 U	50 U	104	7
	3/14/1995	Weston	45	29,000	20	1	1 U	84	4	1 U	1 U	—	10	3 U	20	**10 U**	50 U	**50 U**	50 U	50 U	57	2 U
GP-09107	3/14/1995	Weston	14	54,500	130	2	1 U	213	23	1 U	1 U	—	14	3 U	30	**10 U**	50 U	**50 U**	50 U	50 U	154	23
	3/14/1995	Weston	25	69,900	120	1	1 U	274	8	1 U	1 U	—	19	3 U	50	**10 U**	50 U	**50 U**	50 U	50 U	149	10
	3/14/1995	Weston	45	23,600	50	2	1 U	76	2	1 U	1 U	—	9	3 U	30	**10 U**	50 U	**50 U**	50 U	50 U	46	2 U
GP-09108	3/14/1995	Weston	14	44,500	350	1	1 U	180	20	1 U	1 U	—	11	3 U	30	**10 U**	50 U	**50 U**	50 U	50 U	143	36
	3/14/1995	Weston	25	16,900	30	1 U	1 U	75	12	1 U	1 U	—	6	3 U	10	**10 U**	50 U	**50 U**	50 U	50 U	41	5
	3/14/1995	Weston	45	6,930	20 U	1	1 U	24	3	1 U	1 U	—	4	3 U	10 U	10	50 U	**50 U**	50 U	50 U	16	2 U
GP-09109	3/15/1995	Weston	14	22,400	410	1	3	81	10 B	1 U	1 U	—	6	3 U	20	**10 U**	50 U	**50 U**	50 U	50 U	144	75
	3/15/1995	Weston	25	47,500	130	1	2 U	177	10 B	1 U	1 U	—	15	3 U	30	**10 U**	50 U	**50 U**	50 U	50 U	109	9
	3/15/1995	Weston	45	27,000	70	1	1	77	2 B	1 U	1 U	—	9	3 U	20	**10 U**	50 U	**50 U**	50 U	50 U	57	2 U
GP-09110	9/19/1995	Weston	15	—	—	1 U	1 U	32	17	1 U	1 U	—	—	—	10 U	**10 U**	50 U	**50 U**	50 U	50 U	—	—
	9/19/1995	Weston	25	—	—	1 U	1 U	39	7	1 U	1 U	—	—	—	10 U	**10 U**	50 U	**50 U**	50 U	50 U	—	—
	9/19/1995	Weston	45	—	—	1 U	1 U	16	9	1 U	1 U	5,000 U	—	—	10 U	**10 U**	50 U	**50 U**	50 U	50 U	—	—
GP-09111	9/20/1995	Weston	15	—	—	1 U	1 U	154	13 UB	1 U	1 U	—	—	—	10 U	**10 U**	50 U	**50 U**	50 U	50 U	—	—
	9/20/1995	Weston	25	—	—	1 U	1 U	20	9 UB	1 U	1 U	—	—	—	10 U	**10 U**	50 U	**50 U**	50 U	50 U	—	—
	9/20/1995	Weston	45	—	—	1 U	1 U	14	9 UB	1 U	1 U	—	—	—	10 U	**10 U**	50 U	**50 U**	50 U	50 U	—	—
GP-09112	9/19/1995	Weston	15	—	—	1 U	1 U	107	9	1 U	1 U	—	—	—	30	**10 U**	50 U	**50 U**	50 U	50 U	—	—
	9/19/1995	Weston	25	—	—	1 U	1 U	50	13	1 U	1 U	—	—	—	10 U	**10 U**	50 U	**50 U**	50 U	50 U	—	—
	9/19/1995	Weston	45	—	—	1 U	1 U	68	3	1 U	1 U	5,000 U	—	—	10	**10 U**	50 U	**50 U**	50 U	50 U	—	—
GP-09113	9/19/1995	Weston	15	—	—	1 U	1	67	7	1 U	1 U	—	—	—	50	20	50 U	**50 U**	50 U	50 U	—	—
	9/19/1995	Weston	25	—	—	1 U	1 U	15	7	1 U	1 U	—	—	—	10 U	**10 U**	50 U	**50 U**	50 U	50 U	—	—
	9/19/1995	Weston	45	—	—	1 U	1 U	29	17	1 U	1 U	—	—	—	10 U	**10 U**	50 U	**50 U**	50 U	50 U	—	—
Source Control Evaluation Screening Level Values				**NE**	**NE**	**NE**	**1,040** [2]	**NE**	**NE**	**NE**	**273** [2]	**NE**	**NE**	**NE**	**NE**	**8.2** [2]	**NE**	**71** [3]	**NE**	**NE**	**NE**	**NE**

Table 5-12
Summary of Groundwater Analytical Results for Total and Dissolved Non-SMS Metals

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter)[1]																		
				Aluminum		Antimony		Barium		Beryllium		Bromide	Cobalt		Nickel		Selenium		Thallium		Vanadium	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
GP-09114	9/20/1995	Weston	15	—	—	1 U	1 U	50	5 UB	1 U	1 U	—	—	—	10 U	**10 U**	50 U	**50 U**	50 U	50 U	—	—
	9/20/1995	Weston	25	—	—	2 U	1 U	127	11 UB	1 U	1 U	—	—	—	10 U	**10 U**	80	**50 U**	50 U	50 U	—	—
	9/20/1995	Weston	45	—	—	1 U	1 U	29 J	2 UB	1 U	1 U	1,000 U	—	—	10 U	**10 U**	50 U	**50 U**	50 U	50 U	—	—
GP-09115	9/19/1995	Weston	15	—	—	5 U	5 U	144	133	1 U	1 U	—	—	—	10 U	**10 U**	50	**50 U**	50 U	50 U	—	—
	9/19/1995	Weston	25	—	—	1 U	1 U	33	2	1 U	1 U	—	—	—	10 U	**10 U**	50 U	**50 U**	50 U	50 U	—	—
	9/19/1995	Weston	45	—	—	1 U	1 U	11	1	1 U	1 U	—	—	—	10 U	**10 U**	50 U	**50 U**	50 U	50 U	—	—
MW-9	3/24/1992	SECOR	5-20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-11	3/24/1992	SECOR	5-20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-13	9/10/1992	SECOR	5-20	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-23	11/20/1992	SECOR	6-15.75	—	—	—	—	2,000 U	—	—	—	—	—	—	—	—	500 U	—	—	—	—	—
PL2-JF01A	3/10/1995	Boeing	NA	50	30	1	2	12	11	1 U	1 U	—	3 U	3 U	10 U	**10 U**	50 U	**50 U**	50 U	50 U	18	17
	9/27/1995	Boeing		60	—	1 U	—	17	—	1 U	—	—	3 U	—	10 U	—	50 U	—	50 U	—	21	—
	11/17/1995	Boeing		—	—	1 U	—	14	—	1 U	—	—	—	—	10 U	—	50 U	—	50 U	—	—	—
	3/1/1996	Boeing		—	—	1 U	—	7	—	1 U	—	—	—	—	10 U	—	50 U	—	50 U	—	—	—
	5/23/1996	Boeing		—	—	1 U	—	7	—	1 U	—	—	—	—	10 U	—	50 U	—	50 U	—	—	—
	8/26/1996	Boeing		—	—	1 U	—	10	—	1 U	—	—	—	—	10 U	—	50 U	—	50 U	—	—	—
	11/21/1996	Boeing		—	—	1 U	—	10	—	1 U	—	—	—	—	10 U	—	50 U	—	50 U	—	—	—
Source Control Evaluation Screening Level Values				**NE**	**NE**	**NE**	**1,040** [2]	**NE**	**NE**	**NE**	**273** [2]	**NE**	**NE**	**NE**	**NE**	**8.2** [2]	**NE**	**71** [3]	**NE**	**NE**	**NE**	**NE**

Table 5-12
Summary of Groundwater Analytical Results for Total and Dissolved Non-SMS Metals

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter)[1]																		
				Aluminum		Antimony		Barium		Beryllium		Bromide	Cobalt		Nickel		Selenium		Thallium		Vanadium	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
PL2-JF01AR	5/17/2001	Boeing	23-27	—	—	2 UJ	2 UJ	—	—	0.2 U	0.2 U	—	—	—	1.2	0.8	50 U	**50 U**	0.2 U	0.2 U	19	21
	7/25/2001	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	0.8	0.7	50 U	**50 U**	0.2 U	0.2 U	20	21
	10/24/2001	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	1.2	1.1	50 U	**50 U**	0.2 U	0.2 U	11	12
	1/21/2002	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	1.6	1.3	50 U	**50 U**	0.2 U	0.2 U	10	11
	6/16/2003	Boeing		—	—	50 U	50 U	—	—	0.2 U	0.2 U	—	—	—	0.8	0.8	2 U	0.9	0.2 U	0.2 U	13	13
	9/2/2003	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	1.2	0.9	0.8	0.8	0.2 U	0.2 U	13	13
	12/8/2003	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	0.9	0.8	50 U	**50 U**	0.2 U	0.2 U	16	15
	12/19/2003	Boeing		—	—	50 U	—	—	—	1 U	—	—	—	—	0.7	—	50 U	—	50 U	—	16	—
	2/2/2004	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	1.1	1.1	50 U	**50 U**	0.2 U	0.2 U	14	14
	5/10/2004	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	1.1	1	50 U	**50 U**	0.2 U	0.2 U	19	19
	8/2/2004	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	1.2	1	50 U	**50 U**	0.2 U	0.2 U	15	13
	11/1/2004	Boeing		—	—	2 U	2 UJ	—	—	0.2 U	0.2 U	—	—	—	2.6	2.4	50 U	**50 U**	0.2 U	0.2 U	14	13
	2/1/2005	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	1	0.9	50 U	**50 U**	0.2 U	0.2 U	17	15
	8/1/2005	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	1.4	1.2	50 U	**50 U**	0.2 U	0.2 U	12	11
	10/31/2005	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	0.8	0.7	50 U	**50 U**	0.2 U	0.2 U	15	14
	2/6/2006	Boeing		—	—	2	4 U	—	—	0.2 U	0.5 U	—	—	—	0.9	2	50 U	**50 U**	0.2 U	0.5 U	11	4
	5/1/2006	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	1.4	1.3	50 U	**50 U**	0.2 U	0.2 U	9	9
	7/31/2006	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	1	1.1	50 U	**50 U**	0.2 U	0.2 U	9	9
	11/6/2006	Boeing		—	—	2 U	2 U	—	—	0.5 U	0.5 U	—	—	—	1	1	50 U	**50 U**	0.5 U	0.5 U	10	9
	2/1/2007	Boeing		—	—	50 U	50 U	—	—	1 U	1 U	—	—	—	1 U	5	50 U	**50 U**	0.5 U	0.5 U	9	8
	5/2/2007	Boeing		—	—	4 U	2 U	—	—	0.2 U	0.2 U	—	—	—	0.8	1.2	50 U	**50 U**	0.2 U	0.2 U	11	10
Source Control Evaluation Screening Level Values				**NE**	**NE**	**NE**	**1,040 [2]**	**NE**	**NE**	**NE**	**273 [2]**	**NE**	**NE**	**NE**	**NE**	**8.2 [2]**	**NE**	**71 [3]**	**NE**	**NE**	**NE**	**NE**

Table 5-12
Summary of Groundwater Analytical Results for Total and Dissolved Non-SMS Metals

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter)[1]																		
				Aluminum		Antimony		Barium		Beryllium		Bromide	Cobalt		Nickel		Selenium		Thallium		Vanadium	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
PL2-JF01B	3/31/1995	Boeing	40-50	30	20 U	1 U	1 U	17 J	18 J	1 U	1 U	—	3 U	3 U	10 U	10 U	50 U	**50 U**	50 U	50 U	8	7
	9/27/1995	Boeing		30	—	1 U	—	22	—	1 U	—	5,000 U	3 U	—	10 U	—	50 U	—	50 U	—	7	—
	11/17/1995	Boeing		—	—	1 U	—	22	—	1 U	—	—	—	—	10 U	—	50 U	—	50 U	—	—	—
	3/1/1996	Boeing		—	—	1 U	—	16	—	1 U	—	—	—	—	10 U	—	50 U	—	50 U	—	—	—
	5/23/1996	Boeing		—	—	1 U	—	13	—	1 U	—	—	—	—	10 U	—	50 U	—	50 U	—	—	—
	8/26/1996	Boeing		—	—	1 U	—	12	—	1 U	—	—	—	—	10 U	—	50 U	—	50 U	—	—	—
	11/21/1996	Boeing		—	—	1 U	—	19	—	1 U	—	—	—	—	10 U	—	50 U	—	50 U	—	—	—
	4/26/2001	Boeing		—	—	2 UJ	2 UJ	—	—	0.2 U	0.2 U	—	—	—	1.8	2.6	50 U	**50 U**	0.2 U	0.2 U	4	4
	7/25/2001	Boeing		—	—	2 U	2 U	—	—	0.5 U	0.4 U	—	—	—	7	2	50	60	0.5 U	0.4 U	3	6
	10/24/2001	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	3.4	2.2	50	**50 U**	0.2 U	0.2 U	3 U	3 U
	1/21/2002	Boeing		—	—	2 U	2 U	—	—	0.5 U	0.4 U	—	—	—	3	2	50	**50 U**	0.5 U	0.4 U	4	3
	6/16/2003	Boeing		—	—	50 U	50 U	—	—	0.2 U	0.2 U	—	—	—	3	1.6	2	3	0.2 U	0.2 U	4	3
	9/2/2003	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	3.4	6.1	1.9	1.4	0.2 U	0.2 U	3 U	3 U
	12/8/2003	Boeing		—	—	2 U	2 U	—	—	0.5 U	0.5 U	—	—	—	3	2	50 U	**50 U**	0.5 U	0.5 U	3	3
	12/19/2003	Boeing		—	—	50 U	—	—	—	1 U	—	—	—	—	3	—	50 U	—	50 U	—	5	—
	2/2/2004	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	3.7	2.4	50 U	**50 U**	0.2 U	0.2 U	9	3 U
	5/10/2004	Boeing		—	—	2	2 U	—	—	0.5 U	0.5 U	—	—	—	4	4	100 U	**100 U**	0.5 U	0.5 U	6 U	6 U
	8/2/2004	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	4.6	3.2	50 U	**50 U**	0.2 U	0.2 U	3	3 U
	11/1/2004	Boeing		—	—	4 U	4 UJ	—	—	0.5 U	0.5 U	—	—	—	6	5	50 U	**50 U**	0.5 U	0.5 U	4	4
	2/1/2005	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	3	3	50 U	**50 U**	0.5 U	0.4 U	3 U	3 U
	8/1/2005	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	2.7	2.7	50 U	**50 U**	0.2 U	0.2 U	5	4
	10/31/2005	Boeing		—	—	2 U	2 U	—	—	0.5 U	0.5 U	—	—	—	2 U	2 U	50 U	**50 U**	1 U	1 U	4	3
	2/6/2006	Boeing		—	—	10 U	20 U	—	—	0.2 U	1 U	—	—	—	2.4	2 U	50 U	**250 U**	0.2 U	1 U	5	20 U
	5/1/2006	Boeing		—	—	4 U	4 U	—	—	0.5 U	0.5 U	—	—	—	4	4	50 U	**50 U**	0.5 U	0.5 U	6	4
	7/31/2006	Boeing		—	—	4 U	4 U	—	—	0.5 U	0.5 U	—	—	—	3	3	50 U	**50 U**	0.5 U	0.5 U	5	3
	11/6/2006	Boeing		—	—	2 U	10 U	—	—	0.5 U	0.5 U	—	—	—	3	3	50 U	**50 U**	0.5 U	0.5 U	3 U	3 U
	2/1/2007	Boeing		—	—	50 U	50 U	—	—	1 U	1 U	—	—	—	2	2	50 U	**50 U**	0.5 U	0.5 U	5	3
	5/2/2007	Boeing		—	—	2 U	4 U	—	—	0.2 U	0.2 U	—	—	—	4.2	4.2	50 U	**50 U**	0.2 U	0.2 U	4	3 U
Source Control Evaluation Screening Level Values				**NE**	**NE**	**NE**	**1,040** [2]	**NE**	**NE**	**NE**	**273** [2]	**NE**	**NE**	**NE**	**NE**	**8.2** [2]	**NE**	**71** [3]	**NE**	**NE**	**NE**	**NE**

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Summary of Groundwater Analytical Results for Total and Dissolved Non-SMS Metals

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter)[1]																		
				Aluminum		Antimony		Barium		Beryllium		Bromide	Cobalt		Nickel		Selenium		Thallium		Vanadium	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
PL2-JF01C	5/17/2001	Boeing	74-78	—	—	2 UJ	2 UJ	—	—	1 U	1 U	—	—	—	15	5	110	120	1 U	1 U	34	6 U
	7/25/2001	Boeing		—	—	2 U	4 U	—	—	1 U	1 U	—	—	—	13	6	50 U	70	1 U	1 U	22	5
	10/24/2001	Boeing		—	—	10 U	10 U	—	—	1 U	1 U	—	—	—	9	6	90	90	1 U	1 U	17	3
	1/21/2002	Boeing		—	—	10 U	10 U	—	—	2 U	2 U	—	—	—	10	7	50 U	**50 U**	2 U	2 U	18	4
	6/16/2003	Boeing		—	—	100 U	100 U	—	—	1 U	1 U	—	—	—	16	5	12	12	1 U	1 U	37	6 U
	12/8/2003	Boeing		—	—	10 U	10 U	—	—	1 U	1 U	—	—	—	16	6	100 U	**100 U**	1 U	1 U	39	6
	12/19/2003	Boeing		—	—	100 U	—	—	—	2 U	—	—	—	—	5	—	100 U	—	100 U	—	6 U	—
	11/1/2004	Boeing		—	—	10 U	20 UJ	—	—	1 U	1 U	—	—	—	15	10	—	—	5 U	5 U	24	7
	11/3/2004	Boeing		—	—	—	—	—	—	—	—	—	—	—	—	—	0.113 U	—	—	—	—	—
	10/31/2005	Boeing		—	—	10 U	10 U	—	—	1 U	1 U	—	—	—	13	5	0.257	0.238	5 U	5 U	38	6
	2/6/2006	Boeing		—	—	2 U	4	—	—	0.2 U	0.2 U	—	—	—	12.2	0.8	0.225	0.19	2 J	1 U	30	8
	11/6/2006	Boeing		—	—	2 U	20 U	—	—	0.5 U	0.5 U		—	—	10	25	0.31	0.225	0.5 U	0.5 U	16	6 U
Source Control Evaluation Screening Level Values				**NE**	**NE**	**NE**	**1,040** [2]	**NE**	**NE**	**NE**	**273** [2]	**NE**	**NE**	**NE**	**NE**	**8.2** [2]	**NE**	**71** [3]	**NE**	**NE**	**NE**	**NE**

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Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter)[1]																		
				Aluminum		Antimony		Barium		Beryllium		Bromide	Cobalt		Nickel		Selenium		Thallium		Vanadium	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
PL2-JF02A	9/27/1995	Boeing	8-22.75	50	—	1 U	—	21	—	1 U	—	5,000 U	3 U	—	10 U	—	50 U	—	50 U	—	10	—
	11/17/1995	Boeing		—	—	1 U	—	10	—	1 U	—	—	—	—	10 U	—	50 U	—	50 U	—	—	—
	3/1/1996	Boeing		—	—	1 U	—	14	—	1 U	—	—	—	—	10 U	—	50 U	—	50 U	—	—	—
	5/23/1996	Boeing		—	—	1 U	—	6	—	1 U	—	—	—	—	10 U	—	50 U	—	50 U	—	—	—
	8/26/1996	Boeing		—	—	1 U	—	9	—	1 U	—	—	—	—	10 U	—	50 U	—	50 U	—	—	—
	11/21/1996	Boeing		—	—	1 U	—	3	—	1 U	—	—	—	—	10 U	—	50 U	—	50 U	—	—	—
	11/21/1996	Boeing		—	—	1 U	—	4	—	1 U	—	—	—	—	10 U	—	50 U	—	50 U	—	—	—
	4/26/2001	Boeing		—	—	2 UJ	2 UJ	—	—	0.2 U	0.2 U	—	—	—	2.6	0.7	50 U	**50 U**	0.2 U	0.2 U	7	5
	7/25/2001	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	0.8	0.7	50 U	**50 U**	0.2 U	0.2 U	6	6
	10/24/2001	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	1.2	1	50 U	**50 U**	0.2 U	0.2 U	4	5
	1/21/2002	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	3.2	2.4	50 U	**50 U**	0.2 U	0.2 U	13	13
	6/16/2003	Boeing		—	—	50 U	50 U	—	—	0.2 U	0.2 U	—	—	—	1.4	1.2	2 U	2 U	0.2 U	0.2 U	5	4
	9/2/2003	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	1.4	2.1	2 U	2	0.2 U	0.2 U	6	4
	12/8/2003	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	0.9	0.7	50 U	**50 U**	0.2 U	0.2 U	8	7
	2/2/2004	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	2.3	0.8	50 U	**50 U**	0.2 U	0.2 U	9	8
	5/10/2004	Boeing		—	—	2	2 U	—	—	0.2 U	0.2 U	—	—	—	1.5	1.2	50 U	**50 U**	0.2 U	0.2 U	8	7
	8/2/2004	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	2.2	2	50 U	**50 U**	0.2 U	0.2 U	8	9
	11/1/2004	Boeing		—	—	2 U	2 UJ	—	—	0.2 U	0.2 U	—	—	—	1.1	0.9	50 U	**50 U**	0.2 U	0.2 U	10	7
	2/1/2005	Boeing		—	—	2 U	2 U	—		0.2 U	0.2 U	—	—	—	0.8	1	50 U	**50 U**	0.2 U	0.2 U	10	6
	8/1/2005	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	1.4	1.2	50 U	**50 U**	0.2 U	0.2 U	6	6
	10/31/2005	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	0.5	0.8	50 U	**50 U**	0.2 U	0.2 U	7	6
	2/6/2006	Boeing		—	—	2	2 U	—	—	0.2 U	0.2 U	—	—	—	0.7	1.1	50 U	**50 U**	0.2 U	0.2 U	11	10
	5/1/2006	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	0.5	0.6	50 U	**50 U**	0.2 U	0.2 U	7	6
	7/31/2006	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	0.8	0.5	50 U	**50 U**	0.2 U	0.2 U	7	5
	11/6/2006	Boeing		—	—	4 U	4 U	—	—	0.5 U	0.5 U		—	—	1	1 U	50 U	**50 U**	0.5 U	0.5 U	6	5
	2/1/2007	Boeing		—	—	50 U	50 U	—	—	1 U	1 U		—	—	1 U	4	50 U	**50 U**	0.5 U	0.5 U	5	5
	5/2/2007	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	0.7	5.6	50 U	**50 U**	0.2 U	0.2 U	5	5
Source Control Evaluation Screening Level Values				**NE**	**NE**	**NE**	**1,040 [2]**	**NE**	**NE**	**NE**	**273 [2]**	**NE**	**NE**	**NE**	**NE**	**8.2 [2]**	**NE**	**71 [3]**	**NE**	**NE**	**NE**	**NE**

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				Aluminum		Antimony		Barium		Beryllium		Bromide	Cobalt		Nickel		Selenium		Thallium		Vanadium	
				Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved	Total	Dissolved
PL2-JF03A	9/28/1995	Boeing	8-22.75	50 J	—	4	—	23	—	1 U	—	5,000 U	3 U	—	10 U	—	50 U	—	50 U	—	2 U	—
	11/17/1995	Boeing		—	—	1 U	—	18	—	1 U	—	—	—	—	10	—	50 U	—	50 U	—	—	—
	3/1/1996	Boeing		—	—	1 U	—	7	—	1 U	—	—	—	—	10 U	—	50 U	—	50 U	—	—	—
	5/23/1996	Boeing		—	—	1 U	—	7	—	1 U	—	—	—	—	10 U	—	50 U	—	50 U	—	—	—
	8/26/1996	Boeing		—	—	1 U	—	15	—	1 U	—	—	—	—	10 U	—	50 U	—	50 U	—	—	—
	11/21/1996	Boeing		—	—	1 U	—	13	—	1 U	—	—	—	—	10 U	—	50 U	—	50 U	—	—	—
	4/26/2001	Boeing		—	—	2 UJ	2 UJ	—	—	0.2 U	0.2 U	—	—	—	1.4	1.1	50 U	**50 U**	0.2 U	0.2 U	3 U	3 U
	7/25/2001	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	1.2	1	50 U	**50 U**	0.2 U	0.2 U	3 U	3 U
	10/24/2001	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	1.6	1.2	50 U	**50 U**	0.2 U	0.2 U	3 U	3 U
	1/21/2002	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	1.6	0.9	50 U	**50 U**	0.2 U	0.2 U	3 U	3 U
	6/16/2003	Boeing		—	—	50 U	50 U	—	—	0.2 U	0.2 U	—	—	—	1.5	1.2	0.5 U	**0.5 U**	0.2 U	0.2 U	3 U	3 U
	12/8/2003	Boeing		—	—	2 U	2 U	—	—	0.2 U	0.2 U	—	—	—	1.6	0.8	50 U	**50 U**	0.2 U	0.2 U	3 U	3 U
	11/1/2004	Boeing		—	—	2 U	2 UJ	—	—	0.2 U	0.2 U	—	—	—	1.1	1	50 U	**50 U**	0.2 U	0.2 U	3 U	3 U
	10/31/2005	Boeing		2 U	2 U	0.6	0.5	0.2 U	0.2 U	—	2 U	2 U	1	0.7	0.8	1	50 U	**50 U**	0.2 U	0.2 U	3 U	3 U
Source Control Evaluation Screening Level Values				**NE**	**NE**	**NE**	**1,040** [2]	**NE**	**NE**	**NE**	**273** [2]	**NE**	**NE**	**NE**	**NE**	**8.2** [2]	**NE**	**71** [3]	**NE**	**NE**	**NE**	**NE**

NOTES:

Results in **BOLD** indicate that the laboratory practical quantitation limit exceeds the screening level value.

Indicates detected concentration exceeds the Source Control Evaluation Screening Level Value.

[1] Analyzed by U.S. Environmental Protection Agency 6000/7000 Series Methods.

[2] Washington State Department of Ecology (Ecology) Cleanup Levels and Risk Calculations (CLARC) under the Model Toxics Control Act (MTCA) Cleanup Regulation, Standard Method B Formula Values for Surface Water, November 2001.

[3] Ecology Water Quality Standards for Surface Waters of the State of Washington, Toxic Substances Criteria for Freshwater, Chro

— = not analyzed

B = the analyte was detected in the associated method blank.

J = denotes result reported is an estimate

NA = not available

NE = not established

U = no detectable concentrations above the listed laboratory practical quantitation limit

Table 5-13
Summary of Groundwater Analytical Results for Polycyclic Aromatic Hydrocarbons

Sample Location	Sample Date	Sampled by	Sample Depth/ Screened Interval (feet bgs)	Analytical Results (micrograms per liter)[1]																
				LPAH							HPAH									
				Naphthalene	Acenaphthylene	Acenaphthene	Fluorene	Phenanthrene	Anthracene	2-Methylnaphthalene	Fluoranthene	Pyrene	Benzo(a)anthracene	Chrysene	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Benzo(a)pyrene	Indeno(1,2,3-cd)pyrene	Dibenzo(a,h)anthracene	Benzo(g,h,i)perylene
GP-08901	9/14/1994	Boeing	14	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**
GP-08902	9/14/1994	Weston	14	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**
GP-08903	9/14/1994	Weston	14	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**
GP-08904	9/14/1994	Weston	14	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**
GP-08905	9/13/1994	Weston	14	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**
GP-09101	9/12/1994	Weston	15	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**
GP-09102	9/8/1994	Weston	14	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**
GP-09103	9/8/1994	Boeing	14	1 U	1 U	1.5	1 U	1 U	1 U	1 U	1 U	1 U	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**	**1 U**
MW-23	12/29/2004	Farallon	6-15.75	1 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-25	12/29/2004	Farallon	6-19.75	0.0449 JB	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-31	12/29/2004	Farallon	5-19	0.0475 JB	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Source Control Evaluation Screening Level Values [2]				**54**	**11**	**2.6**	**2**	**4.8**	**11**	**18**	**2.3**	**14**	**0.26**	**0.47**	**0.29**	**0.29**	**0.13**	**0.013**	**0.0046**	**0.012**

NOTES:

Results in **BOLD** indicate that the laboratory practical quantitation limit exceeds the screening level value.

[1]Analyzed by U.S. Environmental Protection Agency Methods 8260B, 625, or 8270.

[2] SAIC. 2007. Draft Source Control Action Plan - Slip 4 Duwamish Waterway. Prepared for the Washington State Department of Ecology. February 2007.

— = not analyzed
bgs = below ground surface
NA = not available
U = no detectable concentrations above the listed laboratory practical quantitation limit
J = estimated value.
B = blank contamination
LPAH = low molecular weight polycyclic aromatic hydrocarbons
HPAH = high molecular weight polycyclic aromatic hydrocarbons

Table 5-14
Summary of Groundwater Analytical Results for Semivolatile Organic Compounds

					Analytical Results (micrograms per liter) [1]																			
					Chlorinated Benzenes				Phthalate Esters						Phenols					Misc Extractables				
Sample Location	Sample ID	Sample Date	Sampled by	Sample Depth/ Screened Interval (feet bgs)	1,4-Dichlorobenzene	1,2-Dichlorobenzene	1,2,4-Trichlorobenzene	Hexachlorobenzene	Dimethylphthalate	Diethylphthalate	Di-n-butylphthalate	Butylbenzylphthalate	bis(2-Ethylhexyl)phthalate	Di-n-octylphthalate	Phenol	2-Methylphenol	4-Methylphenol	2,4-Dimethylphenol	Pentachlorophenol	Benzyl alcohol	Benzoic acid	Dibenzofuran	Hexachlorobutadiene	n-Nitrosodiphenylamine
GP-08901	W20-GP-08901-0140	9/14/1994	Boeing	14	1 U	1 U	1 U	**1 U**	1 U	1 U	1 U	**1 U**	12 J	**1 U**	2 U	1 U	1 U	2 U	5 U	5 U	10 U	1 U	2 U	1 U
GP-08901	W20-GP-08901-1140	9/14/1994	Boeing	14	1 U	1 U	1 U	**1 U**	1 U	1 U	1 U	**1 U**	**1 UJ**	**1 U**	2 U	1 U	1 U	2 U	5 U	5 U	10 U	1 U	2 U	1 U
GP-08902	W20-GP-08902-0140	9/14/1994	Weston	14	1.00 U	1.00 U	1.00 U	**1.00 U**	1.00 U	1.00 U	1.00 U	**1.00 U**	**1.00 U**	**1.00 U**	2.00 R	1.00 R	1.00 R	2.00 R	5.00 R	5.00 U	10.00 U	1.00 U	2.00 U	1.00 U
GP-08903	W20-GP-08903-0140	9/14/1994	Weston	14	1.00 U	1.00 U	1.00 U	**1.00 U**	1.00 U	1.00 U	1.00 U	**1.00 U**	**1.00 U**	**1.00 U**	2.00 U	1.00 U	1.00 U	2.00 U	5.00 U	5.00 U	10.00 U	1.00 U	2.00 U	1.00 U
GP-08904	W20-GP-08904-0140	9/14/1994	Weston	14	1.00 U	1.00 U	1.00 U	**1.00 U**	1.00 U	1.00 U	1.00 U	**1.00 U**	**1.00 U**	**1.00 U**	2.00 U	1.00 U	1.00 U	2.00 U	5.00 U	5.00 U	10.00 U	1.00 U	2.00 U	1.00 U
GP-08905	W20-GP-08905-0140	9/13/1994	Weston	14	1.00 U	1.00 U	1.00 U	**1.00 U**	1.00 U	1.00 U	1.00 U	**1.00 U**	**1.00 U**	**1.00 U**	2.00 U	1.00 U	1.00 U	2.00 U	5.00 U	5.00 U	10.00 U	1.00 U	2.00 U	1.00 U
GP-09101	W20-GP-09101-0150	9/12/1994	Weston	15	1.00 U	1.00 U	1.00 U	**1.00 U**	1.00 U	1.00 U	1.00 U	**1.00 U**	**1.00 U**	**1.00 U**	2.00 U	1.00 U	1.00 U	2.00 U	5.00 U	5.00 U	10.00 U	1.00 U	2.00 U	1.00 U
GP-09102	W20-GP-09102-0140	9/8/1994	Weston	14	1.00 U	1.00 U	1.00 U	**1.00 U**	1.00 U	1.00 U	1.00 U	**1.00 U**	**1.00 U**	**1.00 U**	2.00 U	1.00 U	1.00 U	2.00 U	5.00 U	5.00 U	10.00 U	1.00 U	2.00 U	1.00 U
GP-09103	W20-GP-09103-0140	9/8/1994	Boeing	14	1 U	1 U	1 U	**1 U**	1 U	1 U	1 U	**1 U**	**1 U**	**1 U**	2 U	1 U	1 U	2 U	5 U	5 U	10 U	1 U	2 U	1 U
MW-1/2	MW-1/2	NA	NA	NA	**12.5 U**	**12.5 U**	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-2/2	MW-2/2	NA	NA	NA	0.5 U	0.5 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-22	03131993-MW-22	3/13/1993	SECOR	6-15.75	1 U	1 U	1 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	09171992-MW-22	9/17/1992	SECOR		2 U	2 U	2 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-23	MW23 -122904	12/29/2004	Farallon	6-15.75	1 U	1 U	1 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 U	—
MW-24	09171992-MW-24	9/17/1992	SECOR	6-19.75	**100 U**	**100 U**	**100 U**	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-25	03131993-MW-25	3/13/1993	SECOR	6-19.75	1 U	1 U	1 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	09171992-MW-25	9/17/1992	SECOR		**2000 U**	**2000 U**	**2000 U**	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
	MW25 -122904	12/29/2004	Farallon		1 U	1 U	1 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 U	—
MW-3/1	MW-3/1	NA	NA	NA	0.5 U	0.5 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-31	MW31 -122904	12/29/2004	Farallon	5-19	1 U	1 U	1 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1 U	—
Source Control Evaluation Screening Level Values [2]					**5.2**	**7.1**	**1.1**	**0.11**	**484**	**151**	**143**	**0.52**	**0.28**	**0.3**	**92**	**8.4**	**91**	**2.4**	**6.3**	**214**	**2639**	**1.3**	**3.9**	**2**

NOTES:

Results in **BOLD** indicate that the laboratory practical quantitation limit exceeds the screening level value.

[shaded] Indicates detected concentration exceeds the Source Control Evaluation Screening Level Value.

[1]Analyzed by U.S. Environmental Protection Agency Methods 608, 8240, 8260, 8260B or 8270.

[2] SAIC. 2007. Draft Source Control Action Plan - Slip 4 Duwamish Waterway. Prepared for the Washington State Department of Ecology. February 2007.

— = not analyzed
bgs = below ground surface
NA = not available
U = no detectable concentrations above the listed laboratory practical quantitation limit
J = estimated value
R = rejected
B = blank contamination

Table 5-15
Summary of Groundwater Analytical Results Halogenated Volatile Organic Compounds

Sample Location	Date Sampled	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]							
				PCE	TCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,1-DCA	1,2-DCA
GP-06601	9/12/1994	Weston	13	1 U	1 U	1 U	2.5	1 U	2.5	1 U	1 U
	9/12/1994	Weston	23	1 U	1 U	1 U	1 U	1 U	22	12	1 U
	9/12/1994	Weston	45	1 U	1 U	1 U	1 U	1 U	0.03 UB	1 U	1 U
GP-06602	9/13/1994	Weston	14	1 U	1 U	1 U	1 U	1 U	0.36	1 U	1 U
	9/13/1994	Weston	24	1 U	1 U	1 U	1 U	1 U	0.54	1 U	1 U
	9/13/1994	Weston	45	1 U	1 U	1 U	1 U	1 U	0.09	1 U	1 U
GP-06603	9/12/1994	Weston	14	1 U	1 U	1 U	1 U	1 U	0.02 U	1 U	1 U
	9/12/1994	Weston	24	1 U	1 U	1 U	5.6	1 U	13	73	1 U
	9/12/1994	Weston	45	1 U	1 U	1 U	1 U	1 U	26	16	2 N
GP-06604	9/13/1994	Weston	14	**5 U**	5 U	**5 U**	5 U	5 U	0.61	5 U	5 U
	9/13/1994	Weston	24	1 U	1 U	1 U	1 U	1 U	0.75	1 U	1 U
	9/13/1994	Weston	45	1 U	1 U	1 U	1 U	1 U	0.82	1 U	1 U
GP-06633	11/28/1994	Boeing	15	1 U	6.2	1 U	24	1.1	0.82	1 U	1 U
	11/28/1994	Boeing	25	1 U	1 U	4	7,600 JD	13	16,000 D	1.1	2.3 N
	11/28/1994	Boeing	45	1 UJH	1 UJH	1 UJH	2.2 JH	1 UJH	9.6 JH	1 UJH	1 UJH
	11/28/1994	Boeing	65	1 UJH	1 UJH	1 UJH	1 UJH	1 UJH	0.069	1 UJH	1 UJH
GP-06634	11/22/1994	Weston	15	1 U	43	1 U	33	1 U	0.6	1 U	1 U
	11/22/1994	Weston	25	1 U	1 U	1 U	13	1 U	6.6	1.3	1 U
	11/22/1994	Weston	45	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	0.3	1 UJ	1 UJ
	11/22/1994	Weston	65	1 U	1 U	1 U	1 U	1 U	0.02 U	1 U	1 U
GP-06635	11/22/1994	Weston	15	1 U	1 U	1 U	1 U	1 U	0.02 U	1 U	1 U
	11/22/1994	Weston	25	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	0.8	1 UJ	1 UJ
	11/22/1994	Weston	45	1 U	1 U	1 U	1 U	1 U	0.21	1.5	1 U
	11/22/1994	Weston	65	1 U	1 U	1 U	1 U	1 U	0.03	1 U	1 U
GP-06636	11/21/1994	Weston	15	1 U	1 U	1 U	1 U	1 U	1.1	1.4 J	1 U
	11/21/1994	Weston	25	1 U	1 U	1 U	54	3.4	1,800 D	1 U	1 U
	11/21/1994	Weston	45	1 U	1 U	1 U	1 U	1 U	1.3	9.4	2.6 N
	11/21/1994	Weston	65	1 U	1 U	1 U	1 U	1 U	0.11	1 U	1 U
GP-06637	3/15/1995	Weston	14	2.2	70	1 U	3.6	1 U	0.02 U	1 U	1 U
	3/15/1995	Weston	25	1 U	1 U	1 U	1 U	1 U	1.1	1	1 U
	3/15/1995	Weston	45	1 U	1 U	1 U	1 U	1 U	0.85	1 U	1 U
GP-06638	3/16/1995	Weston	14	1 U	1 U	1 U	1 U	1 U	0.02 U	1.1	1 U
	3/16/1995	Weston	25	1 U	1 U	1 U	1.3	1 U	2.7	1 U	1 U
	3/16/1995	Weston	45	1 U	1 U	1 U	1 U	1 U	0.28	1 U	1 U
GP-06639	3/16/1995	Weston	14	1 U	1 U	1 U	3.1	1 U	3.8	22	1 U
	3/16/1995	Weston	25	1 U	1 U	1 U	2.7	1 U	90	2.6	1 U
	3/16/1995	Weston	45	1 U	1 U	1 U	1 U	1 U	4.1	10	1 U
Source Control Evaluation Screening Level Values [2]				**4.15**	**55.6**	**1.93**	**NE**	**32,800**	**3.69**	**NE**	**59.4**

Table 5-15
Summary of Groundwater Analytical Results Halogenated Volatile Organic Compounds

Sample Location	Date Sampled	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]							
				PCE	TCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,1-DCA	1,2-DCA
GP-06640	3/15/1995	Weston	14	1.5	1 U	1 U	1 U	1 U	0.02 U	1.2	1 U
	3/15/1995	Weston	25	1 U	1 U	1 U	1 U	1 U	0.3	1.7	1 U
	3/15/1995	Weston	45	1 U	1 U	1 U	1 U	1 U	0.32	1 U	1 U
GP-08901	9/14/1994	Boeing	14	1 U	1 U	1 U	12	1 U	13	1 U	1 U
	9/14/1994	Boeing	24	1 U	1 U	1 U	1 U	1 U	25	1 U	1 U
GP-08902	9/14/1994	Weston	14	1 U	1 U	1 U	1 U	1 U	21	1 U	1 U
	9/14/1994	Weston	24	1 U	2.8	1 U	57	21	54	1 U	1 U
GP-08903	9/14/1994	Weston	14	1 U	1 U	1 U	53	1 U	0.37	1 U	1 U
	9/14/1994	Weston	24	1 U	1 U	1 U	18	2.2	25	1 U	1 U
GP-08904	9/14/1994	Weston	14	1 U	1 U	1 U	1 U	1 U	0.02 U	1 U	1 U
	9/14/1994	Weston	24	1 U	1 U	1 U	17	1	0.26	1 U	1 U
GP-08905	9/13/1994	Weston	14	6.8	1.7	1 U	1.8	1 U	0.02 U	1 U	1 U
	9/13/1994	Weston	24	1 U	1 U	1 U	8.5	1 U	0.08	1 U	1 U
GP-08906	11/29/1994	Weston	15	1 U	1 U	1 U	1.1	1 U	0.02 U	1 U	1 U
	11/29/1994	Weston	25	1 U	1 U	1 U	40	1.7	22	1 U	1 U
	11/29/1994	Weston	45	1 U	1 U	1 U	1 U	1 U	7.2	1 U	1 U
	11/29/1994	Weston	65	1 U	1 U	1 U	1 U	1 U	0.02 U	1 U	1 U
GP-08907	11/28/1994	Weston	15	1 U	1 U	1 U	1 U	1 U	0.07	1 U	1 U
	11/28/1994	Weston	25	1 U	20	1 U	60	21	32	1 U	1 U
	11/28/1994	Weston	45	1 U	1 U	1 U	1 U	1 U	22	1 U	1 U
	11/29/1994	Weston	63	1 U	1 U	1 U	1 U	1 U	0.02 U	1 U	1 U
GP-08908	3/17/1995	Boeing	14	1 U	1 U	1 U	1 U	1 U	0.02 U	1 U	1 U
	3/17/1995	Boeing	25	1 U	1 U	1 U	1 U	1 U	0.02 U	1 U	1 U
	3/17/1995	Boeing	45	1 U	1 U	1 U	1 U	1 U	0.02 U	1 U	1 U
GP-09101	9/12/1994	Weston	15	1 U	1 U	1 U	1 U	1 U	0.03 UB	1 U	1 U
GP-09102	9/8/1994	Weston	14	1 U	1 U	1 U	1 U	1 U	0.71	1 U	1 U
GP-09103	9/8/1994	Boeing	14	1 U	1 U	1 U	1 U	1 U	9.7	1 U	1 U
GP-09104	11/23/1994	Weston	15	1 U	1 U	1 U	1 U	1 U	0.02 U	1 U	1 U
	11/23/1994	Weston	25	1 U	1 U	1 U	1 U	1 U	13	30	1 U
	11/23/1994	Weston	45	1 U	1 U	1 U	1 U	1 U	0.17	1 U	1 U
GP-09105	11/23/1994	Weston	15	1 U	1 U	1 U	1 U	1 U	0.02 U	1 U	1 U
	11/23/1994	Weston	25	1 U	1 U	1 U	1 U	1 U	78	51	1.2 N
	11/23/1994	Weston	45	1 U	1 U	1 U	1 U	1 U	0.68	1 U	1 U
GP-09106	3/14/1995	Weston	14	1 U	1 U	1 U	1 U	1 U	0.02 U	1 U	1 U
	3/14/1995	Weston	25	1 U	1 U	1 U	58	31	30	1 U	1 U
	3/14/1995	Weston	45	1 U	1 U	1 U	1 U	1 U	2.2	1 U	1 U
Source Control Evaluation Screening Level Values [2]				**4.15**	**55.6**	**1.93**	**NE**	**32,800**	**3.69**	**NE**	**59.4**

Table 5-15
Summary of Groundwater Analytical Results Halogenated Volatile Organic Compounds

Sample Location	Date Sampled	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]							
				PCE	TCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,1-DCA	1,2-DCA
GP-09107	3/14/1995	Weston	14	1 U	1 U	1 U	1 U	1 U	0.02 U	1 U	1 U
	3/14/1995	Weston	25	1 U	1 U	1 U	1 U	1 U	23	13	1 U
	3/14/1995	Weston	45	1 U	1 U	1 U	1 U	1 U	0.22	1 U	1 U
GP-09108	3/14/1995	Weston	14	1 U	1 U	1 U	1 U	1 U	0.02 U	1 U	1 U
	3/14/1995	Weston	25	1 U	1 U	1 U	1 U	1 U	21	27	1 U
	3/14/1995	Weston	45	1 U	1 U	1 U	1 U	1 U	1.5	1 U	1 U
GP-09109	3/15/1995	Weston	14	1 U	1 U	1 U	1 U	1 U	0.38	1 U	1 U
	3/15/1995	Weston	25	1 U	1 U	1 U	1 U	1 U	77	39	1 U
	3/15/1995	Weston	45	1 U	1 U	1 U	1 U	1 U	0.21	1 U	1 U
GP-09110	9/19/1995	Weston	15	1 U	1 U	1 U	1 U	1 U	0.73	1 U	1 U
	9/19/1995	Weston	25	1 U	1 U	1 U	1 U	1 U	1.4	1 U	1 U
	9/19/1995	Weston	45	1 U	1 U	1 U	1 U	1 U	2.7	1 U	1 U
GP-09111	9/20/1995	Weston	15	1 U	1 U	1 U	1 U	1 U	2.5	1 U	1 U
	9/20/1995	Weston	25	1 U	1 U	1 U	1 U	1 U	0.7	1 U	1 U
	9/20/1995	Weston	45	1 U	1 U	1 U	1 U	1 U	16	1 U	1 U
GP-09112	9/19/1995	Weston	15	1 U	1 U	1 U	1 U	1 U	0.01 U	1 U	1 U
	9/19/1995	Weston	25	1 U	1 U	1 U	1 U	1 U	1.6	1 U	1 U
	9/19/1995	Weston	45	1 U	1 U	1 U	1 U	1 U	7.5	1 U	1 U
GP-09113	9/19/1995	Weston	15	1 U	1 U	1 U	1 U	1 U	0.01 U	1 U	1 U
	9/19/1995	Weston	25	1 U	1 U	1 U	1 U	1 U	0.24	1 U	1 U
	9/19/1995	Weston	45	1 U	1 U	1 U	1 U	1 U	16	1 U	1 U
GP-09114	9/20/1995	Weston	15	1 U	1 U	1 U	1 U	1 U	11	1 U	1 U
	9/20/1995	Weston	25	1 U	1 U	1 U	1 U	1 U	0.01 U	1 U	1 U
	9/20/1995	Weston	45	1 U	1 U	1 U	1 U	1 U	3.2	1 U	1 U
GP-09115	9/19/1995	Weston	15	1 U	1 U	1 U	1 U	1 U	0.01 U	1 U	1 U
	9/19/1995	Weston	25	1 U	1 U	1 U	1 U	1 U	0.32	1 U	1 U
	9/19/1995	Weston	45	1 U	1 U	1 U	1 U	1 U	0.4	1 U	1 U
Source Control Evaluation Screening Level Values [2]				**4.15**	**55.6**	**1.93**	**NE**	**32,800**	**3.69**	**NE**	**59.4**

Table 5-15
Summary of Groundwater Analytical Results Halogenated Volatile Organic Compounds

Sample Location	Date Sampled	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]							
				PCE	TCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,1-DCA	1,2-DCA
MW-22	9/17/1992	SECOR	6-15.75	2 U	2 U	**2 U**	—	2 U	2 U	2 U	2 U
	4/13/1993	SECOR		1 U	1 U	1 U	—	1 U	1 U	1 U	1 U
	11/10/1993	SECOR		**5 U**	2 U	**2 U**	5 U	2 U	**10 U**	2 U	2 U
MW-23	9/10/1992	SECOR	6-15.75	2.8	2 U	**2 U**	—	2 U	2 U	2 U	2 U
	11/10/1993	SECOR		**5 U**	2 U	**2 U**	5 U	2 U	**10 U**	2 U	2 U
	12/29/2004	SECOR		1 U	1.62	1 U	2.75	1 U	1 U	1 U	1 U
MW-24	9/17/1992	SECOR	6-19.75	**100 U**	**100 U**	**100 U**	—	100 U	**100 U**	100 U	**100 U**
	11/10/1993	SECOR		**5 U**	2 U	**2 U**	5 U	2 U	**10 U**	2 U	2 U
MW-25	9/17/1992	SECOR	6-19.75	**2,000 U**	**2,000 U**	**2,000 U**	—	2,000 U	**2,000 U**	2,000 U	**2,000 U**
	4/13/1993	SECOR		1 U	1 U	1 U	—	1 U	1 U	1 U	1 U
	11/10/1993	SECOR		**5 U**	2 U	2 U	5 U	2 U	**10 U**	2 U	2 U
	12/29/2004	Farallon		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
MW-31	12/29/2004	Farallon	5-19	1 U	1 U	1 U	1 U	1 U	0.202 J	0.096 J	1 U
PL2-JF01A	3/10/1995	Boeing	NA	1 U	1 U	1 U	1 U	1 U	**2.2**	19	1 U
	9/27/1995	Boeing		1 U	1 U	1 U	1 U	1 U	2 U	11	1 U
	11/17/1995	Boeing		1 U	10	1 U	2.1	1 U	2 U	6.4	1 U
	3/1/1996	Boeing		1 U	38	1 U	3.1	1 U	2 U	1.2	1 U
	5/23/1996	Boeing		1 U	1 U	1 U	1 U	1 U	2 U	10	1 U
	8/26/1996	Boeing		1 U	1 U	1 U	1 U	1 U	2 U	8.4	1 U
	11/21/1996	Boeing		1 U	4.7	1 U	1 U	1 U	2 U	6.8	1 U
PL2-JF01AR	5/17/2001	Boeing	23-27	**5 UD**	5 UD	**5 UD**	850 D	5 UD	410 D	5 UD	5 UD
	7/25/2001	Boeing		1 U	1 U	1.1	3,100 D	3.9	2,300 D	1 U	1 U
	10/24/2001	Boeing		1 U	1 U	1 U	240 D	1 U	550 D	1 U	1 U
	1/21/2002	Boeing		**5 U**	5 U	10	26,000 D	25	16,000 D	5 U	5 U
	6/16/2003	Boeing		**100 U**	**100 U**	**100 U**	3,000	100 U	4,800	100 U	**100 U**
	9/2/2003	Boeing		**25 U**	25 U	**25 U**	260	25 U	1,700	25 U	25 U
	12/8/2003	Boeing		**30 U**	30 U	**30 U**	300	30 U	1,300	30 U	30 U
	12/19/2003	Boeing		**20 UJ**	20 UJ	**5 U**	510 J	20 UJ	2,200 J	5 U	5 U
	2/2/2004	Boeing		**20 U**	20 U	**20 U**	4,000	20 U	5,400	20 U	20 U
	5/10/2004	Boeing		**50 U**	50 U	**50 U**	3,600	50 U	4,500 JL	50 U	50 U
	8/2/2004	Boeing		**50 U**	50 U	**50 U**	2,200	50 U	7,000 J	50 U	50 U
	11/1/2004	Boeing		1 U	1 U	1 U	280	1 U	2,900	1 U	1 U
	2/1/2005	Boeing		**50 UJ**	50 UJ	**50 UJ**	280 J	50 UJ	2,000 J	50 UJ	50 UJ
	8/1/2005	Boeing		**75 U**	**75 U**	**75 U**	520	75 U	4000	75 U	75 U
	10/31/2005	Boeing		**10 U**	10 U	**10 U**	10 U	10 U	1900 J	10 U	10 U
	2/6/2006	Boeing		**10 U**	10 U	**10 U**	28	10 U	1100	10 U	10 U
	5/1/2006	Boeing		**15 U**	15 U	**15 U**	910	15 U	2600 J	15 U	15 U
	7/31/2006	Boeing		**15 U**	15 U	**15 U**	15 U	15 U	820	15 U	15 U
	11/6/2006	Boeing		**5 U**	5 U	**5 U**	5 U	5 U	330	5 U	5 U
	2/1/2007	Boeing		3 U	3 U	**3 U**	900	3 U	2100	3 U	3 U
	5/2/2007	Boeing		1 U	1 U	1 U	1100	1 U	13000	1 U	1 U
Source Control Evaluation Screening Level Values [2]				**4.15**	**55.6**	**1.93**	**NE**	**32,800**	**3.69**	**NE**	**59.4**

Table 5-15
Summary of Groundwater Analytical Results Halogenated Volatile Organic Compounds

Sample Location	Date Sampled	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]							
				PCE	TCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,1-DCA	1,2-DCA
PL2-JF01B	3/31/1995	Boeing	40-50	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U
	9/27/1995	Boeing		1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U
	11/17/1995	Boeing		1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U
	3/1/1996	Boeing		1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U
	5/23/1996	Boeing		1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U
	8/26/1996	Boeing		1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U
	11/21/1996	Boeing		1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U
	4/26/2001	Boeing		1 U	1 U	1 U	68	1 U	130 J	1 U	1 U
	7/25/2001	Boeing		2 U	2 U	**2 U**	170	2 U	170	2.1	2 U
	10/24/2001	Boeing		1 U	1 U	1 U	150	1 U	190 D	1.8	1 U
	1/21/2002	Boeing		1 U	1 U	1 U	100	1 U	150	2	1 U
	6/16/2003	Boeing		1 U	1 U	1 U	38	1 U	57	1 U	1 U
	9/2/2003	Boeing		1 U	1 U	1 U	540	2.2	240	1.6	1 U
	12/8/2003	Boeing		**5 U**	5 U	**5 U**	460	5 U	120	5 U	5 U
	12/19/2003	Boeing		**5 U**	5 U	**5 U**	380	5 U	170 J	5 U	5 U
	2/2/2004	Boeing		**5 U**	5 U	**5 U**	220	5 U	100	5 U	5 U
	5/10/2004	Boeing		1 U	1 U	1 U	130	1 U	13 JL	1	1 U
	8/2/2004	Boeing		1 U	1 U	1 U	160	1 U	38 J	1.1	1 U
	11/1/2004	Boeing		1 U	1 U	1 U	81	1 U	62	1.2	1 U
	2/1/2005	Boeing		1 UJ	1 UJ	1 UJ	41 J	1 UJ	87 J	1.1 J	1 UJ
	8/1/2005	Boeing		1 U	1 U	1 U	7.1	1 U	55	1 U	1 U
	10/31/2005	Boeing		1 U	1 U	1 U	6.9	1 U	35	1.1	1 U
	2/6/2006	Boeing		1 U	1 U	1 U	9.2	1 U	160	1.2	1 U
	5/1/2006	Boeing		1 U	1 U	1 U	3.7	1 U	5.1	1 U	1 U
	7/31/2006	Boeing		1 U	1 U	1 U	4.1	1 U	30	1 U	1 U
	11/6/2006	Boeing		0.2 U	0.2	0.2 U	1.3	0.2 U	7.6	1	0.2 U
	2/1/2007	Boeing		0.2 U	0.2 U	0.2 U	2.7	0.2 U	20	0.6	0.2 U
	5/2/2007	Boeing		1 U	1 U	1 U	1.1	1 U	2.9	1 U	1 U
PL2-JF01C	5/17/2001	Boeing	74-78	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
	7/25/2001	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	10/24/2001	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	1/21/2002	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	6/16/2003	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	12/8/2003	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	12/19/2003	Boeing		0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ
	5/10/2004	Boeing		1 U	1 U	1 U	1 U	1 U	1 UJL	1 U	1 U
	11/1/2004	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	10/31/2005	Boeing		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
	2/6/2006	Boeing		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
	5/1/2006	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	11/6/2006	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	5/2/2007	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Source Control Evaluation Screening Level Values [2]				**4.15**	**55.6**	**1.93**	**NE**	**32,800**	**3.69**	**NE**	**59.4**

Table 5-15
Summary of Groundwater Analytical Results Halogenated Volatile Organic Compounds

Sample Location	Date Sampled	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]							
				PCE	TCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,1-DCA	1,2-DCA
PL2-JF02A	9/27/1995	Boeing	8-22.75	1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U
	11/17/1995	Boeing		1 U	1.2	1 U	1 U	1 U	2 U	1 U	1 U
	3/1/1996	Boeing		1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U
	5/23/1996	Boeing		1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U
	8/26/1996	Boeing		1 U	1 U	1 U	1 U	1 U	2 U	1 U	1 U
	11/21/1996	Boeing		1 U	1.5	1 U	1 U	1 U	2 U	1 U	1 U
	11/21/1996	Boeing		1 U	1.6	1 U	1 U	1 U	2 U	1 U	1 U
	4/26/2001	Boeing		1 U	1 U	1 U	1 U	1 U	1.2 J	1 U	1 U
	7/25/2001	Boeing		1 U	1 U	1 U	1 U	1 U	3.3	1 U	1 U
	10/24/2001	Boeing		1 U	1 U	1 U	1 U	1 U	5.8	1 U	1 U
	1/21/2002	Boeing		1 U	1 U	1 U	1 U	1 U	2.5	1 U	1 U
	6/16/2003	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	9/2/2003	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	12/8/2003	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	2/2/2004	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	5/10/2004	Boeing		1 U	1 U	1 U	1 U	1 U	1 UJL	1 U	1 U
	8/2/2004	Boeing		1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U
	11/1/2004	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	2/1/2005	Boeing		1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
	8/1/2005	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	10/31/2005	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	2/6/2006	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	5/1/2006	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	7/31/2006	Boeing		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.4	0.2 U	0.2 U
	11/6/2006	Boeing		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.5	0.2 U	0.2 U
	2/1/2007	Boeing		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.6	0.2 U	0.2 U
	5/2/2007	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Source Control Evaluation Screening Level Values [2]				**4.15**	**55.6**	**1.93**	**NE**	**32,800**	**3.69**	**NE**	**59.4**

Table 5-15
Summary of Groundwater Analytical Results Halogenated Volatile Organic Compounds

Sample Location	Date Sampled	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]							
				PCE	TCE	1,1-DCE	cis-1,2-DCE	trans-1,2-DCE	Vinyl Chloride	1,1-DCA	1,2-DCA
PL2-JF03A	9/28/1995	Boeing	8-22.75	1 U	1 U	1 U	1 U	1 U	2 U	3	1 U
	11/17/1995	Boeing		1 U	1 U	1 U	1 U	1 U	2 U	7.7	1 U
	3/1/1996	Boeing		1 U	1 U	1 U	1 U	1 U	2 U	9.3	1 U
	5/23/1996	Boeing		1 U	1 U	1 U	1 U	1 U	2 U	6.4	1 U
	8/26/1996	Boeing		1 U	1 U	1 U	1 U	1 U	2 U	2.9	1 U
	11/21/1996	Boeing		1 U	1 U	1 U	1 U	1 U	2 U	2	1 U
	4/26/2001	Boeing		1 U	1 U	1 U	1 U	1 U	1 UJ	1 U	1 U
	7/25/2001	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	10/24/2001	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	1/21/2002	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	6/16/2003	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	12/8/2003	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	5/10/2004	Boeing		1 U	1 U	1 U	1 U	1 U	1 UJL	1 U	1 U
	11/1/2004	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
	10/31/2005	Boeing		1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Source Control Evaluation Screening Level Values [2]				**4.15**	**55.6**	**1.93**	**NE**	**32,800**	**3.69**	**NE**	**59.4**

NOTES:

Results in **BOLD** indicate that the laboratory practical quantitation limit exceeds the screening level value.

Indicates detected concentration exceeds the Source Control Evaluation Screening Level Value.

[1]Analyzed using U.S. Environmental Protection Agency Method 8240, 8260, 8260B, or 8260 SIM.

[2] Washington State Department of Ecology Cleanup Levels and Risk Calculations (CLARC) under the Model Toxics Control Act (MTCA) Cleanup Regulation, Standard Method B Formula Values for Surface Water, November 2001.

— = not analyzed
bgs = below ground surface
D = the reported result for this analyte was calculated based on a secondary dilution factor
DCA = dichloroethane
DCE = dichloroethene
H = denotes value greater than minimum shown
J = the analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity
L = denotes value less than max shown
N = presumptive evidence of a compound.
NA = not available
PCE = tetrachloroethene
TCE = trichloroethene
U = no detectable concentrations above the listed laboratory practical quantitation limit
NE = not established

Table 5-16
Summary of Groundwater Analytical Results for Detected Volatile Organic Compounds

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]							
				1,1,1-Trichloroethane	1,2,4-Trimethylbenzene	Acetone	Carbon Disulfide	Chlorobenzene	Chloroethane	Chloroform	Chloromethane
GP-06601	9/12/1994	Weston	13	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	9/12/1994	Weston	23	1 U	—	5 U	8.5	1 U	2 U	1 U	2 U
	9/12/1994	Weston	45	1 U	—	8.7	1 U	1 U	2 U	1 U	2 U
GP-06602	9/13/1994	Weston	14	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	9/13/1994	Weston	24	1 U	—	5 U	2	1 U	2 U	1 U	2 U
	9/13/1994	Weston	45	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-06603	9/12/1994	Weston	14	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	9/12/1994	Weston	24	1 U	—	5 U	1.1	1 U	17	1 U	2 U
	9/12/1994	Weston	45	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-06604	9/13/1994	Weston	14	5 U	—	25 U	5 U	5 U	10 U	5 U	10 U
	9/13/1994	Weston	24	1 U	—	5 U	1.1	1 U	2 U	1 U	2 U
	9/13/1994	Weston	45	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-06633	11/28/1994	Boeing	15	1 U	—	5.8 UB	1 U	1 U	2 U	1 U	2 U
	11/28/1994	Boeing	25	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	11/28/1994	Boeing	45	1 UJH	—	5 UJH	2.8 UBJH	1 UJH	2 UJH	1 UJH	2 UJH
	11/28/1994	Boeing	65	1 UJH	—	5 UJH	3 UBJH	1 UJH	2 UJH	1 UJH	2 UJH
GP-06634	11/22/1994	Weston	15	1 U	—	5.4	1 U	1 U	2 U	1 U	2 U
	11/22/1994	Weston	25	1 U	—	5.2	1 U	1 U	2 U	1 U	2 U
	11/22/1994	Weston	45	1 UJ	—	12 J	1.9 J	1 UJ	2 UJ	1 UJ	2 UJ
	11/22/1994	Weston	65	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-06635	11/22/1994	Weston	15	1 U	—	6.2	3.8	1 U	2 U	1 U	2 U
	11/22/1994	Weston	25	1 UJ	—	5.9 J	1 UJ	1 UJ	2 UJ	1 UJ	2 UJ
	11/22/1994	Weston	45	1 U	—	6	1 U	1 U	2 U	1 U	2 U
	11/22/1994	Weston	65	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-06636	11/21/1994	Weston	15	1 U	—	5 U	1.3 J	1 U	11 J	1 U	2 U
	11/21/1994	Weston	25	1 U	—	14 UB	1 U	1 U	2 U	1 U	2 U
	11/21/1994	Weston	45	1 U	—	14 UB	1 U	1 U	2 U	1 U	2 U
	11/21/1994	Weston	65	1 U	—	12 UB	1.3	1 U	2 U	1 U	2 U
GP-06637	3/15/1995	Weston	14	1 U	—	5 U	1 U	1 U	2 U	1.6	2 U
	3/15/1995	Weston	25	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	3/15/1995	Weston	45	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-06638	3/16/1995	Weston	14	1	—	5 U	1 U	1 U	2 U	1 U	2 U
	3/16/1995	Weston	25	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	3/16/1995	Weston	45	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-06639	3/16/1995	Weston	14	1 U	—	5 U	1 U	1 U	200	1 U	2 U
	3/16/1995	Weston	25	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	3/16/1995	Weston	45	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
Source Control Evaluation Screening Level Values [2]				**417,000**	**NE**	**NE**	**NE**	**5,030**	**NE**	**283**	**133**

Table 5-16
Summary of Groundwater Analytical Results for Detected Volatile Organic Compounds

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]							
				1,1,1-Trichloroethane	1,2,4-Trimethylbenzene	Acetone	Carbon Disulfide	Chlorobenzene	Chloroethane	Chloroform	Chloromethane
GP-06640	3/15/1995	Weston	14	5	—	5 U	1 U	1 U	2 U	1 U	2 U
	3/15/1995	Weston	25	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	3/15/1995	Weston	45	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-08901	9/14/1994	Boeing	14	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	9/14/1994	Boeing	24	1 U	—	5 U	18	1 U	2 U	1 U	2 U
GP-08902	9/14/1994	Weston	14	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	9/14/1994	Weston	24	1 U	—	5 U	17	1 U	2 U	1 U	2 U
GP-08903	9/14/1994	Weston	14	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	9/14/1994	Weston	24	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-08904	9/14/1994	Weston	14	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	9/14/1994	Weston	24	1 U	—	5 U	1.1 UB	1 U	2 U	1 U	2 U
GP-08905	9/13/1994	Weston	14	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	9/13/1994	Weston	24	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-08906	11/29/1994	Weston	15	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	11/29/1994	Weston	25	1 U	—	10 UBN	1 U	1 U	2 U	1 U	2 U
	11/29/1994	Weston	45	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	11/29/1994	Weston	65	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-08907	11/28/1994	Weston	15	1 U	—	5 U	5.2 UB	1 U	2 U	1 U	2 U
	11/28/1994	Weston	25	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	11/28/1994	Weston	45	1 U	—	5 U	3 UB	1 U	2 U	1 U	2 U
	11/29/1994	Weston	63	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-08908	3/17/1995	Boeing	14	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	3/17/1995	Boeing	25	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	3/17/1995	Boeing	45	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-09101	9/12/1994	Weston	15	1 U	—	5 U	1.2	1 U	2 U	1 U	2 U
GP-09102	9/8/1994	Weston	14	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-09103	9/8/1994	Boeing	14	1 U	—	5 U	1.9 UB	1 U	2 U	1 U	2 U
GP-09104	11/23/1994	Weston	15	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	11/23/1994	Weston	25	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	11/23/1994	Weston	45	1 U	—	6.8 UB	1 U	1 U	2 U	1 U	2 U
GP-09105	11/23/1994	Weston	15	1 U	—	10	1.5	1 U	2 U	1 U	2 U
	11/23/1994	Weston	25	1 U	—	5.4	1 U	1 U	2 U	1 U	2 U
	11/23/1994	Weston	45	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-09106	3/14/1995	Weston	14	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	3/14/1995	Weston	25	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	3/14/1995	Weston	45	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-09107	3/14/1995	Weston	14	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	3/14/1995	Weston	25	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	3/14/1995	Weston	45	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-09108	3/14/1995	Weston	14	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	3/14/1995	Weston	25	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	3/14/1995	Weston	45	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
Source Control Evaluation Screening Level Values [2]				**417,000**	**NE**	**NE**	**NE**	**5,030**	**NE**	**283**	**133**

Table 5-16
Summary of Groundwater Analytical Results for Detected Volatile Organic Compounds

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]							
				1,1,1-Trichloroethane	1,2,4-Trimethylbenzene	Acetone	Carbon Disulfide	Chlorobenzene	Chloroethane	Chloroform	Chloromethane
GP-09109	3/15/1995	Weston	14	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	3/15/1995	Weston	25	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	3/15/1995	Weston	45	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-09110	9/19/1995	Weston	15	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	9/19/1995	Weston	25	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	9/19/1995	Weston	45	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-09111	9/20/1995	Weston	15	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	9/20/1995	Weston	25	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	9/20/1995	Weston	45	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-09112	9/19/1995	Weston	15	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	9/19/1995	Weston	25	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	9/19/1995	Weston	45	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-09113	9/19/1995	Weston	15	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	9/19/1995	Weston	25	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	9/19/1995	Weston	45	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-09114	9/20/1995	Weston	15	1 U	—	5 U	1.9 UB	1 U	2 U	1 U	2 U
	9/20/1995	Weston	25	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	9/20/1995	Weston	45	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
GP-09115	9/19/1995	Weston	15	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	9/19/1995	Weston	25	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	9/19/1995	Weston	45	1 U	—	5.3	1 U	1 U	2 U	1 U	2 U
MW-12	11/10/1993	SECOR	5-20	5 U	—	10 U	10 U	2 U	10 U	2 U	10 U
MW-13	9/10/1992	SECOR	5-20	2 U	—	10 U	2 U	2 U	2 U	2 U	2 U
MW-14	11/10/1993	SECOR	5-20	5 U	—	10 U	10 U	2 U	10 U	2 U	10 U
MW-15	11/10/1993	SECOR	5-20	5 U	—	10 U	10 U	2 U	10 U	2 U	10 U
MW-22	9/17/1992	SECOR	6-15.75	2 U	2 U	10 U	2 U	2 U	2 U	2 U	2 U
	4/13/1993	SECOR		1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
	11/10/1993	SECOR		5 U	—	10 U	10 U	2 U	10 U	2 U	10 U
MW-23	9/10/1992	SECOR	6-15.75	2 U	—	10 U	2 U	2 U	2 U	2 U	2 U
	11/10/1993	SECOR		5 U	—	10 U	10 U	2 U	10 U	2 U	10 U
	12/29/2004	Farallon		1 U	1 U	—	—	1 U	1 U	1 U	1 U
MW-24	9/17/1992	SECOR	6-19.75	100 U	100 U	500 U	100 U	100 U	100 U	500	100 U
	11/10/1993	SECOR		5 U	—	32	10 U	2 U	10 U	2 U	10 U
MW-25	9/17/1992	SECOR	6-19.75	2,000 U	2,000 U	10,000 U	2,000 U	2,000 U	2,000 U	**2000 U**	**2,000 U**
	4/13/1993	SECOR		1 U	1 U	5 U	1 U	1 U	1 U	1 U	1 U
	11/10/1993	SECOR		5 U	—	10 U	10 U	2 U	10 U	2 U	10 U
	12/29/2004	Farallon		1 U	1 U	—	—	1 U	1 U	1 U	1 U
MW-31	12/29/2004	Farallon	5-19	1 U	0.0403 J	—	—	1 U	1 U	1 U	1 U
Source Control Evaluation Screening Level Values [2]				**417,000**	**NE**	**NE**	**NE**	**5,030**	**NE**	**283**	**133**

Table 5-16
Summary of Groundwater Analytical Results for Detected Volatile Organic Compounds

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]							
				1,1,1-Trichloroethane	1,2,4-Trimethylbenzene	Acetone	Carbon Disulfide	Chlorobenzene	Chloroethane	Chloroform	Chloromethane
PL2-JF01A	3/10/1995	Boeing	NA	1 U	—	5.7	1 U	27	2 U	1 U	2 U
	9/27/1995	Boeing		1 U	—	5 U	1 U	23	2 U	1 U	2 U
	11/17/1995	Boeing		1 U	—	5 U	1 U	12	2 U	1 U	2 U
	3/1/1996	Boeing		1 U	—	5 U	1 U	1.7	2 U	1	2 U
	5/23/1996	Boeing		1 U	—	5 U	1 U	12	1.6 J	1 U	2 U
	8/26/1996	Boeing		1 U	—	5 U	1 U	13	2.2	1 U	2 U
	11/21/1996	Boeing		1 U	—	5 U	1 U	6.8	3.5	1 U	2 U
PL2-JF01AR	5/17/2001	Boeing	23-27	5 UD	—	25 UD	5 UD	5 UD	5 UD	5 UD	5 UD
	7/25/2001	Boeing		1 U	—	5 U	1 U	4.4	1 U	1 U	1 U
	10/24/2001	Boeing		1 U	—	5 U	1 U	1.4	1 U	1 U	2.1 Y
	1/21/2002	Boeing		5 U	—	25 U	5 U	41	5 U	5 U	48
	6/16/2003	Boeing		100 U	—	500 U	100 U	100 U	100 U	100 U	100 U
	9/2/2003	Boeing		25 U	—	120 U	25 U	25 U	25 U	25 U	25 U
	12/8/2003	Boeing		30 U	—	150 U	30 U	30 U	30 U	30 U	30 U
	12/19/2003	Boeing		5 U	—	100 UJ	20 UJ	20 UJ	20 UJ	20 UJ	20 UJ
	2/2/2004	Boeing		20 U	—	100 U	20 U	25	20 U	20 U	20 U
	5/10/2004	Boeing		50 U	—	250 U	50 U	50 U	50 U	50 U	50 U
	8/2/2004	Boeing		50 U	—	250 U	50 U	50 U	50 U	50 U	50 U
	11/1/2004	Boeing		1 U	—	5 U	1 U	11	1 U	1 U	1 U
	2/1/2005	Boeing		50 UJ	—	250 UJ	50 UJ	50 UJ	50 UJ	50 UJ	50 UJ
	8/1/2005	Boeing		75 U	—	380 U	75 U	75 U	75 U	75 U	75 U
	10/31/2005	Boeing		10 U	—	50 U	10 U	28	10 U	10 U	10 U
	2/6/2005	Boeing		10 U	—	50 U	10 U	11	10 U	10 U	10 U
	5/1/2006	Boeing		15 U	—	75 U	15 U	35	15 U	15 U	15 U
	7/31/2006	Boeing		15 U	—	75 U	15 U	22	15 U	15 U	15 U
	11/6/2006	Boeing		5 U	—	25 U	5 U	25	5 U	5 U	5 U
	2/1/2007	Boeing		3 U	—	15 U	3 U	36	3 U	3 U	3 U
	5/2/2007	Boeing		1 U	—	6.6 U	1 U	47	1 U	1 U	1 U
Source Control Evaluation Screening Level Values [2]				**417,000**	**NE**	**NE**	**NE**	**5,030**	**NE**	**283**	**133**

Table 5-16
Summary of Groundwater Analytical Results for Detected Volatile Organic Compounds

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]							
				1,1,1-Trichloroethane	1,2,4-Trimethylbenzene	Acetone	Carbon Disulfide	Chlorobenzene	Chloroethane	Chloroform	Chloromethane
PL2-JF01B	3/31/1995	Boeing	40-50	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	9/27/1995	Boeing		1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	11/17/1995	Boeing		1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	3/1/1996	Boeing		1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	5/23/1996	Boeing		1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	8/26/1996	Boeing		1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	11/21/1996	Boeing		1 U	—	12	1 U	1 U	2 U	1 U	2 U
	4/26/2001	Boeing		1 U	—	5 U	1 U	1 U	1 UJ	1 UJ	1 UJ
	7/25/2001	Boeing		2 U	—	10 U	2 U	2 U	2 U	2 U	2 U
	10/24/2001	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	1/21/2002	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	6/16/2003	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	9/2/2003	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	12/8/2003	Boeing		5 U	—	25 U	5 U	5 U	5 U	5 U	5 U
	12/19/2003	Boeing		5 U	—	25 U	5 U	5 U	5 U	5 U	5 U
	2/2/2004	Boeing		5 U	—	25 U	5 U	5 U	5 U	5 U	5 U
	5/10/2004	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	8/2/2004	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	11/1/2004	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	2/1/2005	Boeing		1 UJ	—	5 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
	8/1/2005	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	10/31/2005	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	2/6/2005	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	5/1/2006	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	7/31/2006	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	11/6/2006	Boeing		0.2 U	—	3 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
	2/1/2007	Boeing		0.2 U	—	3 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
	5/2/2007	Boeing		1 U	—	6.9 U	1 U	1 U	1 U	1 U	1 U
Source Control Evaluation Screening Level Values [2]				**417,000**	**NE**	**NE**	**NE**	**5,030**	**NE**	**283**	**133**

Table 5-16
Summary of Groundwater Analytical Results for Detected Volatile Organic Compounds

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]							
				1,1,1-Trichloroethane	1,2,4-Trimethylbenzene	Acetone	Carbon Disulfide	Chlorobenzene	Chloroethane	Chloroform	Chloromethane
PL2-JF01C	5/17/2001	Boeing	74-78	1 UJ	—	22 J	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
	7/25/2001	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	10/24/2001	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	1/21/2002	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	6/16/2003	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	12/8/2003	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	12/19/2003	Boeing		0.2 UJ	—	1 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ
	5/10/2004	Boeing		1 U	—	5.4	1 U	1 U	1 U	1 U	1 U
	11/1/2004	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	10/31/2005	Boeing		1 UJ	—	5 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
	2/6/2005	Boeing		1 UJ	—	5 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
	5/1/2006	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	11/6/2006	Boeing		1 U	—	15 U	1 U	1 U	1 U	1 U	1 U
	5/2/2007	Boeing		1 U	—	8.3 U	1 U	1 U	1 U	1 U	1 U
PL2-JF02A	9/27/1995	Boeing	8-22.75	1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	11/17/1995	Boeing		1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	3/1/1996	Boeing		1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	5/23/1996	Boeing		1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	8/26/1996	Boeing		1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	11/21/1996	Boeing		1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	11/21/1996	Boeing		1 U	—	5 U	1 U	1 U	2 U	1 U	2 U
	4/26/2001	Boeing		1 U	—	5 U	1 U	1 U	1 UJ	1 UJ	1 UJ
	7/25/2001	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	10/24/2001	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	1/21/2002	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	6/16/2003	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	9/2/2003	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	12/8/2003	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	2/2/2004	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	5/10/2004	Boeing		1 U	—	5	1 U	1 U	1 U	1 U	1 U
	8/2/2004	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	11/1/2004	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	2/1/2005	Boeing		1 UJ	—	5 UJ	1 UJ	1 UJ	1 UJ	1 UJ	1 UJ
	8/1/2005	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	10/31/2005	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	2/6/2005	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	5/1/2006	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	7/31/2006	Boeing		0.2 U	—	1 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
	11/6/2006	Boeing		0.2 U	—	3 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
	2/1/2007	Boeing		0.2 U	—	3 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
	5/2/2007	Boeing		1 U	—	6.8 U	1 U	1 U	1 U	1 U	1 U
Source Control Evaluation Screening Level Values [2]				**417,000**	**NE**	**NE**	**NE**	**5,030**	**NE**	**283**	**133**

Table 5-16
Summary of Groundwater Analytical Results for Detected Volatile Organic Compounds

Sample Location	Sample Date	Sampled by	Sample Depth/Screened Interval (feet bgs)	Analytical Results (micrograms per liter) [1]							
				1,1,1-Trichloroethane	1,2,4-Trimethylbenzene	Acetone	Carbon Disulfide	Chlorobenzene	Chloroethane	Chloroform	Chloromethane
PL2-JF03A	9/28/1995	Boeing	8-22.75	1.3	—	5 U	1 U	1 U	3.3	1 U	2 U
	11/17/1995	Boeing		1 U	—	5 U	1 U	1 U	2.4	1 U	2 U
	3/1/1996	Boeing		1.2	—	5 U	1 U	1 U	2 U	1 U	2 U
	5/23/1996	Boeing		1 U	—	5 U	1 U	1 U	1.6 J	1 U	2 U
	8/26/1996	Boeing		1 U	—	9.7	1 U	1 U	2 U	1 U	2 U
	11/21/1996	Boeing		1 U	—	18	1 U	1 U	2	1 U	2 U
	4/26/2001	Boeing		1 U	—	5 U	1 U	1 U	1.6 J	1 UJ	1 UJ
	7/25/2001	Boeing		1 U	—	5 U	1 U	1 U	1.8	1 U	1 U
	10/24/2001	Boeing		1 U	—	5 U	1 U	1 U	1.5	1 U	1 U
	1/21/2002	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	6/16/2003	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	12/8/2003	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	5/10/2004	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
	11/1/2004	Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
		Boeing		1 U	—	5 U	1 U	1 U	1 U	1 U	1 U
Source Control Evaluation Screening Level Values [2]				**417,000**	**NE**	**NE**	**NE**	**5,030**	**NE**	**283**	**133**

NOTES:

Results in **BOLD** indicate that the laboratory practical quantitation limit exceeds the screening level value.

Indicates detected concentration exceeds the Source Control Evaluation Screening Level Value.

[1]Analyzed using U.S. Environmental Protection Agency Method 8240, 8260, 8260B, 625 or 8270.

[2] Washington State Department of Ecology Cleanup Levels and Risk Calculations (CLARC) under the Model Toxics Control Act (MTCA) Cleanup Regulation, Standard Method B Formula Values for Surface Water, November 2001.

— = not analyzed

bgs = below ground surface

B1 = the analyte was also detected in the associated method blank.

D = the reported result for this analyte was calculated based on a secondary dilution factor

J = the analyte was analyzed for and positively identified, but the associated numerical value is an estimated quantity

L = denotes value less than max shown

N = presumptive evidence of a compound

NA = not available

NE = not established

U = no detectable concentrations above the listed laboratory practical quantitation limit

Y = the analyte reporting limit is raised due to a positive chromotographic interference. The compound is not detected above ther aised limit but may be present at or below the limit.

Table 5-17
Summary of BTEX in LNAPL

Sample Location	Sample Date	Analytical Results (milligrams per liter)[1]			
		Benzene	Toluene	Ethylbenzene	Xylenes Total
MW-16	9/14/1992	0.02 U	32	0.02 U	0.02 U
	12/29/2004[2]	3.86 U	3.86 U	3.86 U	1.3
MW-18	12/8/1992	0.2 U	0.2 U	0.2 U	0.2 U
MW-19	9/3/1992	0.02 U	8	0.02 U	0.02 U
	12/29/2004[2]	3.94 U	0.734	3.94 U	7.89 U
MW-20	9/3/1992	0.02 U	7	0.02 U	0.02 U
	12/29/2004[2]	4.0 U	4.0 U	4.0 U	8.0 U
MW-21	9/3/1992	0.02 U	8	0.02 U	0.02 U
MW-22	12/29/2004[2]	3.81 U	3.81 U	3.81 U	7.61 U
MW-28	12/29/2004[2]	0.4 U	0.4 U	0.4 U	0.8 U

Notes:

[1] Analyzed by U.S. Environmental Protection Agency Method 8021B.

[2] Results in milligrams per kilogram.

BTEX = benzene, toluene, ethylbenzene and total xylenes

LNAPL = light nonaqueous-phase liquid

U = no detectable concentrations above the listed laboratory practical quantitiation limit

Table 5-18
Summary of Halogenated Volatile Organic Compounds in LNAPL

Sample Location	Sample Date	Analytical Results (milligrams per liter)[1]							
		PCE	TCE	1,1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1-Dichloroethane	1,2-Dichloroethane
MW-16	9/14/1992	0.10 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
	12/29/2004[2]	3.86 U	3.86 U	3.86 U	3.86 U	3.86 U	3.86 U	3.86 U	3.86 U
MW-18	12/8/1992	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
MW-19	9/3/1992	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
	12/29/2004[2]	3.94 U	3.94 U	3.94 U	3.94 U	3.94 U	3.94 U	3.94 U	3.94 U
MW-20	9/3/1992	27	0.02 U	0.02 U	0.02 U	20 U	20 U	20 U	20 U
	12/29/2004[2]	4 U	4 U	4 U	4 U	4 U	4 U	4 U	4 U
MW-21	9/3/1992	8	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
MW-22	12/29/2004[2]	3.81 U	3.81 U	3.81 U	3.81 U	3.81 U	3.81 U	3.81 U	3.81 U
MW-28	12/29/2004[2]	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U

Notes:

[1] Analyzed using U.S. Environmental Protection Agency Method 8260/8260B.

[2] Results in milligrams per kilogram.

HVOCs = halogenated volatile organic compounds

LNAPL = light nonaqueous-phase liquid

PCE = tetrachloroethene

TCE = trichloroethene

U = no detectable concentrations above the listed laboratory practical quantitation limits

Table 5-19
Summary of Polychlorinated Biphenyls in LNAPL

Sample ID	Date Sampled	Analytical Results (milligrams per liter)						
		Aroclor						
		1016	1221	1232	1242	1248	1254	1260
MW-19	9/3/1992[1]	10 U	10 U	10 U	10 U	10 U	10 U	10 U
	4/11/2003[2]	1 UQ	1 UQ	1 UQ	1 UQ	1 UQ	1 UQ	1 UQ
MW-20	9/3/1992[1]	10 U	10 U	10 U	10 U	10 U	10 U	10 U
MW-21	9/3/1992[1]	10 U	10 U	10 U	10 U	10 U	10 U	10 U
MW-33	4/10/2003[2]	0.99 U	0.99 U	0.99 U	0.99 U	0.99 U	0.99 U	0.99 U

Notes:

[1] Analyzed by U.S. Environmental Protection Agency Method 8080.

[2] Analyzed by U.S. Environmental Protection Agency Method 8082. Results in milligrams per kilogram.

PCBs = polychlorinated biphenyls

LNAPL = light nonaqueous-phase liquid

Q = denotes that surrogate recovery was outside the control limits

U = no detectable concentrations above the listed laboratory practical quantitation limit

Table 5-20
Summary of Polycyclic Aromatic Hydrocarbons in LNAPL

Sample Location	Sample Date	Sampled by	Naph thalene	Acenaph thylene	Acenaph thene	Fluorene	Phenan threne	Anthra cene	2-Methyl naph thalene	Fluor anthene	Pyrene	Benzo(a) anthra cene	Chrysene	Benzo(b) fluoran thene	Benzo(k) fluoran thene	Total Benzo fluoran thenes	Benzo(a) pyrene	Indeno (1,2,3-cd) pyrene	Dibenzo (a,h)anthra cene	Benzo (g,h,i) perylene
			Analytical Results (micrograms per litre) [1]																	
			LPAH							HPAH										
Area 1	08/26/92	SEACOR	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	—	10,000 U	—	—	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U
MW-18	12/08/92	SEACOR	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	—	10,000 U	—	—	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U
MW-19	09/03/92	SEACOR	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	—	10,000 U	—	—	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U
MW-20	09/03/92	SEACOR	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	—	10,000 U	—	—	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U
MW-21	09/03/92	SEACOR	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	—	10,000 U	—	—	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U
R-W Lathe	12/08/92	SEACOR	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	—	10,000 U	—	—	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U
			Analytical Results (micrograms per kilogram) [1]																	
			LPAH							HPAH										
Sample Location	Sample Date	Sampled by	Naph thalene	Acenaph thylene	Acenaph thene	Fluorene	Phenan threne	Anthra cene	2-Methyl naph thalene	Fluor anthene	Pyrene	Benzo(a) anthra cene	Chrysene	Benzo(b) fluoran thene	Benzo(k) fluoran thene	Total Benzo fluoran thenes	Benzo(a) pyrene	Indeno (1,2,3-cd) pyrene	Dibenzo (a,h)anthra cene	Benzo (g,h,i) perylene
MW-16	12/29/04	Farallon	4610	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-19	12/29/04	Farallon	1310 J	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-20	12/29/04	Farallon	1130 J	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-22	12/29/04	Farallon	3810 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-28	12/29/04	Farallon	157 J	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Notes:
[1]Analyzed by U.S. Environmental Protection Agency Methods 8260B, or 8270.
— = not analyzed
bgs = below ground surface
NA = not available
U = no detectable concentrations above the listed laboratory practical quantitation limit
J = estimated value

Table 5-21
Summary of Semivolatile Organic Compounds in LNAPL

Sample Location	Sample Date	Sampled by	Analytical Results (micrograms per liter)[1]																							
			Chlorinated Benzenes				Phthalate Esters						Phenols					Misc Extractables					
			1,4-Dichloro benzene	1,2-Dichloro benzene	1,2,4-Tri chloro benzene	Hexa chloro benzene	Dimethyl phthalate	Diethyl phthalate	Di-n-butyl phthalate	Butyl benzyl phthalate	bis(2-Ethyl hexyl) phthalate	Di-n-octyl phthalate	Phenol	2-Methyl phenol	4-Methyl phenol	2,4-Dimethyl phenol	Penta chloro phenol	Benzyl alcohol	Benzoic acid	Dibenzo furan	Hexa chloro ethane	Hexa chloro butadiene	n-Nitroso diphenyl amine
Area 1	8/26/1992	SEACOR	20 U	20 U	20 U	100 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	50,000 U	20,000 U	50,000 U	10,000 U	10,000 U	10,000 U	10,000 U
MW-16	9/14/1992	SEACOR	20 U	20 U	20 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-18	12/8/1992	SEACOR	200 U	200 U	200 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	50,000 U	20,000 U	50,000 U	10,000 U	10,000 U	10,000 U	10,000 U
MW-19	9/3/1992	SEACOR	20 U	20 U	20 U	100 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	50,000 U	20,000 U	50,000 U	10,000 U	10,000 U	10,000 U	10,000 U
MW-20	9/3/1992	SEACOR	20 U	20 U	20 U	100 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	50,000 U	20,000 U	50,000 U	10,000 U	10,000 U	10,000 U	10,000 U
MW-21	9/3/1992	SEACOR	20 U	20 U	20 U	100 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	50,000 U	20,000 U	50,000 U	10,000 U	10,000 U	10,000 U	10,000 U
R-W Lathe	12/8/1992	SEACOR	200 U	200 U	200 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	10,000 U	50,000 U	20,000 U	50,000 U	10,000 U	10,000 U	10,000 U	10,000 U
Sample Location	Sample Date	Sampled by	Analytical Results (micrograms per kilogram)[1]																							
			Chlorinated Benzenes				Phthalate Esters						Phenols					Misc Extractables					
			1,4-Dichloro benzene	1,2-Dichloro benzene	1,2,4-Tri chloro benzene	Hexa chloro benzene	Dimethyl phthalate	Diethyl phthalate	Di-n-butyl phthalate	Butyl benzyl phthalate	bis(2-Ethyl hexyl) phthalate	Di-n-octyl phthalate	Phenol	2-Methyl phenol	4-Methyl phenol	2,4-Dimethyl phenol	Penta chloro phenol	Benzyl alcohol	Benzoic acid	Dibenzo furan	Hexa chloro ethane	Hexa chloro butadiene	n-Nitroso diphenyl amine
MW-16	12/29/2004	Farallon	3860 U	3860 U	3860 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3860 U	—
MW-19	12/29/2004	Farallon	3940 U	3940 U	3940 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3940 U	—
MW-20	12/29/2004	Farallon	4000 U	4000 U	4000 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	4000 U	—
MW-22	12/29/2004	Farallon	3810 U	3810 U	3810 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	3810 U	—
MW-28	12/29/2004	Farallon	400 U	400 U	400 U	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	400 U	—

Notes:
[1]Analyzed by U.S. Environmental Protection Agency Methods 8260 or 8080.
— = not analyzed
bgs = below ground surface
NA = not available
U = no detectable concentrations above the listed laboratory practical quantitation limit

Table 5-22
Summary of Stormwater Analytical Results for SMS Metals

Sample Location	Sample Identification	Sample Date	Sampled by	Sample Location	Analytical Results (micrograms per liter)[1] Arsenic Total	Arsenic Dissolved	Cadmium Total	Cadmium Dissolved	Chromium Total	Chromium Dissolved	Copper Total	Copper Dissolved	Lead Total	Lead Dissolved	Mercury Total	Mercury Dissolved	Nickel Total	Nickel Dissolved	Silver Total	Silver Dissolved	Zinc Total	Zinc Dissolved
Stormwater Outfalls																						
Outfall 1	E-1	1990	Dames & Moore	Discharge	1 U	—	1 U	—	4 U	—	—	—	10 U	—	0.1 U	—	—	—	2 U	—	—	—
Outfall 2	E-2	1990	Dames & Moore	Discharge	26	—	1 U	—	4 U	—	—	—	10 U	—	0.3 U	—	—	—	2 U	—	—	—
Outfall 2	AJF-02SW-050519	5/19/2005	Anchor	Catch Basin	5.35	4.29	0.166 J	0.054 J	109	5.21	68.1	15.3	11.4	0.28 J	0.2 U	**0.2 U**	103	9.14	0.092 J	0.011 J	196	40.4
Outfall 3	E-3	1990	Dames & Moore	Discharge	7	—	1 U		4.2 U	—	—	—	10 U	—	0.2	—	—	—	2.1 U	—	—	—
Outfall 3	JOR-01SW-031015	10/15/2003	Anchor	Discharge	—	—	—	—	—	—	408	—	150	—	—	—	—	—	—	—	1,520	—
Outfall 3	JOR-01SW-040324	3/24/2004	Anchor	Discahrge	—	—	—	—	—	—	481	—	130	—	—	—	—	—	—	—	658	—
Outfall 3	JOR-02SW-041008	10/8/2004	Anchor	Catch Basin	—	—	—	—	—	—	32	—	20 U	—	—	—	—	—	—	—	217	—
Outfall 3	JOR-02SW-041206	12/6/2004	Anchor	Catch Basin	—	—	—	—	—	—	34	—	20 U	—	—	—	—	—	—	—	296	—
Outfall 3	JOR-02SW-050704	4/7/2005	Anchor	Catch Basin	—	—	—	—	—	—	39	—	20 U	—	—	—	—	—	—	—	578	—
Outfall 3	AJF-03SW-050519	5/19/2005	Anchor	Catch Basin	1.45	1.09	0.278 J	0.046 J	45.2	3.3	29.6	9.09	8.64	0.436 J	0.2 U	**0.2 U**	26.4	4.28	0.059 J	0.005 J	269	45.2
Outfall 3	JOR-01SW-051230	12/30/2005	Anchor	Discharge	—	—	—	—	—	—	16	—	20 U	—	—	—	—	—	—	—	284	—
Outfall 3	JOR-02SW-060316	3/16/2006	Anchor	Catch Basin	—	—	—	—	—	—	30	—	20 U	—	—	—	—	—	—	—	376	—
Outfall 3	JOR-02SW-060601	6/1/2006	Anchor	Catch Basin	—	—	—	—	—	—	25	—	20 U	—	—	—	—	—	—	—	715	—
Outfall 3	JOR-02SW-060919	9/19/2006	Anchor	Catch Basin	—	—	—	—	—	—	58	—	20 U	—	—	—	—	—	—	—	357	—
Outfall 3	JOR-04SW-060919	9/19/2006	Anchor	Catch Basin	—	—	—	—	—	—	9	—	20 U	—	—	—	—	—	—	—	70	—
Outfall 3	JOR-04SW-060919	9/19/2006	Anchor	Catch Basin	—	—	—	—	—	—	168	—	60	—	—	—	—	—	—	—	260	—
Outfall 3	JOR-03SW-061220	12/20/2006	Anchor	Catch Basin	—	—	—	—	—	—	43	—	20 U	—	—	—	—	—	—	—	456	—
Outfall 3	JOR-04SW-070409	4/9/2007	Anchor	Catch Basin	—	—	—	—	—	—	49	—	20 U	—	—	—	—	—	—	—	70	—
Outfall 4	E-4	1990	Dames & Moore	Discharge	<1	—	<1	—	<4.2	—	—	—	<10	—	<0.1	—	—	—	<2.1	—	—	—
Source Control Evaluation Screening Level Values					**NE**	**36** [2]	**NE**	**1.03** [3]	**NE**	**10** [3]	**NE**	**3.1** [2]	**NE**	**2.5** [3]	**NE**	**0.125** [5]	**NE**	**8.2** [2]	**NE**	**25,900** [4]	**NE**	**81** [2]

NOTES:

Results in **BOLD** indicate that the laboratory practical quantitation limit exceeds the screening level value.

(Green shading) Indicates detected concentration exceeds the Source Control Evaluation Screening Level Value.

[1] Analyzed by U.S. Environmental Protection Agency 6000/7000 Series Methods.

[2] Washington State Department of Ecology Water Quality Standards for Surface Waters of the State of Washington, Toxic Substances Criteria for Marine Water, Chronic Toxicity, Chapter 173-201A of the Washington Administrative Code, November 2006.

[3] Washington State Department of Ecology Water Quality Standards for Surface Waters of the State of Washington, Toxic Substances Criteria for Marine Water, Chronic Toxicity, Chapter 173-201A of the Washington Administrative Code, November 2006.

[4] Washington State Department of Ecology Cleanup Levels and Risk Calculations (CLARC) under the Model Toxics Control Act (MTCA) Cleanup Regulation, Standard Method B Formula Values for Surface Water, November 2001.

[5] Laboratory practical detection limit.

Concentrations of total/dissolved metals in Seep Sample Seep 20 correspond to unfiltered/filtered sample results.

— = not analyzed

J = denotes result reported is an estimate

U = no detectable concentrations above the listed laboratory practical quantitation limit

NE= not estabilshed

Table 5-23
Summary of Stormwater Analytical Results for Polychlorinated Biphenyls

Sample Location	Sample Identification	Sample Date	Sampled by	Analytical Results (micrograms per liter) [1]							
				Aroclor							
				1016	1221	1232	1242	1248	1254	1260	Total PCBs
Outfall 2	AJF-02SW-050519	5/19/2005	Anchor	**0.19 U**	**0.19 U**	**0.19 U**	**0.19 U**	**0.19 U**	**0.19 U**	**0.19 U**	**0.19 U**
Outfall 3	AJF-03SW-050519	5/19/2005	Anchor	**0.19 U**	**0.19 U**	**0.19 U**	**0.19 U**	**0.19 U**	**0.19 U**	**0.19 U**	**0.19 U**
Source Control Evaluation Screening Level Value [2]											**0.05**

NOTES:

Results in **BOLD** indicate that the laboratory practical quantitation limit exceeds the screening level value.

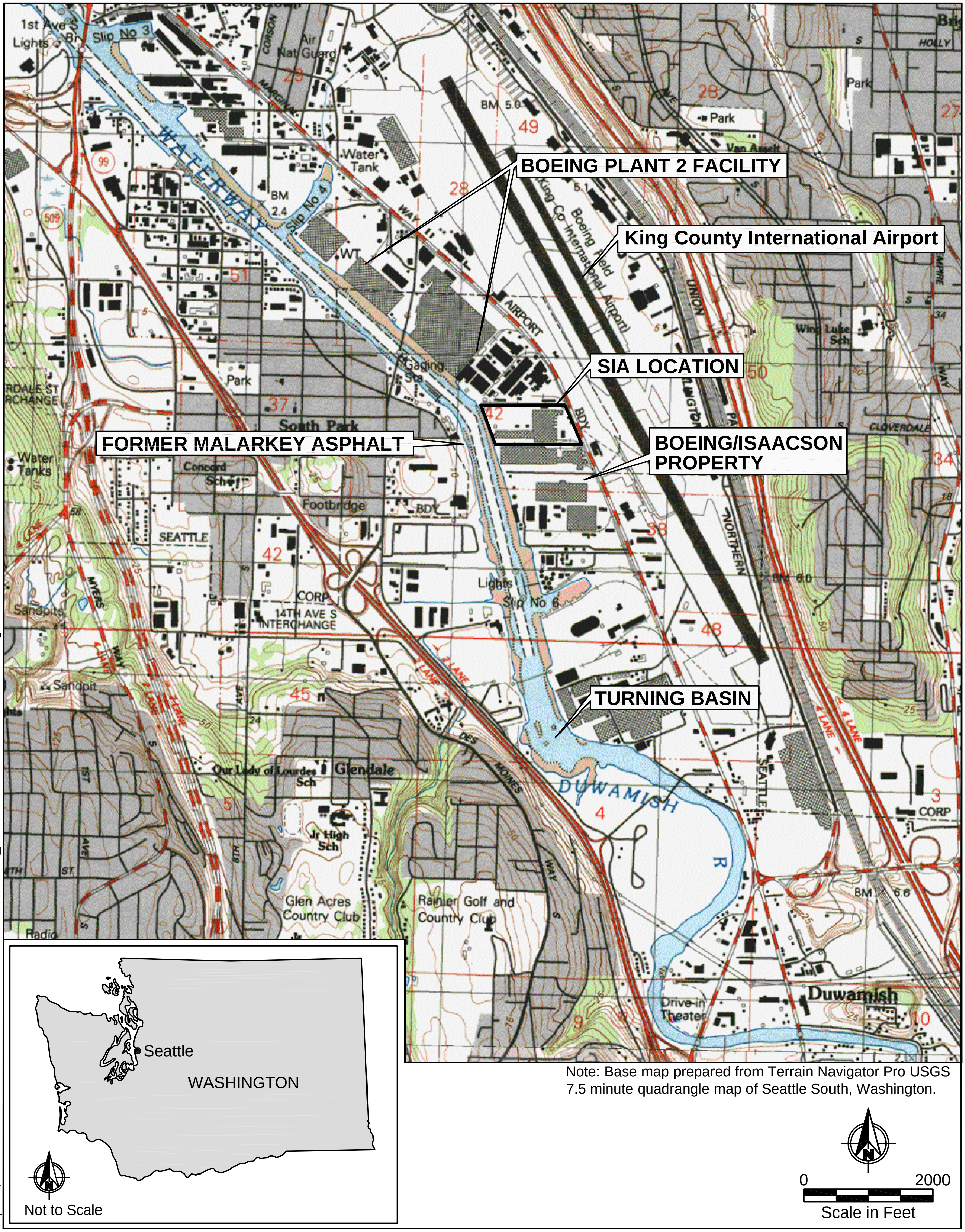
U = no detectable concentrations above the listed laboratory practical quantitation limit

(green shading) Indicates detected concentration exceeds the Source Control Evaluation Screening Level Value.

[1] Analyzed by U.S. Environmental Protection Agency Method 608, 8080, 8081, or 8082.

[2] Laboratory Practical Detection Limit for PCBs in Water.

FIGURES

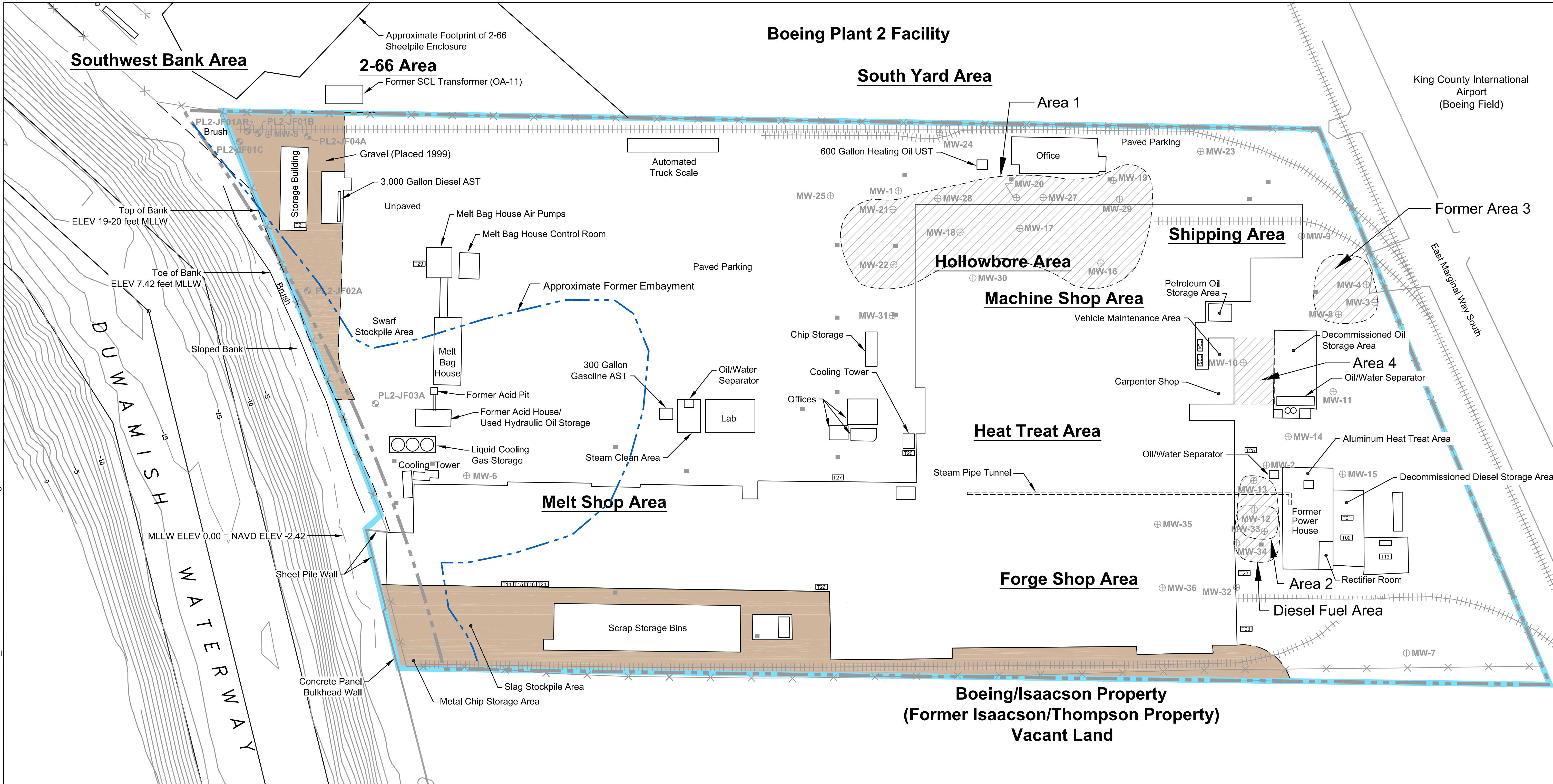


Apr 15, 2008 11:40am cdavidson K:\Jobs\010128-JORGENSEN_FORGE\01012802\01012802-001.dwg FIG 1-1

ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

Figure 1-1
SIA VICINITY MAP
Jorgensen Forge Facility



Legend

Property Boundary	NAVD	North American Vertical Datum	Transformer	Unpaved Areas (approximate)	
Sediment Investigation Area	MLLW	Mean Lower Low Water	Fence	Building Footprint	
Railroad Spur Mean Lower	ELEV	Elevation	Catch Basin (Spill Control Separator Design)	Previous Investigation and/or Remedial Action Area	
				Approximate Former Embayment	

0 120
Scale in Feet

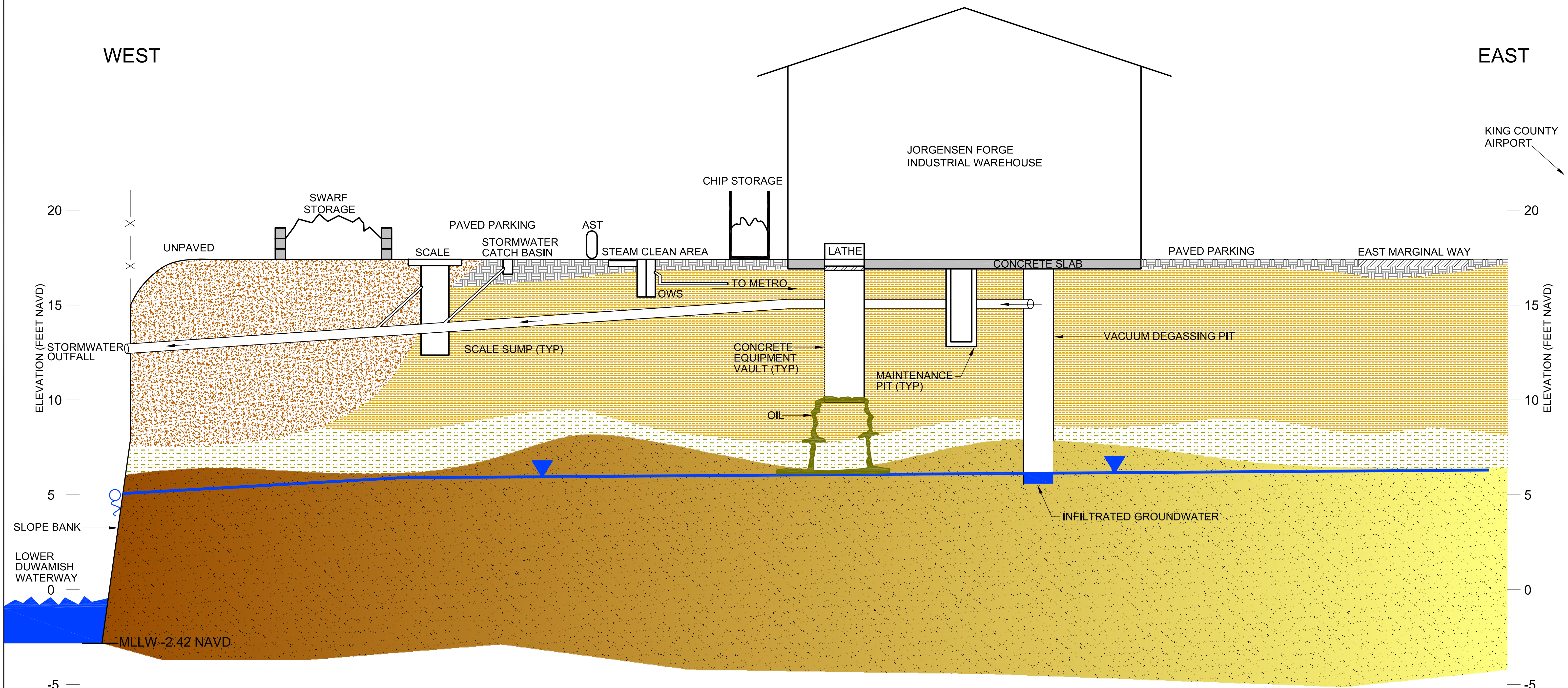
K:\Jobs\010128-JORGENSEN_FORGE\01012802\01012802-006.dwg FIG 1-2

Apr 15, 2008 11:08am heriksen

ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

Figure 1-2
SIA MAP
Jorgensen Forge Facility



LEGEND

- SURFACE FILL-SANDY GRAVEL
- EMBAYMENT FILL-SAND
- SAND / SILTY SAND-INCLUDES INTERBEDDED LAMINATED ALLUVIAL SILT AND BURIED PALESOLS
- SILT / CLAYEY SILT-CONTAINS ORGANIC MATERIAL INCLUDING DEGRADING PLANT MATTER AND WOODY DEBRIS
- SAND / SILTY SAND-INCREASE IN SILT CONTENT FROM EAST TO WEST
- SEEP
- APPROXIMATE GROUNDWATER LEVEL

OWS = OIL-WATER SEPARATOR
MLLW = MEAN LOWER LOW WATER
NAVD = NORTH AMERICAN VERTICAL DATUM

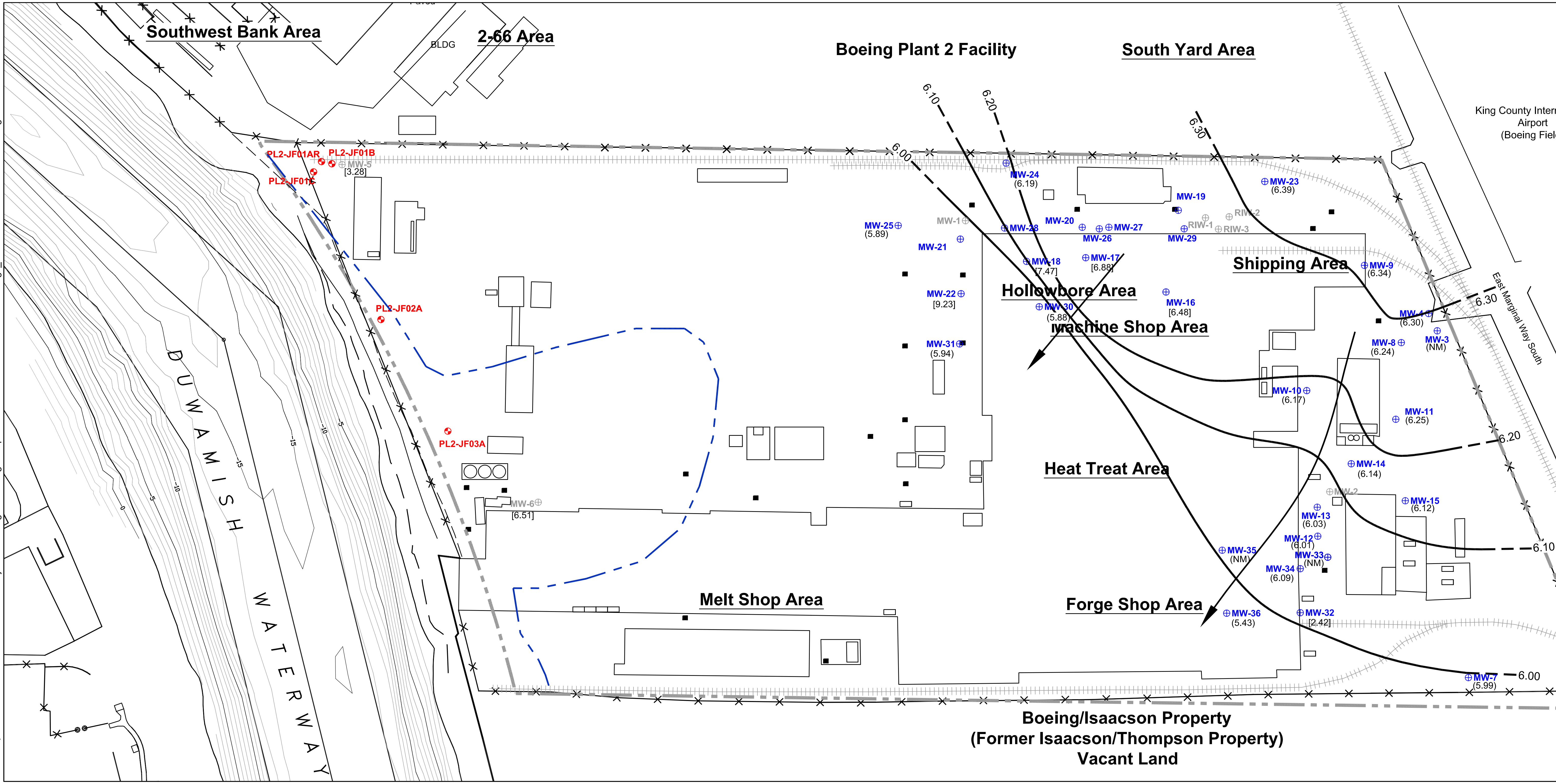
FARALLON CONSULTING
975 5th Avenue Northwest
Issaquah, WA 98027

FIGURE 1-3

CONCEPTUAL CROSS–SECTION
JORGENSEN FORGE FACILITY
8531 EAST MARGINAL WAY
SEATTLE, WASHINGTON

FARALLON PN: 394–002

Drawn By:DEW	Checked By:CB	Date:1/11/08	Disk Reference:394002



H:\Projects\394 Jorgensen Forge Corp\394002 Source Control Invest\Drawings_Plots\394-002GWCONTOUS.dwg GW 5-18-06
Jan 10, 2008 11:28am dwest

Legend

MW-10 ⊕	MW - Monitoring Well RIW - Reinjection Well EW - Series of 5 Extraction Wells
⊕ ⊕	Monitoring Well Not Included in Data Compendium
PL2-JF01A	Boeing Monitoring Well
(6.34)	Groundwater Elevation
[7.42]	Groundwater Elevation Measurement not Considered in Contouring
(NM)	Indicates Groundwater Elevation not Measured
6.40	Groundwater Elevation Contour
←	Approximate Direction of Groundwater Flow

Groundwater Elevations not Indicated for Monitoring Wells With Measurable Light Non-Aqueous Phase Liquid (LNAPL)

- Property Boundary
- Approximate Former Embayment
- Fence
- Catch Basin
- Transformer
- Railroad Spur

0 60 120
Scale in Feet

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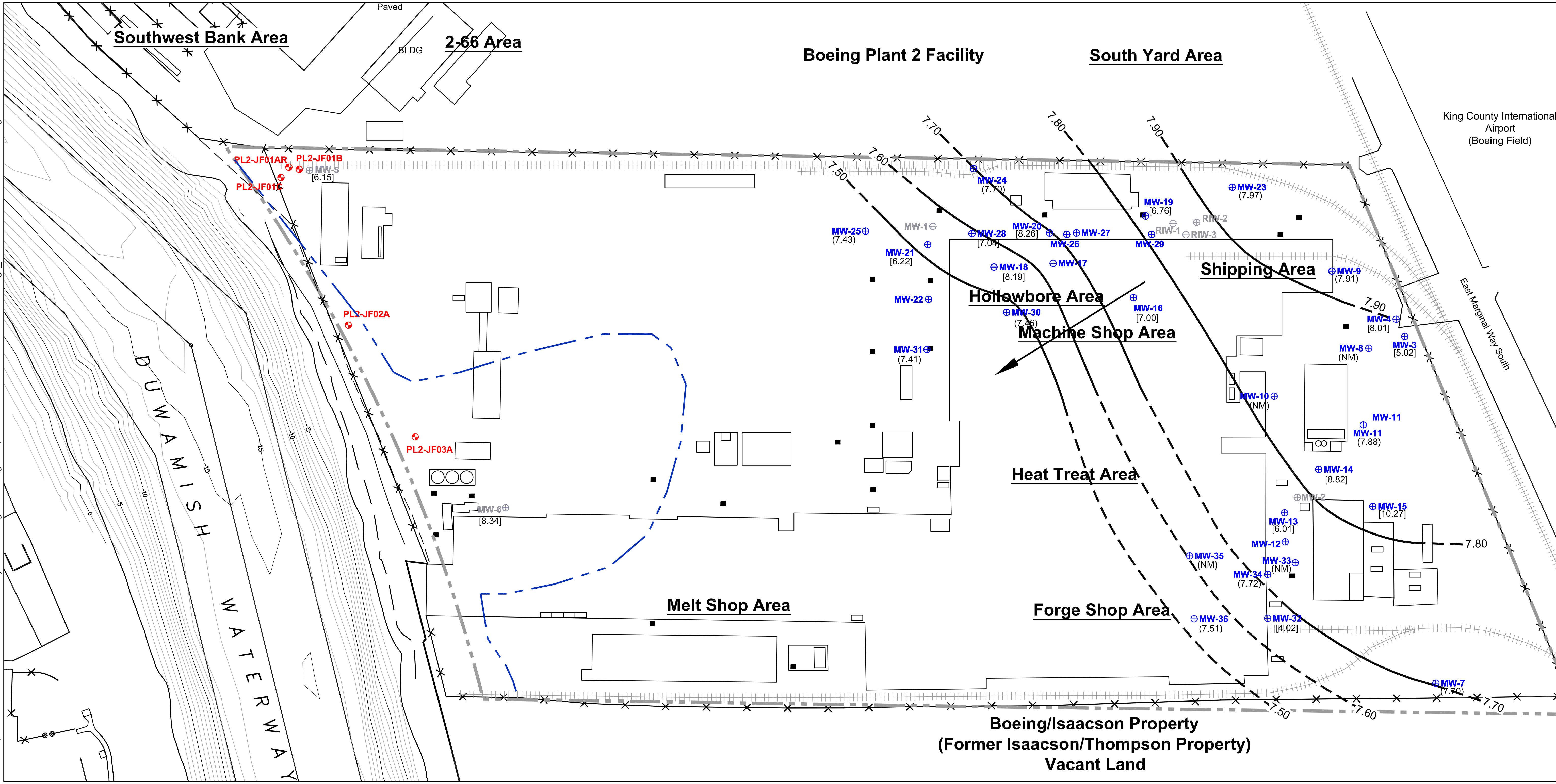
Farallon Consulting

Figure 2-1
SIA MAP SHOWING GROUNDWATER CONTOURS (5/18/06)
Jorgensen Forge Facility
8531 East Marginal Way South
Seattle, Washington



Legend

MW-10 ⊕	MW - Monitoring Well
	RIW - Reinjection Well
	EW - Series of 5 Extraction Wells
PL2-JF01A	Boeing Monitoring Well
(6.34)	Groundwater Elevation
[7.42]	Groundwater Elevation Measurement not Considered in Contouring
(NM)	Indicates Groundwater Elevation not Measured
6.40	Groundwater Elevation Contour
	Approximate Direction of Groundwater Flow
	Property Boundary
	Approximate Former Embayment
	Fence
	Catch Basin
	Transformer
	Railroad Spur

Groundwater Elevations not Indicated for Monitoring Wells With Measurable Light Non-Aqueous Phase Liquid (LNAPL)

N

0 60 120

Scale in Feet

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Figure 2-2

SITE MAP SHOWING GROUNDWATER CONTOURS (1/11/07)

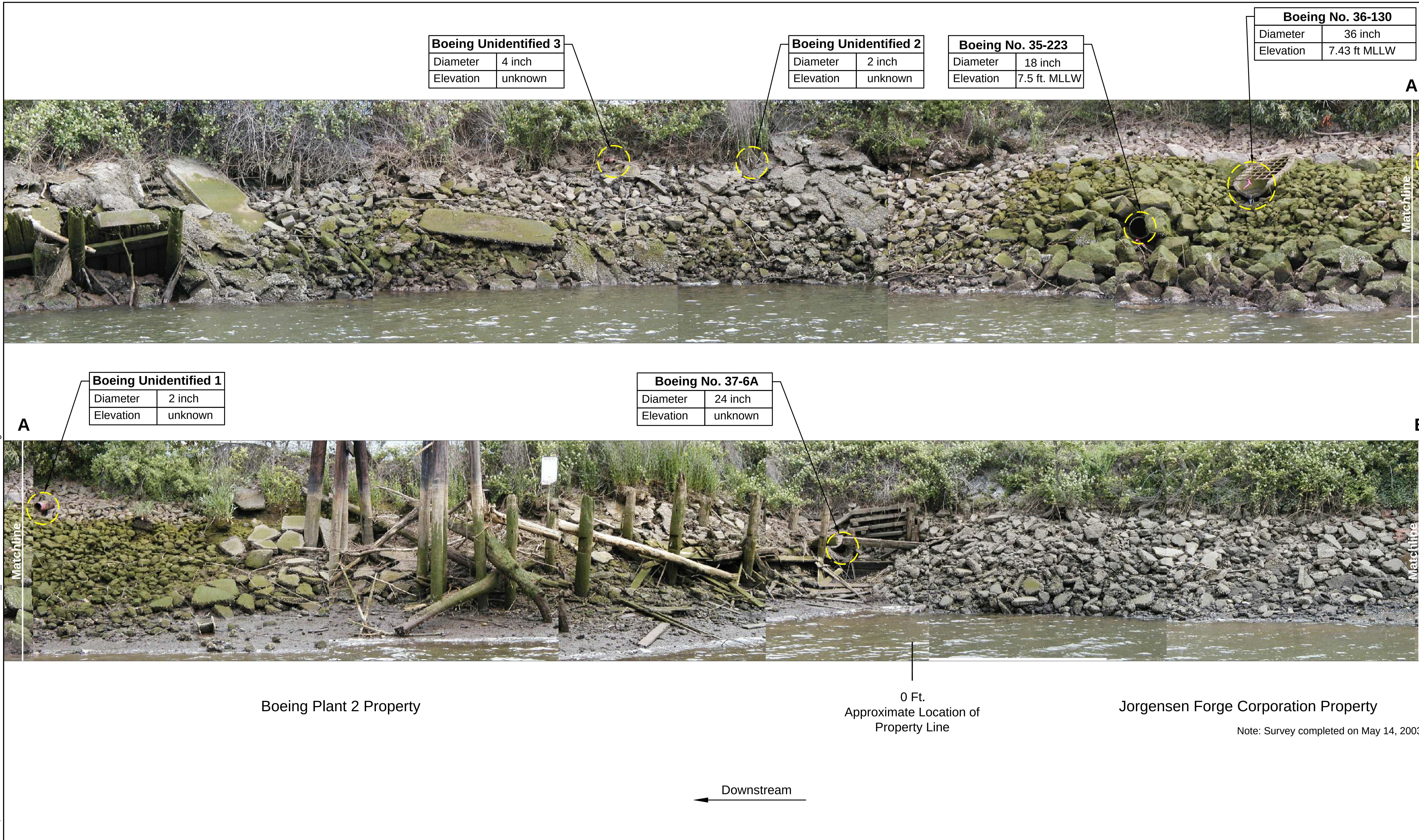
Jorgensen Forge Facility

8531 East Marginal Way South

Seattle, Washington

H:\Projects\394 Jorgensen Forge Corp\394002 Source Control Invest\Drawings_Plots\394-002GWCONTOUS.dwg GW 1-11-07

Jan 10, 2008 11:27am dwest



K:\Jobs\010128-JORGENSEN_FORGE\01012802\01012802-002.dwg FIG 2-3a

Apr 15, 2008 9:10am cdavidson

ANCHOR ENVIRONMENTAL, L.L.C.

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Figure 2-3A

OUTFALL AND SHORELINE RECONNAISSANCE PHOTOLOG - NORTHERN SHORELINE

Jorgenson Forge Facility

Outfall 009	
Diameter	3 inch
Elevation	18.12 ft MLLW

B

C

88 Ft.

Outfall 008	
Diameter	11.5 inch
Elevation	10.6 ft MLLW

Outfall 007	
Diameter	4.75 inch
Elevation	17.69 ft. MLLW

C

D

250 Ft.

355 Ft.

Jorgensen Forge Corporation Property

Downstream ←

Notes:
1. Survey completed on May 14, 2003.
2. Linear distance to outfall measured from northwest corner of property to top of bank above outfall location.

Apr 15, 2008 9:10am cdavidson K:\Jobs\010128-JORGENSEN_FORGE\01012802\01012802-002.dwg FIG 2-3b

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Figure 2-3B
OUTFALL AND SHORELINE RECONNAISSANCE PHOTOLOG - CENTRAL SHORELINE
Jorgenson Forge Facility

D | E

Outfall 006	
Diameter	4.75 inch
Elevation	17.55 ft MLLW

Outfall 005	
Diameter	12 inch
Elevation	8.88 ft MLLW

Outfall 004	
Diameter	12 inch
Elevation	6.99 ft MLLW
NPDES SW Permit	#S03-00323

373 Ft. | 435 Ft. | 482 Ft.

E

Outfall 003	
Diameter	18 inch
Elevation	8.91 ft MLLW
NPDES SW Permit	#S03-00323

Outfall 002	
Diameter	12 inch
Elevation	9.04 ft MLLW
NPDES SW Permit	#S03-00323

Outfall 001	
Diameter	12 inch
Elevation	12.42 ft MLLW
NPDES SW Permit	#S03-00323

Approximate Location of
The Boeing Company
Property Line

Jorgensen Forge Corporation Property

← Downstream

Notes:
1. Survey completed on May 14, 2003.
2. Linear distance to outfall measured from northwest corner of property to top of bank above outfall location.
3. Linear distance for Outfall 001, 002, and 003 could not be measured because top of bank inaccessible.

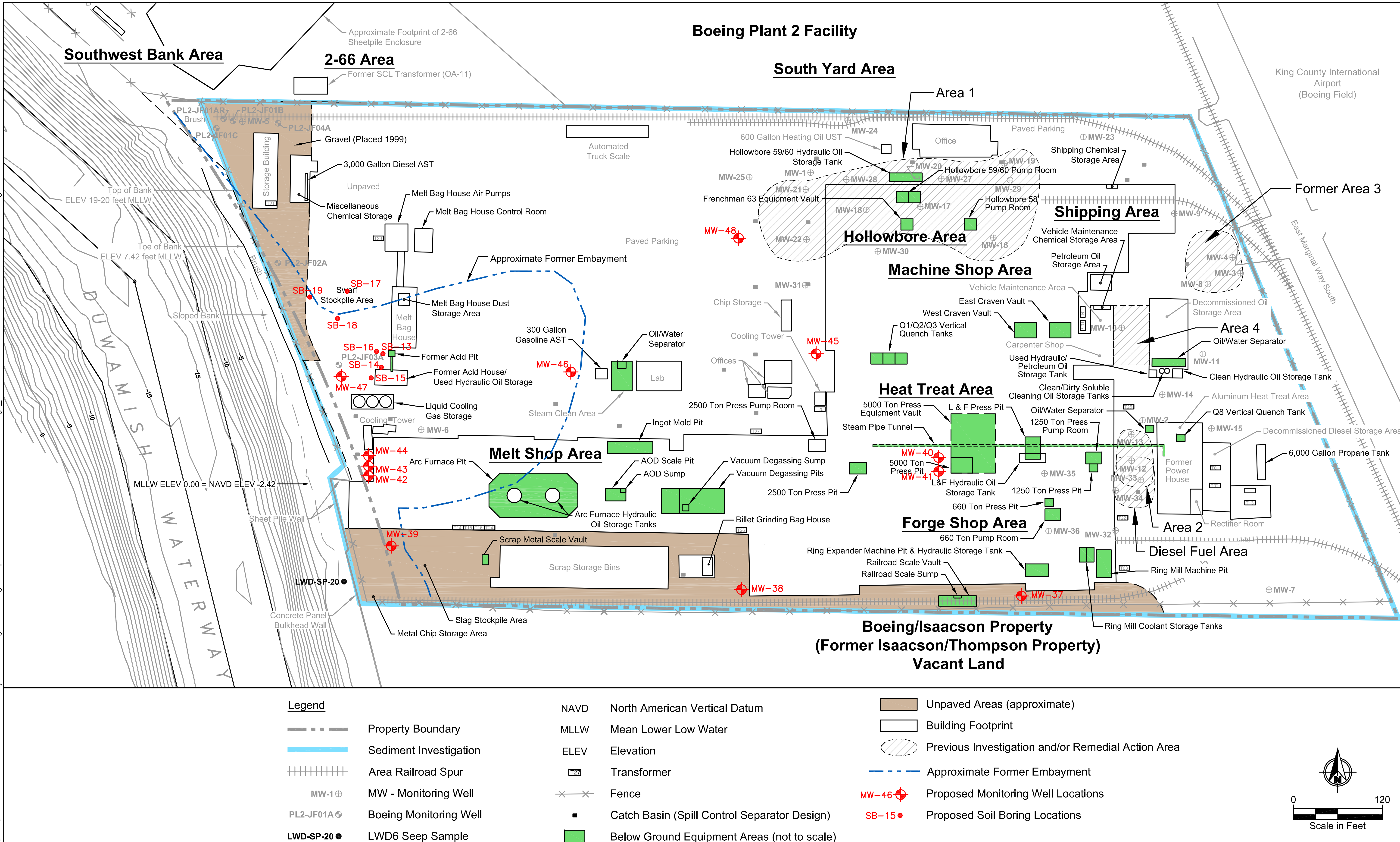
K:\Jobs\010128-JORGENSEN_FORGE\01012802\01012802-002.dwg FIG 2-3c

Apr 15, 2008 9:11am cdavidson

ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

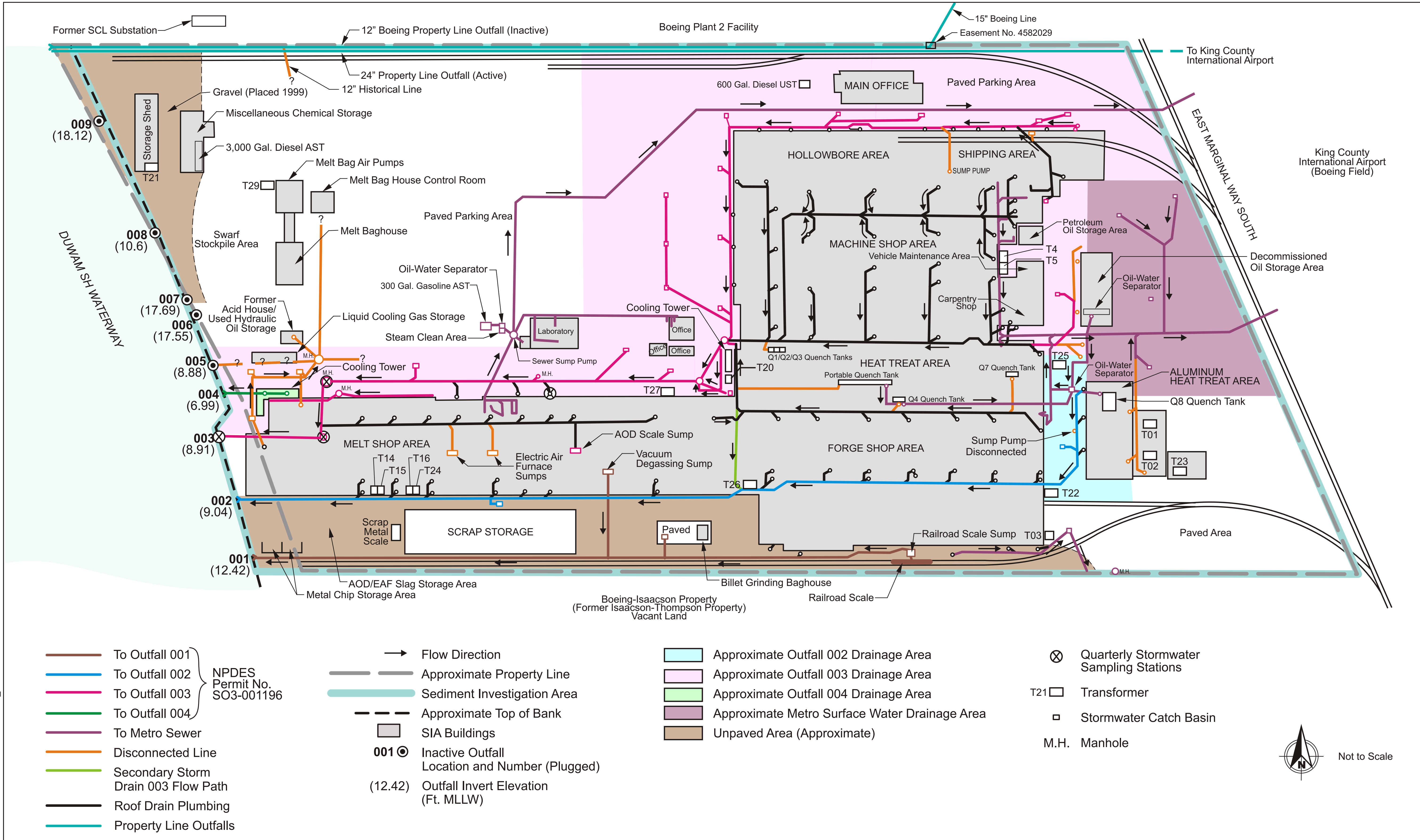
Figure 2-3C
OUTFALL AND SHORELINE RECONNAISSANCE PHOTOLOG - SOUTHERN SHORELINE
Jorgenson Forge Facility



H:\Projects\394 Jorgensen Forge Corp\394002 Source Control Invest\Drawings_Plots\01012802-006.dwg FIG 2-4 Apr 15, 2008 11:13am dwest

Figure 2-4
SIA PLAN SHOWING DATA
GAP INVESTIGATION SOIL AND GROUNDWATER SAMPLING LOCATIONS
Jorgensen Forge Facility

ANCHOR ENVIRONMENTAL, L.L.C.
FARALLON CONSULTING

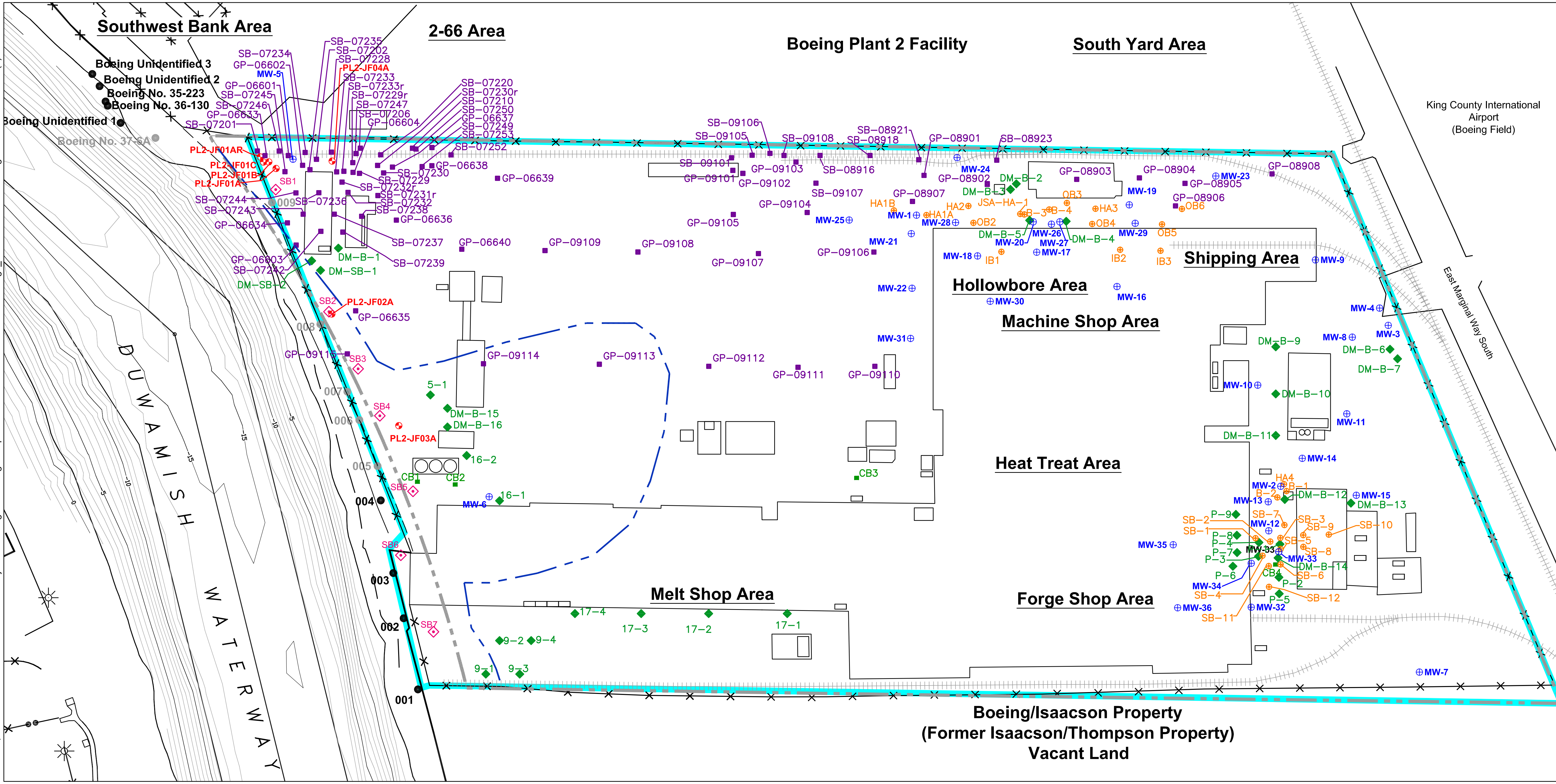


03/27/08 cvd k:\010128-JORGENSEN_FORGE\01012802\FIG 2-5.cdr

ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

Figure 2-5
Current SIA Stormwater Drainage System
Jorgensen Forge Facility



H:\Projects\394 Jorgensen Forge Corp\394002 Source Control Invest\Drawings_Plots\394-001-main.dwg SOIL BORING MAP (2)

Jan 11, 2008 11:59am dwest

Legend

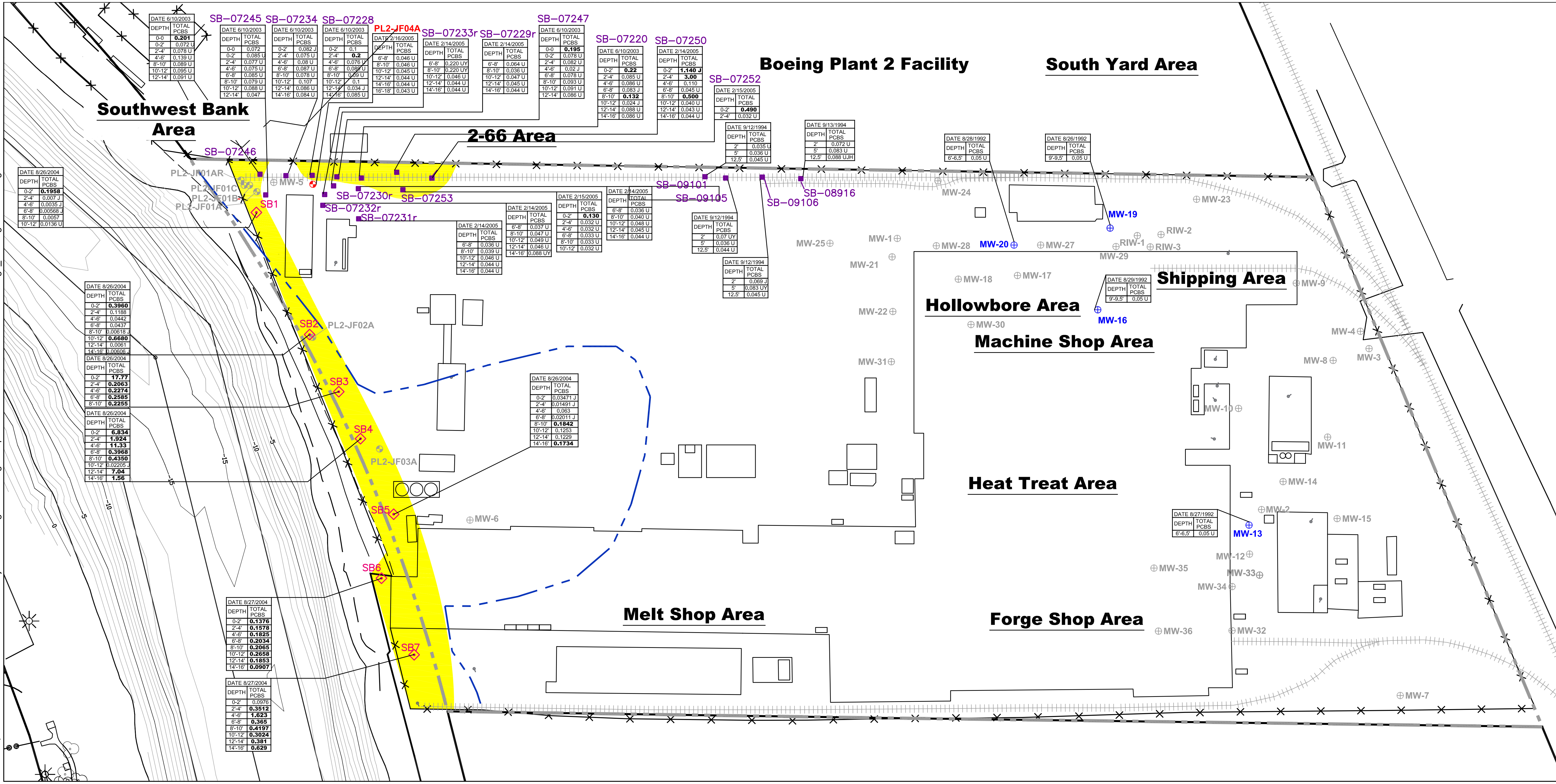
MW-1 ⊕	MW - Monitoring Well
PL2-JF01A	Boeing Monitoring Well
SB3 ◇	Soil Boring Location by Farallon Consulting (8/2004)
CB4 ■	Catch Basin Sample Location by Farallon Consulting (8/2004)
GP-09112 ■	Probe Boring by Weston (9/1994,1995)
SB-07240	Soil Boring Completed by Weston (6/2003)
SB-09105	Soil Boring Completed by Weston (1/1996)
SB-07210	Hand Auger Boring Completed by Weston (1/1996)
SB-07229r	Soil Boring Completed by Weston (2/2005)
P-1 ◆	Probe Boring by Dames & Moore (12/1998)
DM-SB-1	Shallow Soil Boring by Dames & Moore (3/1990)
DM-B-1	Soil Boring by Dames & Moore (1990 and 1993)
17-1	Surface Sample Dames & Moore (3/1998)
B-4 ⊕	Boring by SEACOR (12/1990)
OB2	Exterior Boring by SEACOR (8/1992)
HA3	Hand Auger Boring by SEACOR (1990 and 1993)
JSA-HA-1	Hand Auger Boring by SEACOR (3/1992)
IB3	Interior Boring by SEACOR (8/1992)
SB-1	Probe Boring by SECOR (8/1996)
	Property Boundary
	Sediment Investigation Area
	Approximate Former Embayment
	Fence
	Transformer
	Railroad Spur
004 ●	Active Outfall
005 ●	Inactive Outfall

0 60 120
Scale in Feet

ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

Figure 5-1
SIA PLAN SHOWING SAMPLE LOCATIONS
Jorgensen Forge Facility
8531 East Marginal Way South
Seattle, Washington



Legend

MW-1 ⊕	MW - Monitoring Well
PL2-JF01A	Boeing Monitoring Well
SB3 ◇	Soil Boring Location by Farallon Consulting (8/2004)
SB–07240 ■	Soil Boring Completed by Weston (6/2003)
SB–07240	Soil Boring Completed by Weston (2/2005)
SB–09105	Soil Boring Completed by Weston (1/1996)
MW-1 ⊕ PL2-JF01A	Monitoring Well No Data, for Reference Only
	Property Boundary
	Approximate Former Embayment
	Fence
	Transformer
	Railroad Spur

All Results Shown in milligrams per kilogram (mg/kg)

Total PCBs = Polychlorinated Biphenyls

BOLD = Indicates Concentrations Exceed the Source Control Evaluation Screening Level Value

U = No Detectable Concentration Above The Listed Laboratory Practical Quantitation Limit

Y = The Analyte Reporting Limit Is Raised Due To Positive Chromatographic Interference. The Compound Is Not Detected Above The Raised Limit But May Be Presented At Or Below The Limit

Concentrations of Total PCBs Detected Exceeding the Source Control Evaluation Screening Level Value of 0.130 mg/kg

0 60 120
Scale in Feet

ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

Figure 5-2

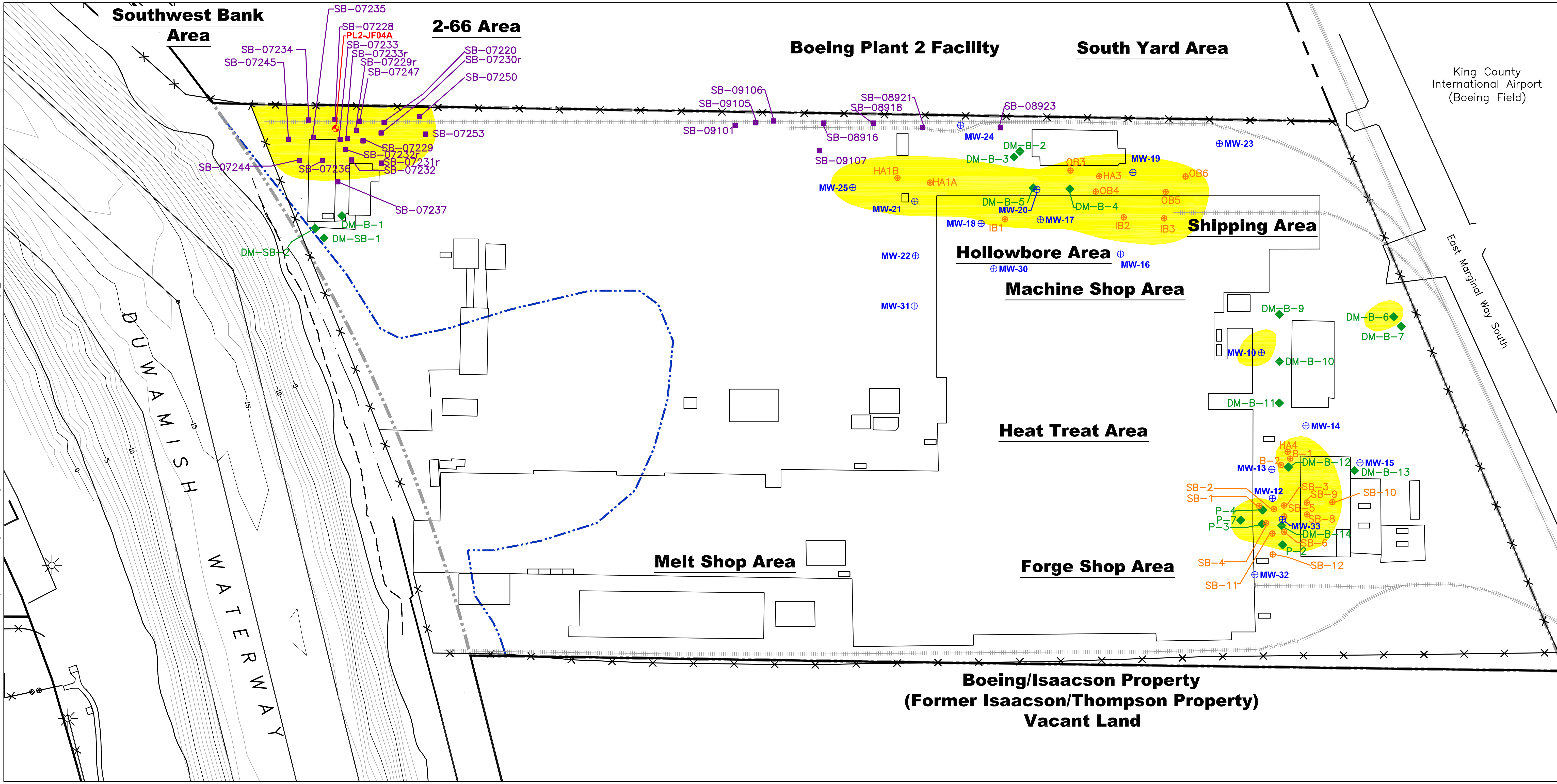
SIA PLAN SHOWING TOTAL PCBs IN SOIL

Jorgensen Forge Facility

8531 East Marginal Way South

Seattle, Washington

Jan 10, 2008 11:26am dwest H:\Projects\394 Jorgensen Forge Corp\394002 Source Control Invest\Drawings_Plots\figures\5-2.dwg T-D ARSENIC



Legend

MW-1 ⊕	MW - Monitoring Well
PL2-JF01A ⊗	Boeing Monitoring Well
SB-07240 ■	Soil Boring Completed by Weston (6/2003)
SB-09105	Soil Boring Completed by Weston (1/1996)
SB-07229r	Soil Boring Completed by Weston (2/2005)
P-1 ◆	Probe Boring by Dames & Moore (12/1998)
DM-SB-1	Shallow Soil Boring by Dames & Moore (3/1990)
DM-B-1	Soil Boring by Dames & Moore (1990 and 1993)
B-4 ⊕	Boring by SEACOR (12/1990)
OB2	Exterior Boring by SEACOR (8/1992)
HA3	Hand Auger Boring by SEACOR (1990 and 1993)
IB3	Interior Boring by SEACOR (8/1992)
SB-1	Probe Boring by SECOR (8/1996)

Property Boundary
Approximate Former Embayment
Fence
Transformer
Railroad Spur

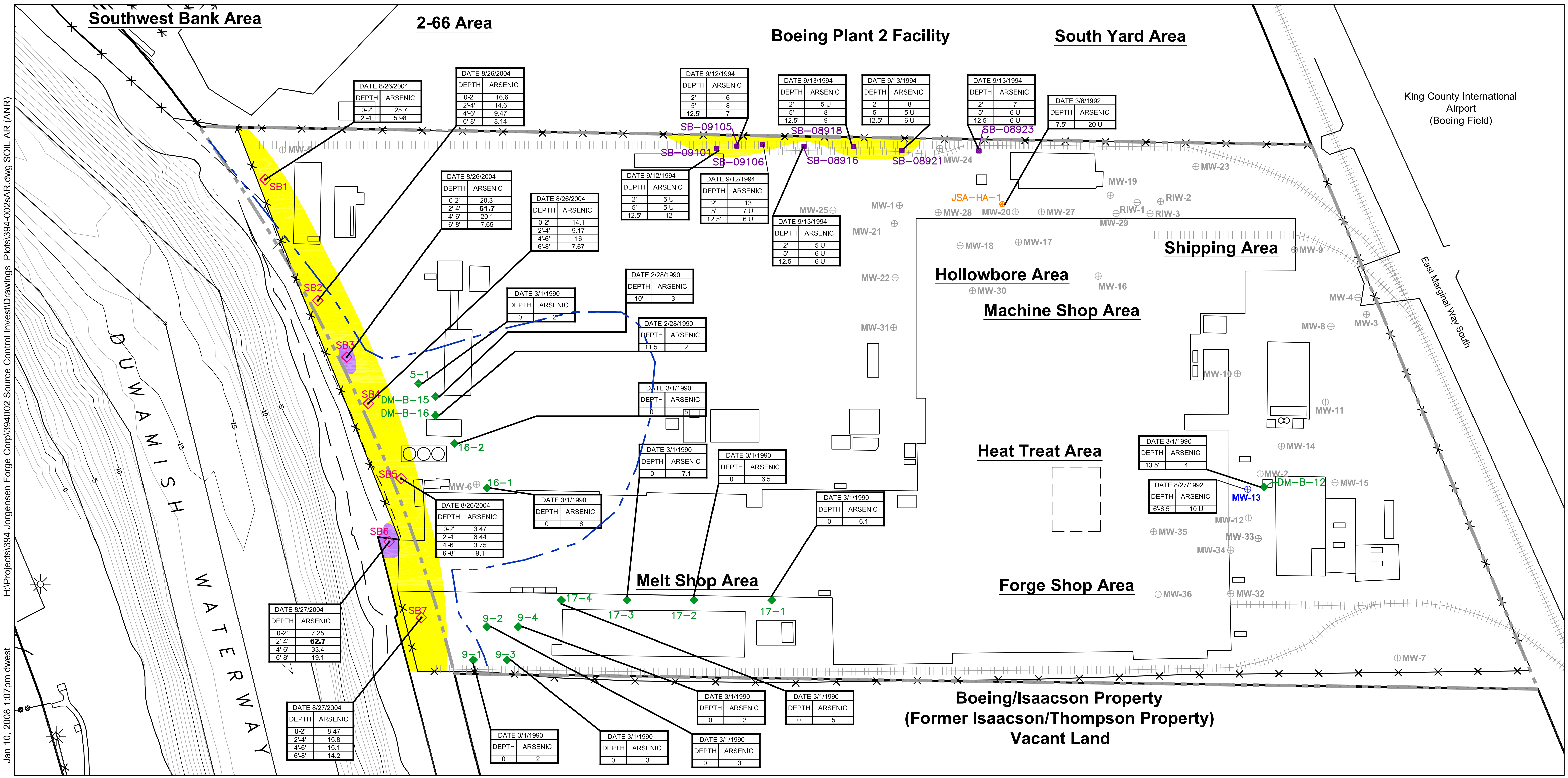
Concentrations of Total Petroleum Hydrocarbons (TPH) Detected Above the Laboratory Practical Quantitation Limits

0 60 120
Scale in Feet

ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

Figure 5-3
SIA PLAN SHOWING PETROLEUM HYDROCARBONS IN SOIL
Jorgensen Forge Facility
8531 East Marginal Way South
Seattle, Washington



Legend

MW-1 MW - Monitoring Well

SB3 Soil Boring Location by Farallon Consulting (8/2004)

SB-09105 Soil Boring Completed by Weston (1/1996)

DM-B-1 Soil Boring by Dames & Moore (1990 and 1993)

17-1 Surface Sample Dames & Moore (3/1998)

JSA-HA-1 Hand Auger Boring by SEACOR (3/1992)

MW-1 Monitoring Well No Data, for Reference Only

Property Boundary

Approximate Former Embayment

Fence

Transformer

Railroad Spur

All Results Shown in milligrams per kilogram (mg/kg)

BOLD = Indicates Concentrations Exceed the Source Control Evaluation Screening Level Value

U = No Detectable Concentration Above The Listed Laboratory Practical Quantitation Limit

J = Denotes Result Reported Is An Estimate

B2 = The Analyte Was Detected In The Associated Method Blank at a Level Above One-Tenth The Sample Concentration

Concentrations of Arsenic Detected Exceeding the Natural Background Soil Concentration of 7 mg/kg for the Puget Sound Region (Ecology 1994)

Concentrations of Arsenic Detected Exceeding the Source Control Evaluation Screening Level Value of 57 mg/kg

0 60 120

Scale in Feet

ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

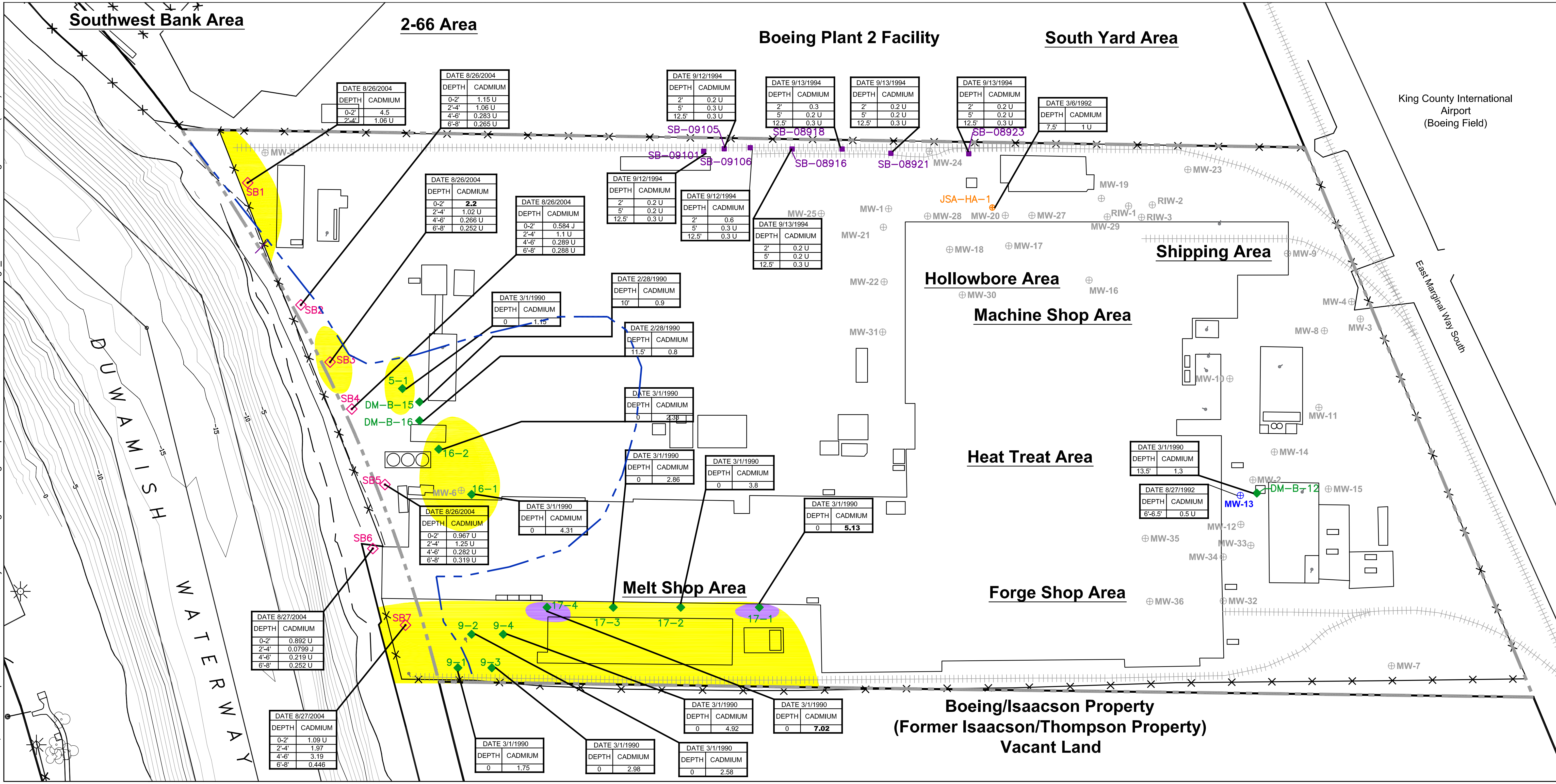
Figure 5-4

SIA PLAN SHOWING ARSENIC DATA FOR SOIL

Jorgensen Forge Facility

8531 East Marginal Way South

Seattle, Washington



H:\Projects\394 Jorgensen Forge Corp\394002 Source Control Invest\Drawings_Plots\394-002sCD.dwg SOIL CD (ANC)
Jan 10, 2008 12:44pm dwest

Legend

MW-1 ⊕ MW - Monitoring Well

SB3 ◇ Soil Boring Location by Farallon Consulting (8/2004)

SB-09105 ■ Soil Boring Completed by Weston (1/1996)

DM-B-1 ◆ Soil Boring by Dames & Moore (1990 and 1993)

17-1 Surface Sample Dames & Moore (3/1998)

JSA-HA-1 ⊕ Hand Auger Boring by SEACOR (3/1992)

MW-1 ⊕ Monitoring Well No Data, for Reference Only

Property Boundary

Approximate Former Embayment

Fence

Transformer

Railroad Spur

All Results Shown in milligrams per kilogram (mg/kg)

BOLD = Indicates Concentrations Exceed the Source Control Evaluation Screening Level Value

U = No Detectable Concentration Above The Listed Laboratory Practical Quantitation Limit

J = Denotes Result Reported Is An Estimate

B2 = The Analyte Was Detected In The Associated Method Blank at a Level Above One-Tenth The Sample Concentration

Concentrations of Cadmium Detected Exceeding the Natural Background Soil Concentration of 1 mg/kg for the Puget Sound Region (Ecology 1994)

Concentrations of Cadmium Detected Exceeding the Source Control Evaluation Screening Level Value of 5.1 mg/kg

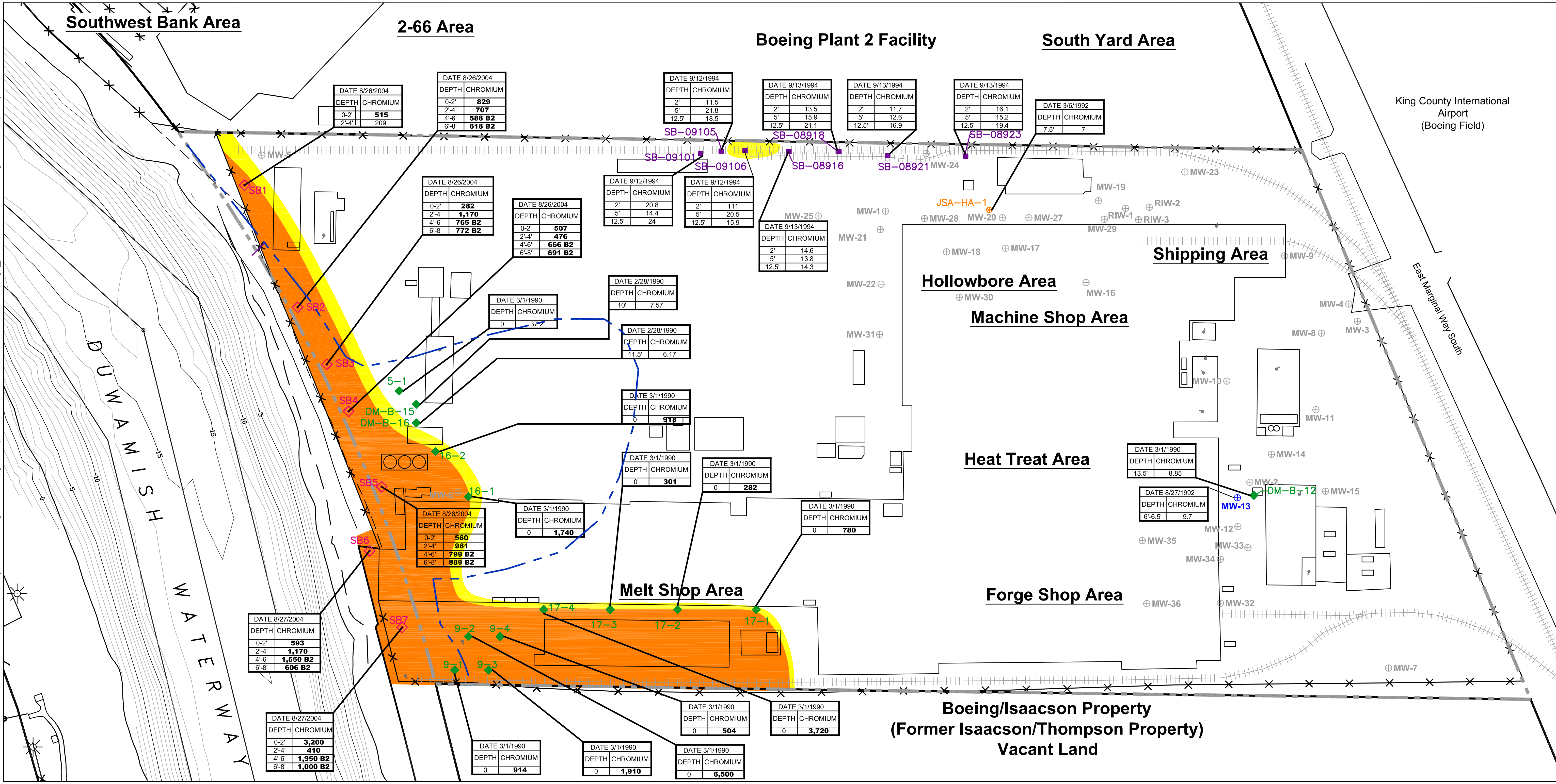
0 60 120
Scale in Feet

ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

Figure 5-5

SIA PLAN SHOWING CADMIUM DATA FOR SOIL
Jorgensen Forge Facility
8531 East Marginal Way South
Seattle, Washington



H:\Projects\394 Jorgensen Forge Corp\394002 Source Control Invest\Drawings_Plots\394-002SCR.dwg SOIL CR (ANC)
Jan 10, 2008 12:54pm dwest

Legend

- MW-1 ⊕ MW - Monitoring Well
- SB3 ◇ Soil Boring Location by Farallon Consulting (8/2004)
- SB-09105 ■ Soil Boring Completed by Weston (1/1996)
- DM-B-1 ◆ Soil Boring by Dames & Moore (1990 and 1993)
- 17-1 Surface Sample Dames & Moore (3/1998)
- JSA-HA-1 ⊕ Hand Auger Boring by SEACOR (3/1992)
- MW-1 ⊕ Monitoring Well No Data, for Reference Only
- Property Boundary
- Approximate Former Embayment
- Fence
- Transformer
- Railroad Spur

All Results Shown in milligrams per kilogram (mg/kg)

BOLD = Indicates Concentrations Exceed the Source Control Evaluation Screening Level Value

U = No Detectable Concentration Above The Listed Laboratory Practical Quantitation Limit

J = Denotes Result Reported Is An Estimate

B2 = The Analyte Was Detected In The Associated Method Blank at a Level Above One-Tenth The Sample Concentration

Concentrations of Chromium Detected Exceeding the Natural Background Soil Concentration of 48 mg/kg for the Puget Sound Region (Ecology 1994)

Concentrations of Chromium Detected Exceeding the Source Control Evaluation Screening Level Value of 260 mg/kg

N

0 60 120
Scale in Feet

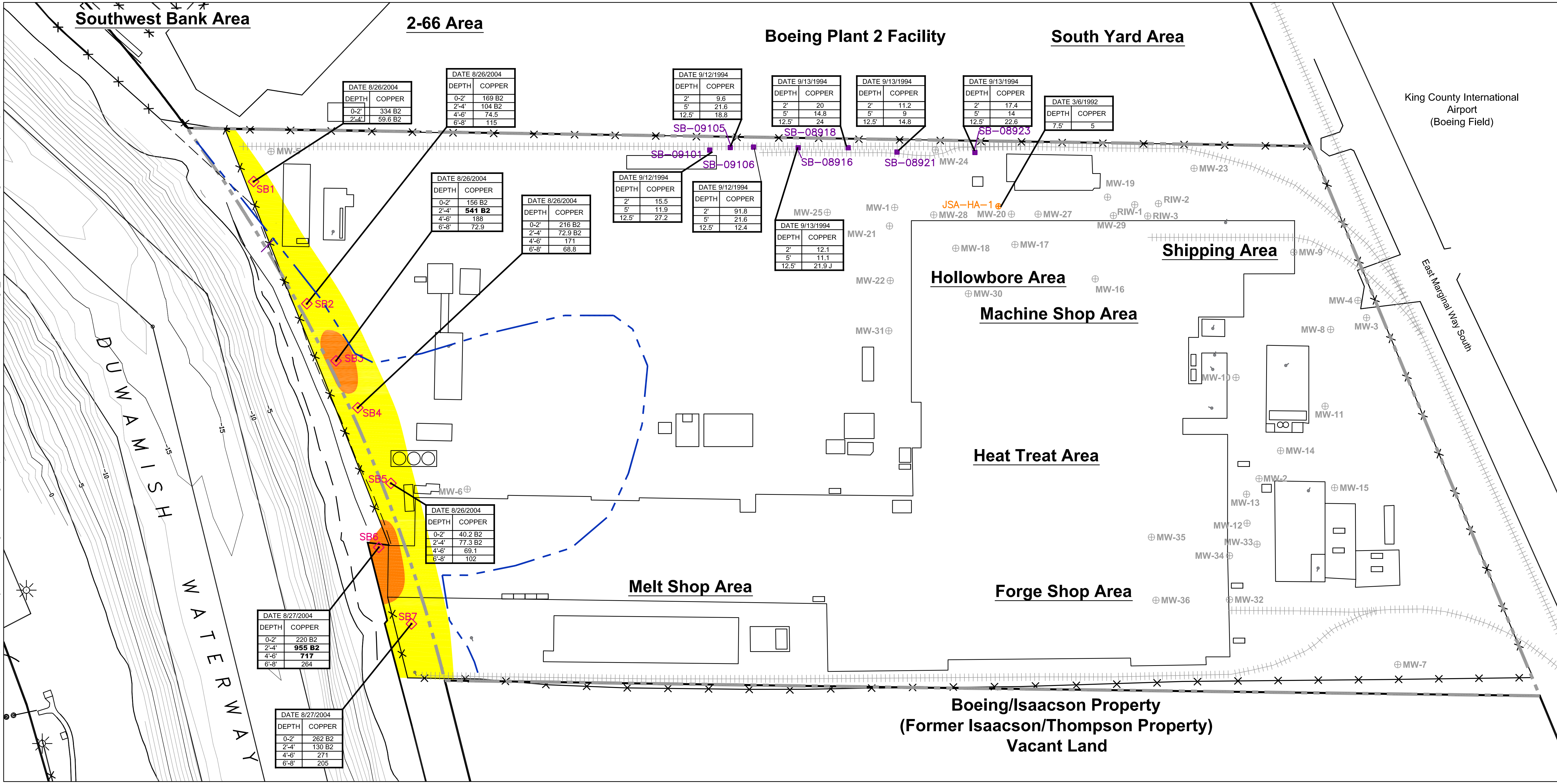
ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

Figure 5-6

SIA PLAN SHOWING CHROMIUM DATA FOR SOIL

Jorgensen Forge Facility
8531 East Marginal Way South
Seattle, Washington



H:\Projects\394 Jorgensen Forge Corp\394002 Source Control Invest\Drawings_Plots\394-002sCO.dwg SOIL CO (ANC)
Jan 10, 2008 12:52pm dwest

Legend

MW-1 ⊕ MW - Monitoring Well

SB3 ◇ Soil Boring Location by Farallon Consulting (8/2004)

SB-09105 ■ Soil Boring Completed by Weston (1/1996)

JSA-HA-1 ⊕ Hand Auger Boring by SEACOR (3/1992)

MW-1 ⊕ Monitoring Well No Data, for Reference Only

Property Boundary

Approximate Former Embayment

Fence

Transformer

Railroad Spur

All Results Shown in milligrams per kilogram (mg/kg)

BOLD = Indicates Concentrations Exceed the Source Control Evaluation Screening Level Value

U = No Detectable Concentration Above The Listed Laboratory Practical Quantitation Limit

J = Denotes Result Reported Is An Estimate

B2 = The Analyte Was Detected In The Associated Method Blank at a Level Above One-Tenth The Sample Concentration

Concentrations of Copper Detected Exceeding the Natural Background Soil Concentration of 36 mg/kg for the Puget Sound Region (Ecology 1994)

Concentrations of Copper Detected Exceeding the Source Control Evaluation Screening Level Value of 390 mg/kg

N

0 60 120

Scale in Feet

ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

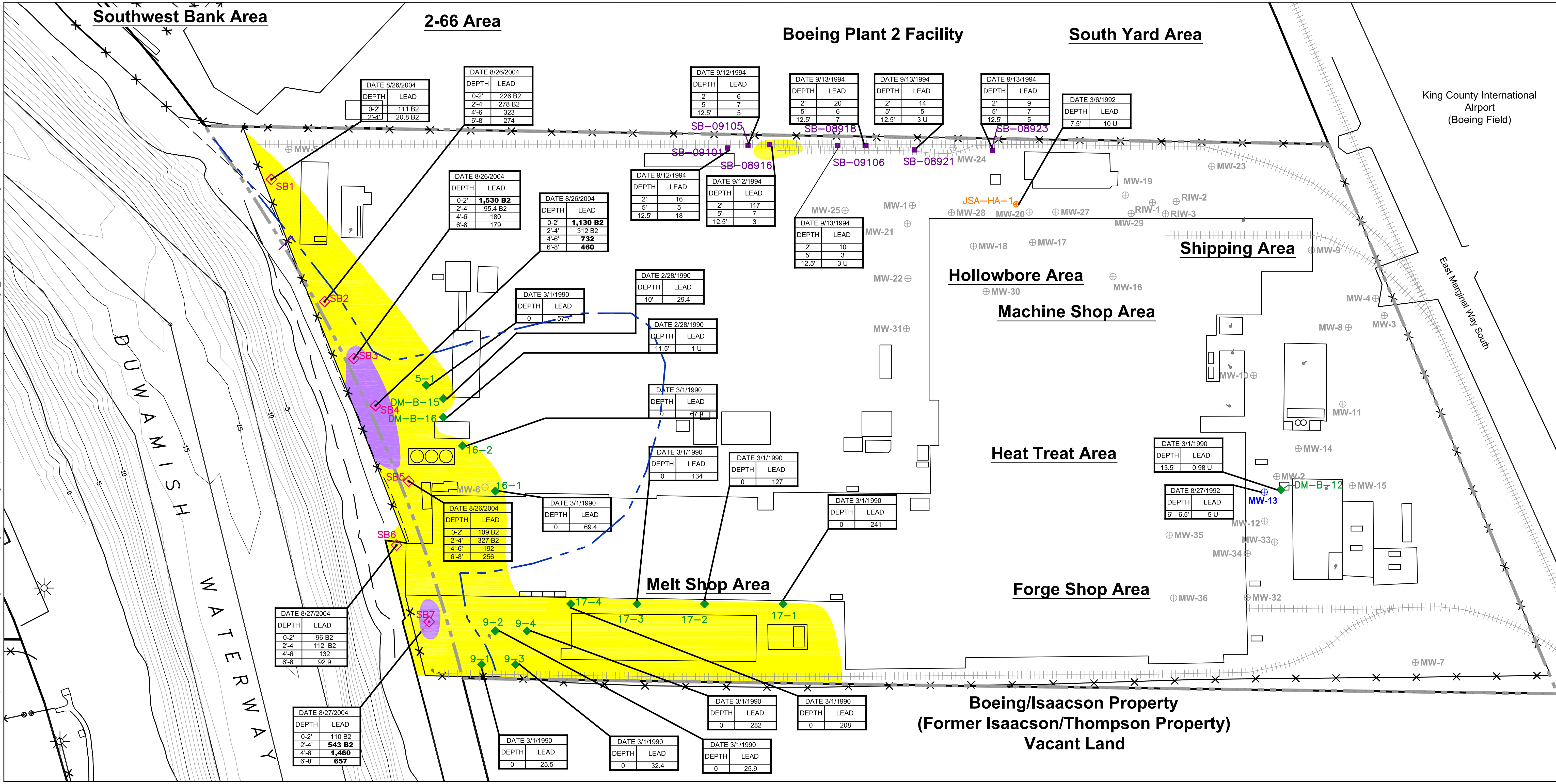
Figure 5-7

SIA PLAN SHOWING COPPER DATA FOR SOIL

Jorgensen Forge Facility

8531 East Marginal Way South

Seattle, Washington



H:\Projects\394 Jorgensen Forge Corp\394002 Source Control Invest\Drawings_Plots\394-002sLD.dwg SOIL LD (ANC)

Jan 10, 2008 12:58pm dwest

Legend

MW-1 ⊕ MW - Monitoring Well

SB3 ◇ Soil Boring Location by Farallon Consulting (8/2004)

SB–09105 ■ Soil Boring Completed by Weston (1/1996)

DM–B–1 ◆ Soil Boring by Dames & Moore (1990 and 1993)

17–1 Surface Sample Dames & Moore (3/1998)

JSA–HA–1 ⊕ Hand Auger Boring by SEACOR (3/1992)

MW-1 ⊕ Monitoring Well No Data, for Reference Only

Property Boundary

Approximate Former Embayment

Fence

Transformer

Railroad Spur

All Results Shown in milligrams per kilogram (mg/kg)

BOLD = Indicates Concentrations Exceed the Source Control Evaluation Screening Level Value

U = No Detectable Concentration Above The Listed Laboratory Practical Quantitation Limit

J = Denotes Result Reported Is An Estimate

B2 = The Analyte Was Detected In The Associated Method Blank at a Level Above One-Tenth The Sample Concentration

Concentrations of Lead Detected Exceeding the Natural Background Soil Concentration of 24 mg/kg for the Puget Sound Region (Ecology 1994)

Concentrations of Lead Detected Exceeding the Source Control Evaluation Screening Level Value of 450 mg/kg

0 60 120

Scale in Feet

ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

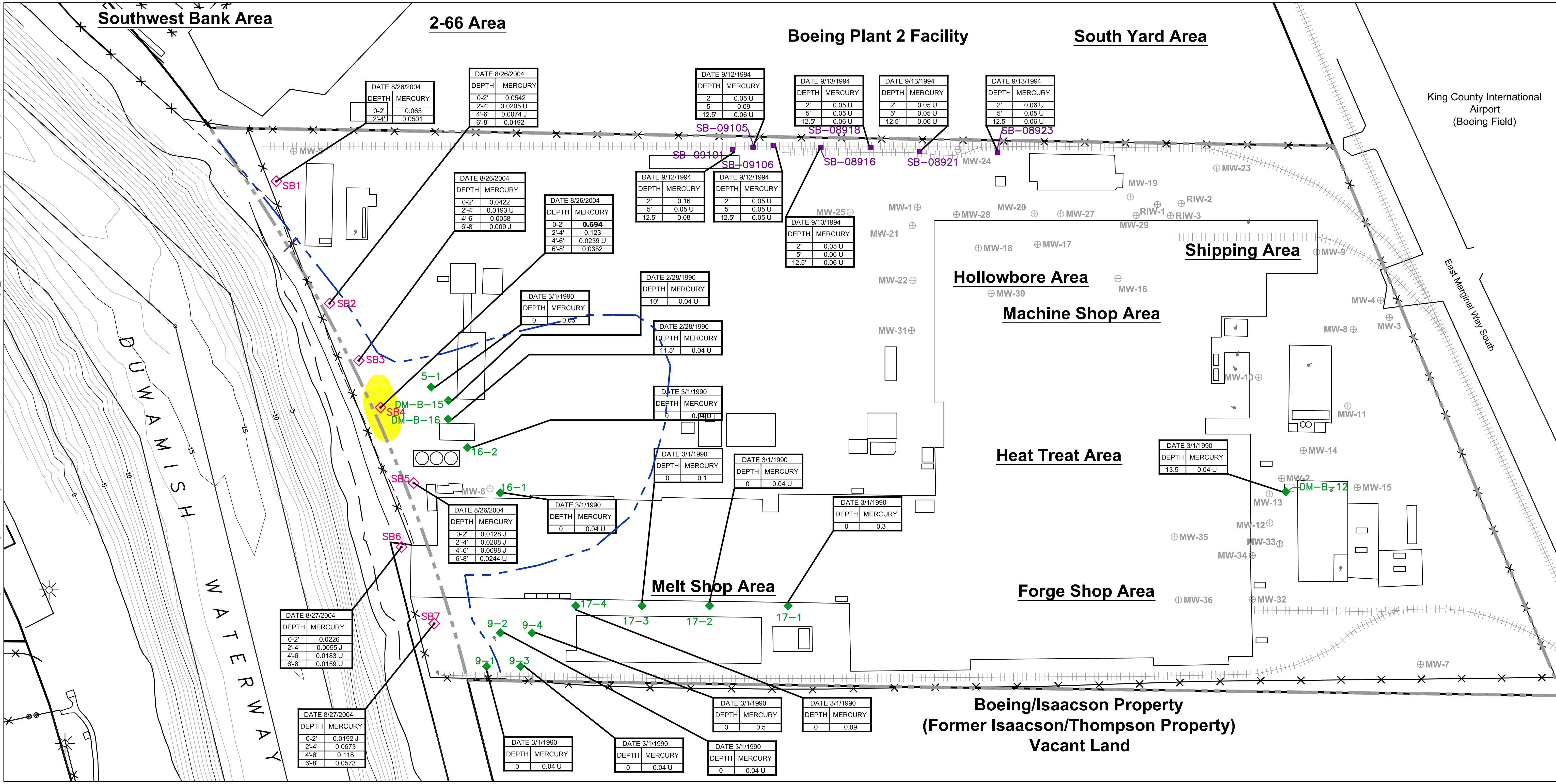
Figure 5-8

SIA PLAN SHOWING LEAD DATA FOR SOIL

Jorgensen Forge Facility

8531 East Marginal Way South

Seattle, Washington



Legend

MW-1 ⊕ MW - Monitoring Well

SB3 ◇ Soil Boring Location by Farallon Consulting (8/2004)

SB–09105 ■ Soil Boring Completed by Weston (1/1996)

DM–B–1 ◆ Soil Boring by Dames & Moore (1990 and 1993)

17–1 Surface Sample Dames & Moore (3/1998)

JSA–HA–1 ⊕ Hand Auger Boring by SEACOR (3/1992)

MW-1 ⊕ Monitoring Well No Data, for Reference Only

Property Boundary

Approximate Former Embayment

Fence

Transformer

Railroad Spur

All Results Shown in milligrams per kilogram (mg/kg)

BOLD = Indicates Concentrations Exceed the Source Control Evaluation Screening Level Value

U = No Detectable Concentration Above The Listed Laboratory Practical Quantitation Limit

J = Denotes Result Reported Is An Estimate

B2 = The Analyte Was Detected In The Associated Method Blank at a Level Above One-Tenth The Sample Concentration

Concentrations of Mercury Detected Exceeding the Source Control Elevation Screening Level Value of 0.4 mg/kg

0 60 120

Scale in Feet

ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

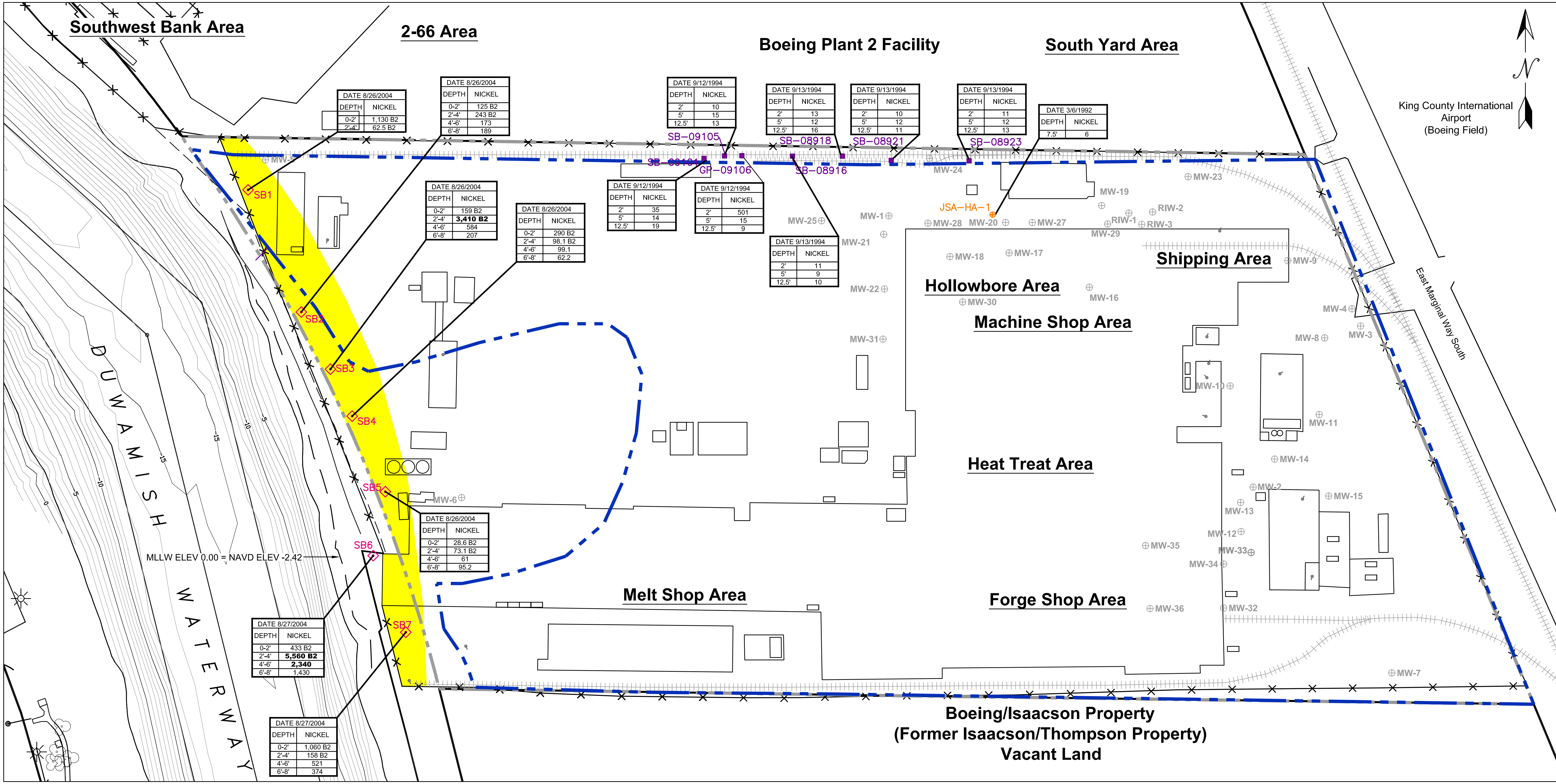
Figure 5-9

SIA PLAN SHOWING MERCURY DATA FOR SOIL

Jorgensen Forge Facility

8531 East Marginal Way South

Seattle, Washington



Legend

MW-1 ⊕ MW - Monitoring Well

SB3 ◇ Soil Boring Location by Farallon Consulting (8/2004)

SB–09105 ■ Soil Boring Completed by Weston (1/1996)

JSA–HA–1 ⊕ Hand Auger Boring by SEACOR (3/1992)

MW-1 ⊕ Monitoring Well No Data, for Reference Only

Property Boundary

Approximate Former Embayment

Fence

Transformer

Railroad Spur

All Results Shown in milligrams per kilogram (mg/kg)

BOLD = Indicates Concentrations Exceed the Source Control Evaluation Screening Level Value

U = No Detectable Concentration Above The Listed Laboratory Practical Quantitation Limit

J = Denotes Result Reported Is An Estimate

B2 = The Analyte Was Detected In The Associated Method Blank at a Level Above One-Tenth The Sample Concentration

Concentrations of Nickel Detected Exceeding the Source Control Evaluation Screening Level Value of 48 mg/kg

0 60 120

Scale in Feet

ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

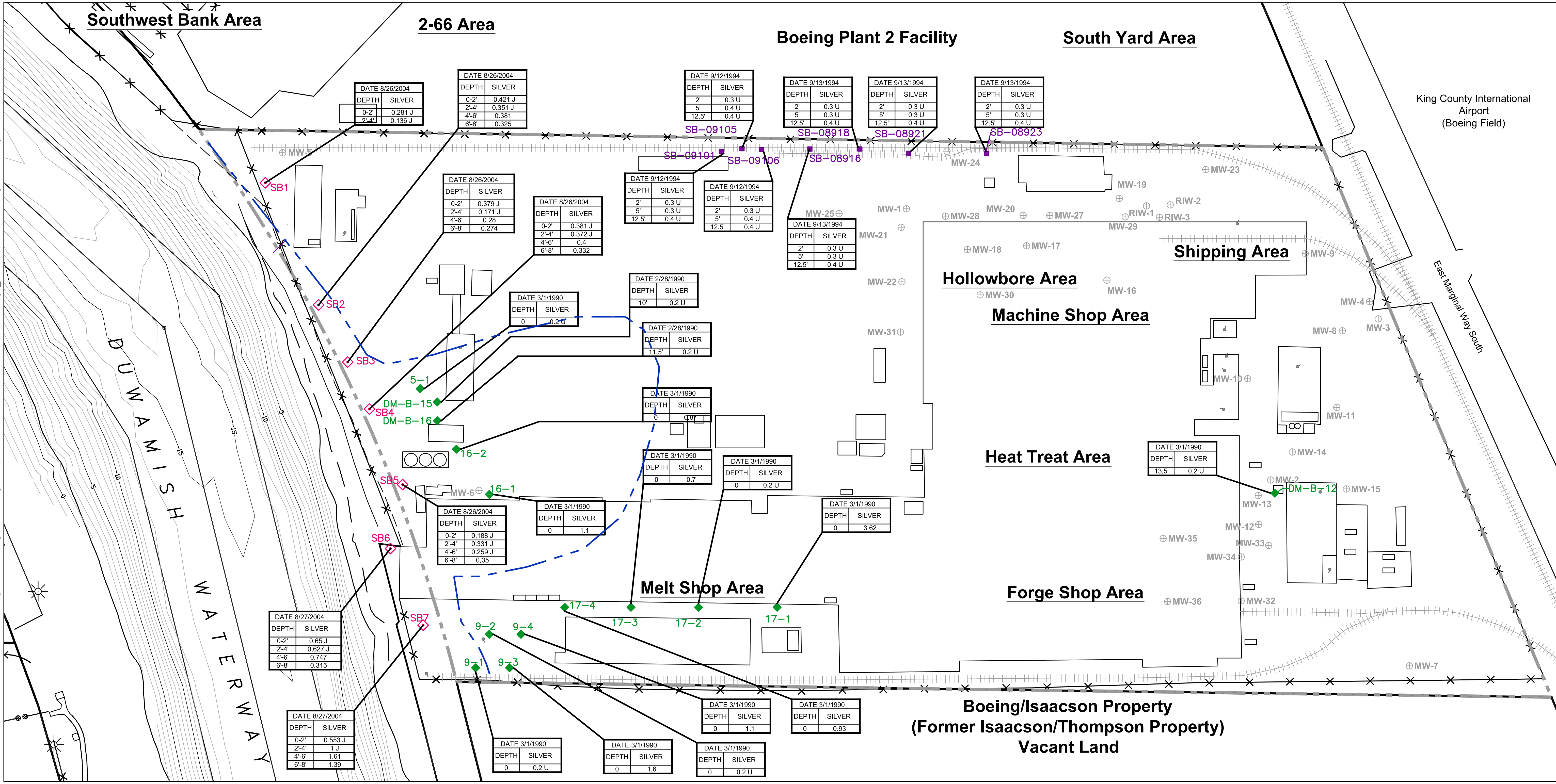
Figure 5-10

SIA PLAN SHOWING NICKEL DATA FOR SOIL

Jorgensen Forge Facility

8531 East Marginal Way South

Seattle, Washington



H:\Projects\394 Jorgensen Forge Corp\394002 Source Control Invest\Drawings_Plots\394-002sSL.dwg SOIL MR (ANC)

Jan 10, 2008 12:02pm dwest

Legend

MW-1 ⊕ MW - Monitoring Well

SB3 ◇ Soil Boring Location by Farallon Consulting (8/2004)

SB-09105 ■ Soil Boring Completed by Weston (1/1996)

DM-B-1 ◆ Soil Boring by Dames & Moore (1990 and 1993)
17-1 Surface Sample Dames & Moore (3/1998)

JSA-HA-1 ⊕ Hand Auger Boring by SEACOR (3/1992)

MW-1 ⊕ Monitoring Well No Data, for Reference Only

Property Boundary

Approximate Former Embayment

Fence

Transformer

Railroad Spur

All Results Shown in milligrams per kilogram (mg/kg)

U = No Detectable Concentration Above The Listed Laboratory Practical Quantitation Limit

J = Denotes Result Reported Is An Estimate

B2 = The Analyte Was Detected In The Associated Method Blank at a Level Above One-Tenth The Sample Concentration

0 60 120
Scale in Feet

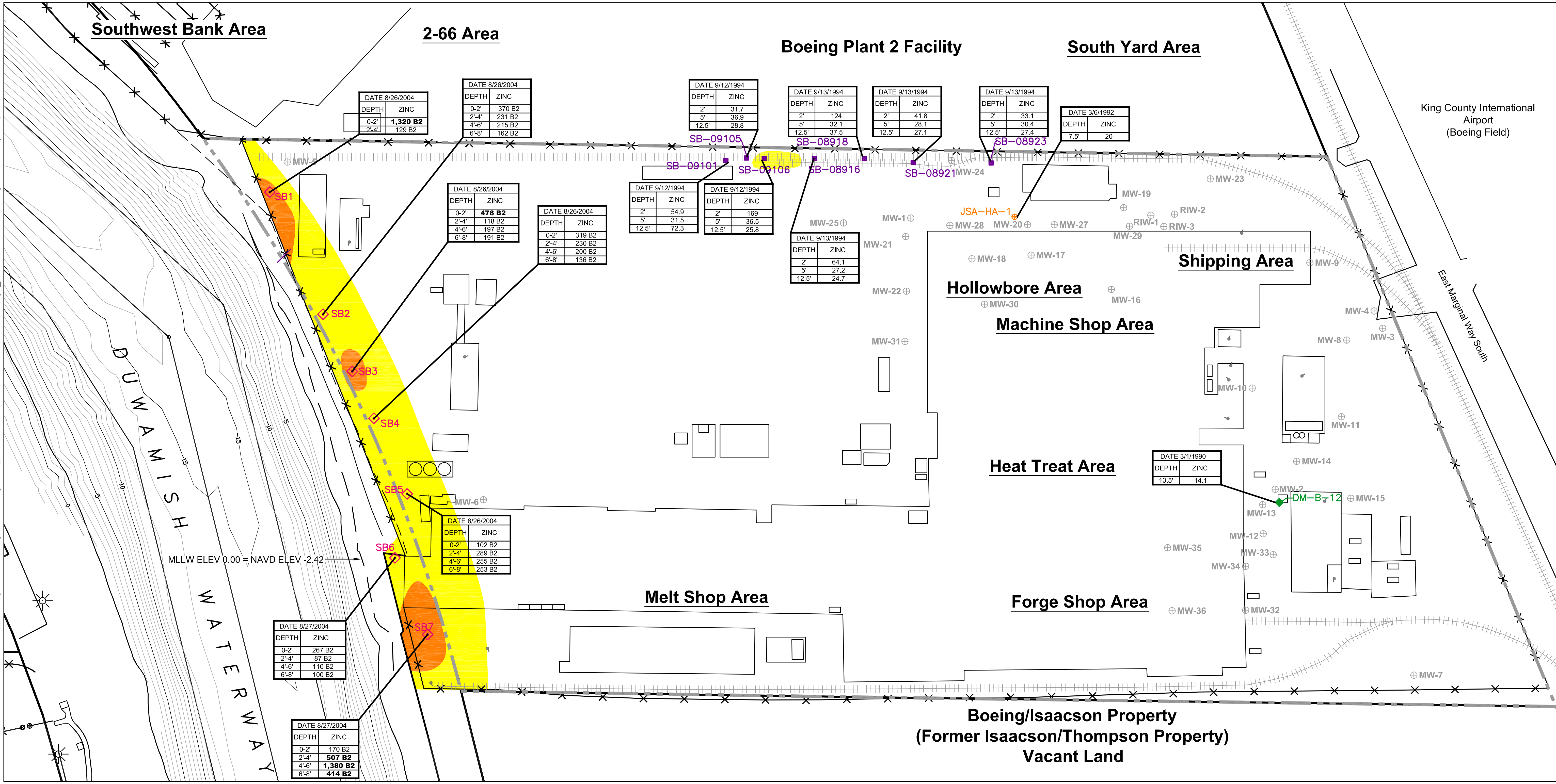
ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

Figure 5-11

SIA PLAN SHOWING SILVER DATA FOR SOIL

Jorgensen Forge Facility
8531 East Marginal Way South
Seattle, Washington



H:\Projects\394 Jorgensen Forge Corp\394002 Source Control Invest\Drawings_Plots\394-002sZN.dwg SOIL MR (ANC)

Jan 10, 2008 11:54am dwest

Legend

MW-1 ⊕ MW - Monitoring Well

SB3 ◇ Soil Boring Location by Farallon Consulting (8/2004)

SB–09105 ■ Soil Boring Completed by Weston (1/1996)

DM–B–1 ◆ Soil Boring by Dames & Moore (1990 and 1993)

JSA–HA–1 ⊕ Hand Auger Boring by SEACOR (3/1992)

MW-1 ⊕ Monitoring Well No Data, for Reference Only

Property Boundary

Approximate Former Embayment

Fence

Transformer

Railroad Spur

All Results Shown in milligrams per kilogram (mg/kg)

BOLD = Indicates Concentrations Exceed the Source Control Evaluation Screening Level Value

U = No Detectable Concentration Above The Listed Laboratory Practical Quantitation Limit

J = Denotes Result Reported Is An Estimate

B2 = The Analyte Was Detected In The Associated Method Blank at a Level Above One-Tenth The Sample Concentration

Concentrations of Zinc Detected Exceeding the Natural Background Soil Concentration of 85 mg/kg for the Puget Sound Region (Ecology 1994)

Concentrations of Zinc Detected Exceeding the Source Control Evaluation Screening Level Value of 410 mg/kg

0 60 120

Scale in Feet

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FARALLON CONSULTING

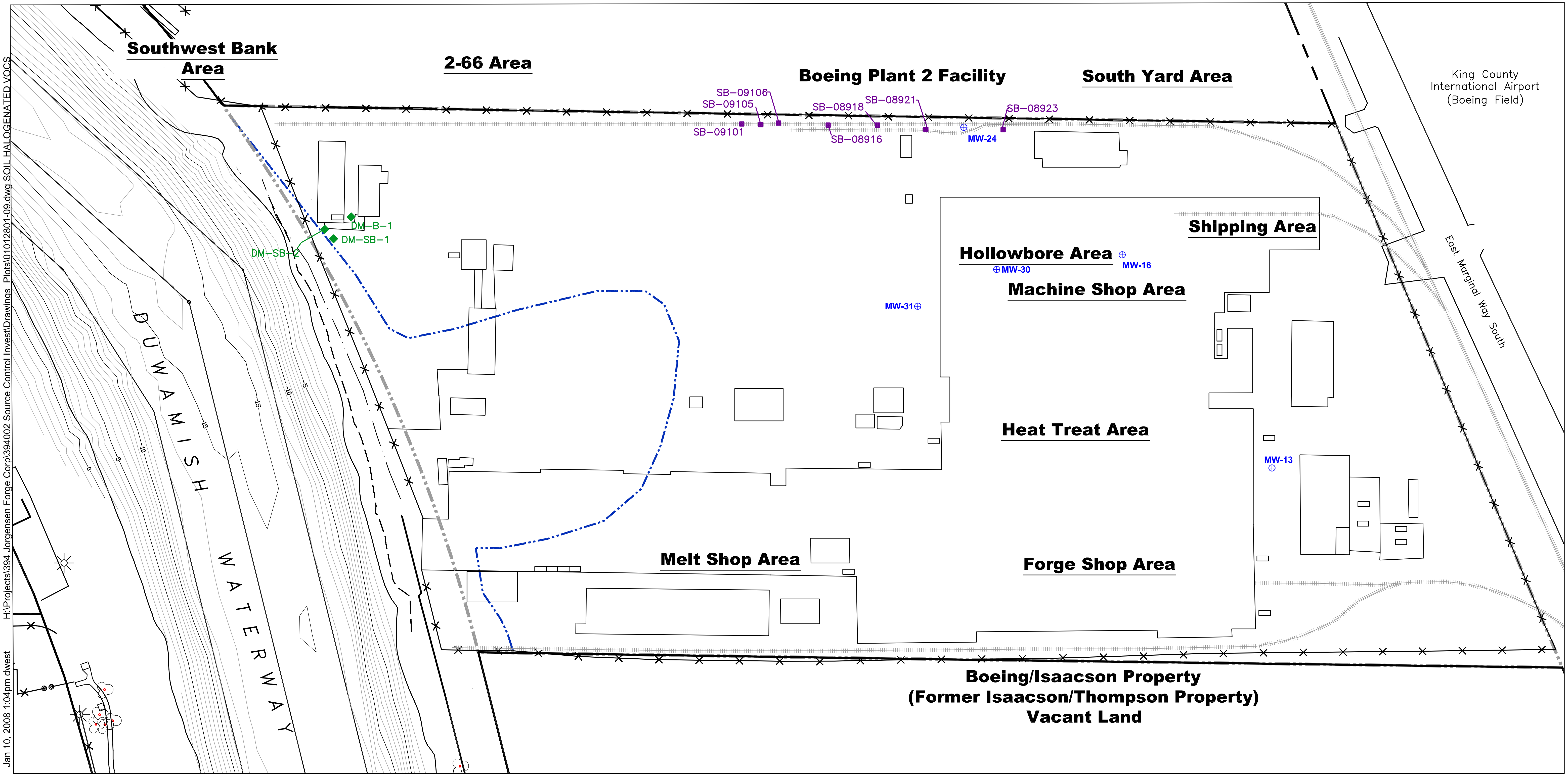
Figure 5-12

SIA PLAN SHOWING ZINC DATA FOR SOIL

Jorgensen Forge Facility

8531 East Marginal Way South

Seattle, Washington



H:\Projects\394 Jorgensen Forge Corp\394002 Source Control Invest\Drawings_Plots\01012801-09.dwg SOIL HALOGENATED VOCS

Jan 10, 2008 1:04pm dwest

Legend

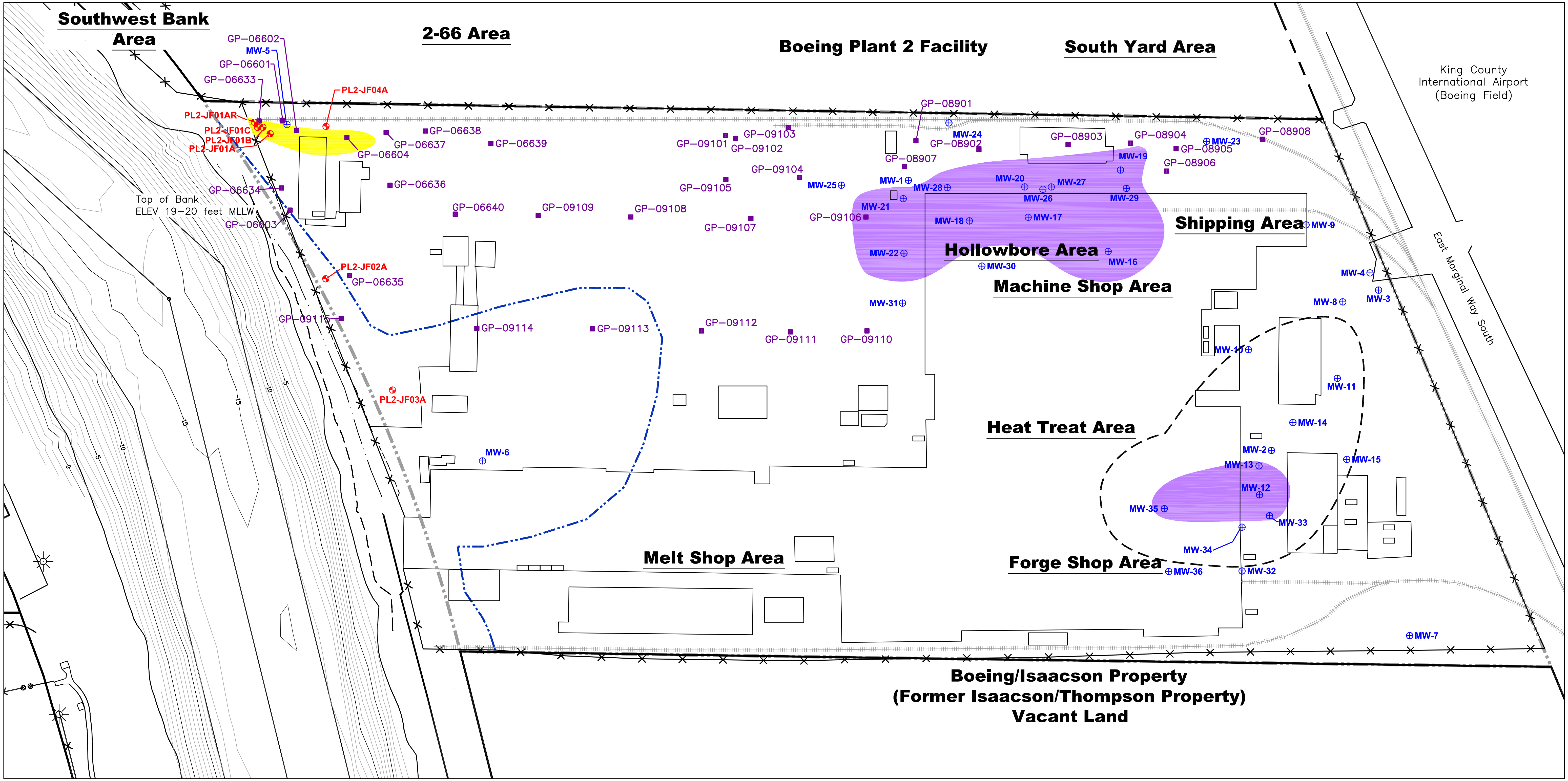
MW-1 ⊕	MW - Monitoring Well
SB-09105 ■	Soil Boring Completed by Weston (1/1996)
DM-SB-1 ◆	Shallow Soil Boring by Dames & Moore (3/1990)
DM-B-1	Soil Boring by Dames & Moore (1990 and 1993)
	Property Boundary
	Approximate Former Embayment
	Fence
	Transformer
	Railroad Spur

0 60 120
Scale in Feet

ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

Figure 5-13
SIA PLAN SHOWING SAMPLE LOCATIONS FOR HALOGENATED VOC'S IN SOIL
Jorgensen Forge Facility
8531 East Marginal Way South
Seattle, Washington



H:\Projects\394 Jorgensen Forge Corp\394002 Source Control Invest\Drawings_Plots\394-002TPHGW.dwg GW TPH

Jan 10, 2008 1:15pm dwest

Legend

- MW-1 ⊕ MW - Monitoring Well
- PL2-JF01A Boeing Monitoring Well
- GP–09112 ■ Probe Boring by Weston (9/1994,1995)
- Property Boundary
- Approximate Former Embayment
- Fence
- Transformer
- Railroad Spur
- Concentrations of Dissolved-Phase Total Petroleum Hydrocarbons (TPH) Detected Exceeding the Source Control Evaluation Screening Level Values
- Extent of LNAPL as Measured on April 13, 2007
- Approximate Extent of Dissolved-Phase Plume of TPH in Groundwater

0 60 120
Scale in Feet

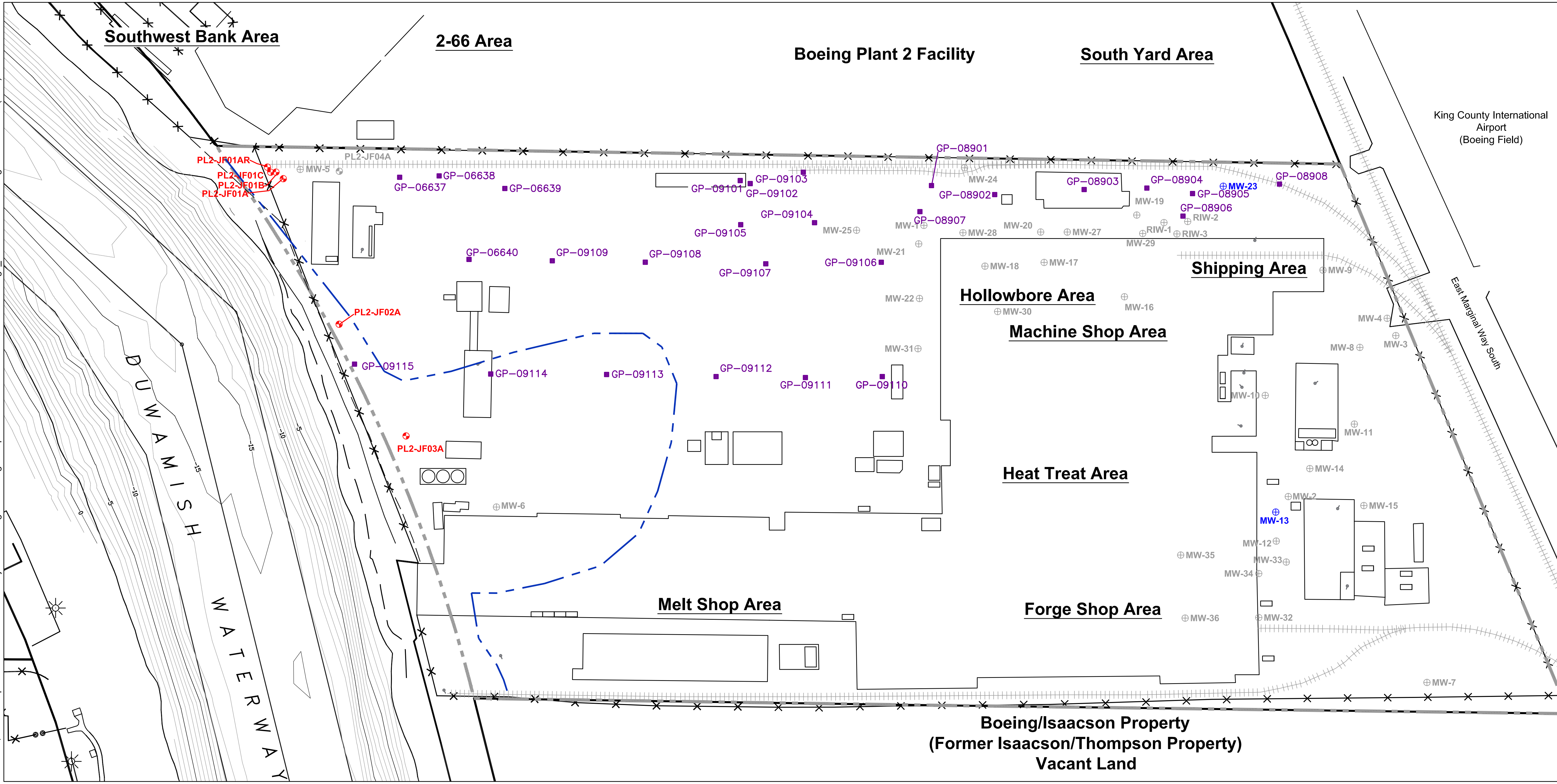
ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

Figure 5-14

SIA PLAN SHOWING LNAPL AND DISSOLVED-PHASE TPH IN GROUNDWATER

Jorgensen Forge Facility
8531 East Marginal Way South
Seattle, Washington



Legend

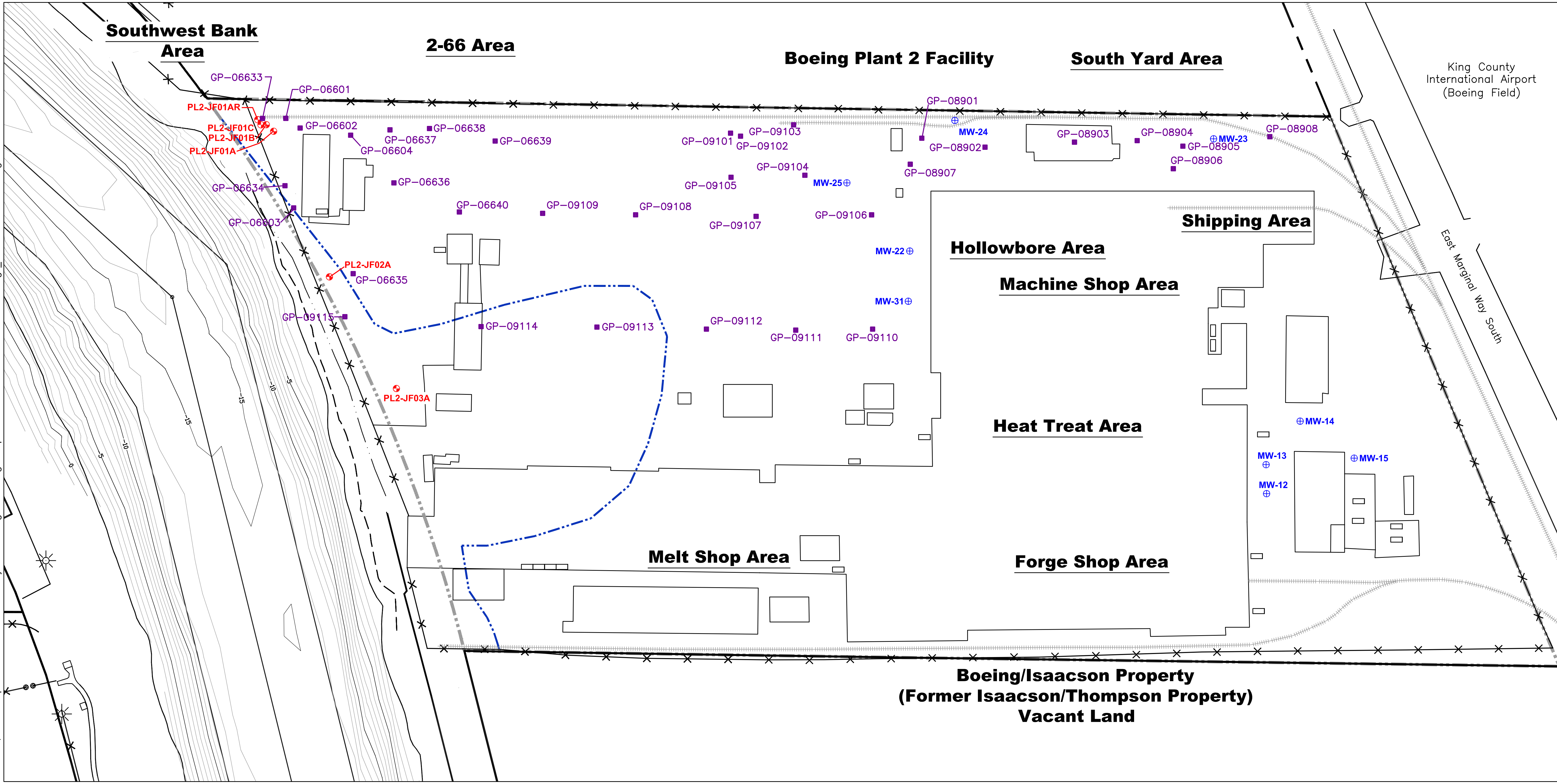
MW-1	MW - Monitoring Well
PL2-JF01A	Boeing Monitoring Well
GP-09112	Probe Boring by Weston (9/1994,1995)
MW-1 / PL2-JF01A	Monitoring Well No Data, for Reference Only
	Property Boundary
	Approximate Former Embayment
	Fence
	Transformer
	Railroad Spur

0 60 120
Scale in Feet

ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

Figure 5-15
SIA PLAN SHOWING SAMPLE LOCATIONS FOR METALS IN GROUNDWATER
Jorgensen Forge Facility
8531 East Marginal Way South
Seattle, Washington



Legend

MW-1 MW - Monitoring Well

PL2-JF01A, PZ-4 Boeing Monitoring Well

GP-09112 Probe Boring by Weston (9/1994,1995)

Property Boundary

Approximate Former Embayment

Fence

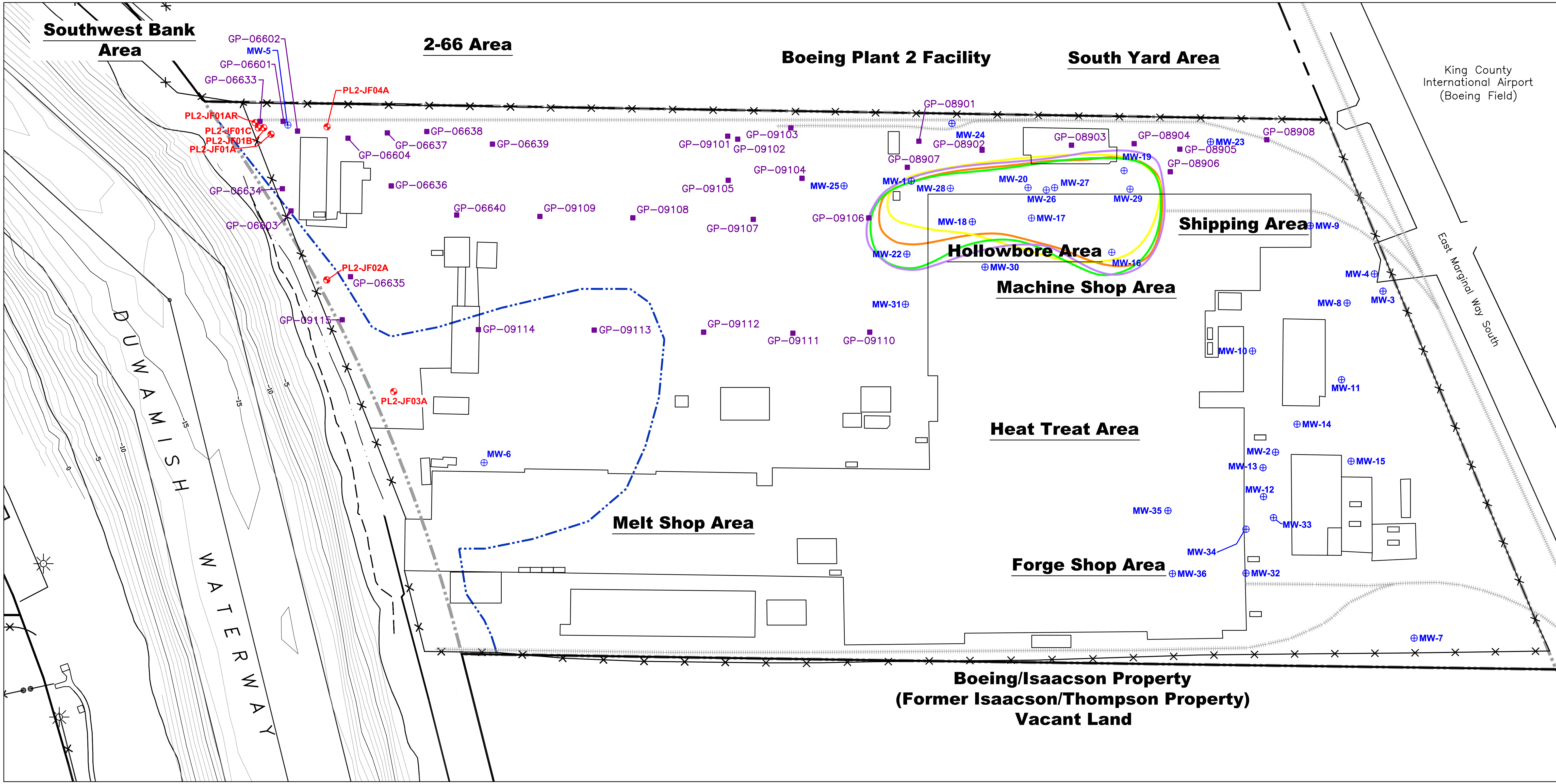
Transformer

Railroad Spur

0 60 120
Scale in Feet

Figure 5-16
SIA PLAN SHOWING SAMPLE LOCATIONS FOR VOC'S IN GROUNDWATER
Jorgensen Forge Facility
8531 East Marginal Way South
Seattle, Washington

H:\Projects\394 Jorgensen Forge Corp\394002 Source Control Invest\Drawings_Plots\394-002VOC.dwg GW VOCS
Jan 10, 2008 1:31pm dwest



Legend

MW-1 ⊕ MW - Monitoring Well

PL2-JF01A Boeing Monitoring Well

GP-09112 ■ Probe Boring by Weston (9/1994,1995)

Property Boundary

Approximate Former Embayment

Fence

Transformer

Railroad Spur

1992

1999

2002

2007

0 60 120

Scale in Feet

ANCHOR ENVIRONMENTAL, L.L.C.

Farallon Consulting

Figure 5-17

SIA PLAN SHOWING GEOMETRY OF CUTTING OIL LNAPL PLUME OVER TIME

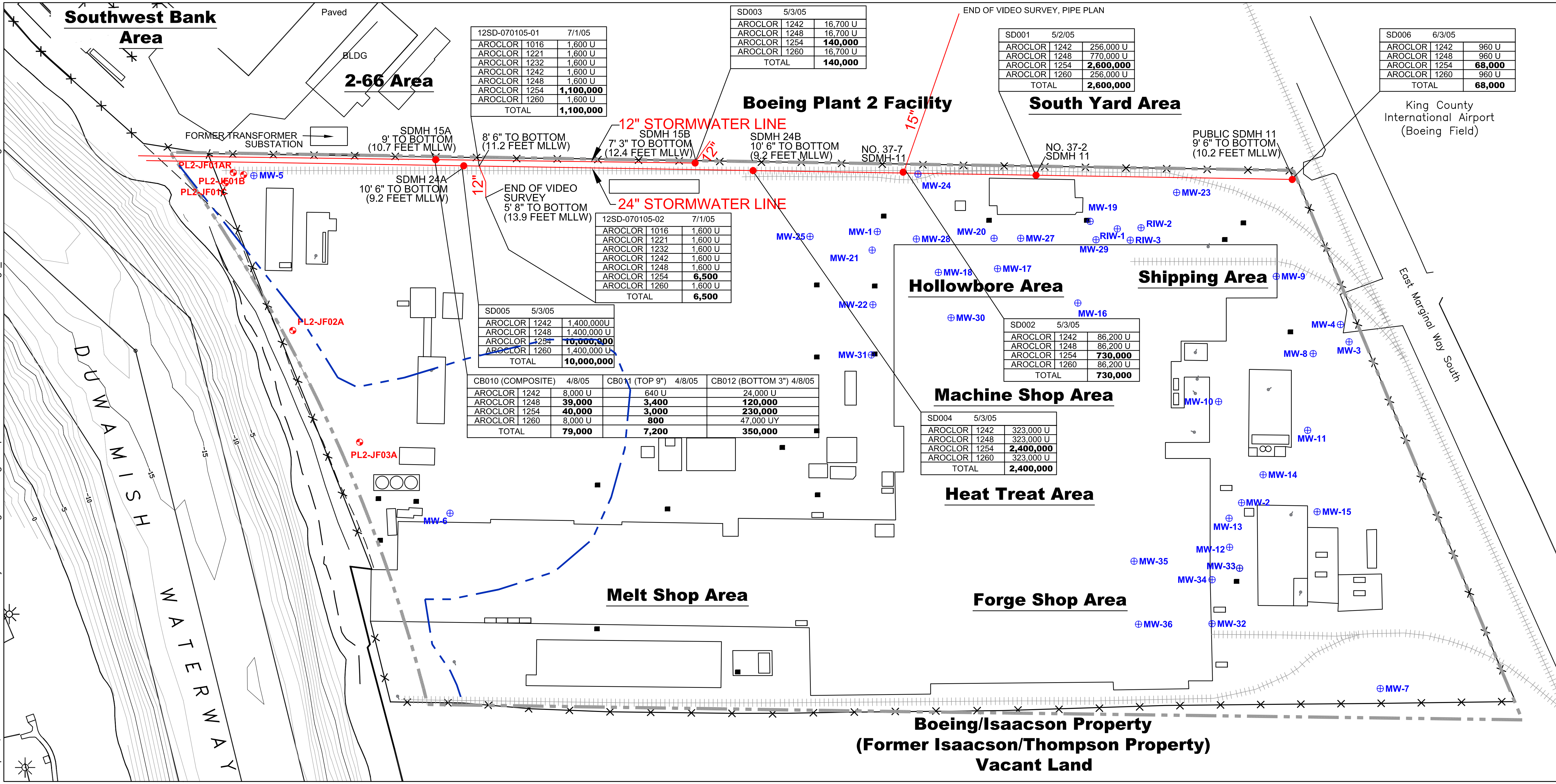
Jorgensen Forge Facility

8531 East Marginal Way South

Seattle, Washington

H:\Projects\394 Jorgensen Forge Corp\394002 Source Control Invest\Drawings_Plots\394-002LNAPL.dwg LNAPL

Jan 11, 2008 12:00pm dwest



12SD-070105-01	7/1/05	
AROCLOR	1016	1,600 U
AROCLOR	1221	1,600 U
AROCLOR	1232	1,600 U
AROCLOR	1242	1,600 U
AROCLOR	1248	1,600 U
AROCLOR	1254	**1,100,000**
AROCLOR	1260	1,600 U
TOTAL		**1,100,000**

SD003	5/3/05	
AROCLOR	1242	16,700 U
AROCLOR	1248	16,700 U
AROCLOR	1254	**140,000**
AROCLOR	1260	16,700 U
TOTAL		**140,000**

SD001	5/2/05	
AROCLOR	1242	256,000 U
AROCLOR	1248	770,000 U
AROCLOR	1254	**2,600,000**
AROCLOR	1260	256,000 U
TOTAL		**2,600,000**

SD006	6/3/05	
AROCLOR	1242	960 U
AROCLOR	1248	960 U
AROCLOR	1254	**68,000**
AROCLOR	1260	960 U
TOTAL		**68,000**

12SD-070105-02	7/1/05	
AROCLOR	1016	1,600 U
AROCLOR	1221	1,600 U
AROCLOR	1232	1,600 U
AROCLOR	1242	1,600 U
AROCLOR	1248	1,600 U
AROCLOR	1254	**6,500**
AROCLOR	1260	1,600 U
TOTAL		**6,500**

SD005	5/3/05	
AROCLOR	1242	1,400,000U
AROCLOR	1248	1,400,000 U
AROCLOR	1254	**10,000,000**
AROCLOR	1260	1,400,000 U
TOTAL		**10,000,000**

		CB010 (COMPOSITE) 4/8/05	CB011 (TOP 9") 4/8/05	CB012 (BOTTOM 3") 4/8/05
AROCLOR	1242	8,000 U	640 U	24,000 U
AROCLOR	1248	**39,000**	**3,400**	**120,000**
AROCLOR	1254	**40,000**	**3,000**	**230,000**
AROCLOR	1260	8,000 U	**800**	47,000 UY
TOTAL		**79,000**	**7,200**	**350,000**

SD002	5/3/05	
AROCLOR	1242	86,200 U
AROCLOR	1248	86,200 U
AROCLOR	1254	**730,000**
AROCLOR	1260	86,200 U
TOTAL		**730,000**

SD004	5/3/05	
AROCLOR	1242	323,000 U
AROCLOR	1248	323,000 U
AROCLOR	1254	**2,400,000**
AROCLOR	1260	323,000 U
TOTAL		**2,400,000**

Legend

- MW-1 ⊕ — MW - Monitoring Well; RIW - Reinjection Well; EW - Series of 5 Extraction Wells
- PL2-JF01A — Boeing Monitoring Well
- SDMH 24B ● — Manhole Location
- 10' 6" TO BOTTOM (11.2 FEET MLLW) — Feet to Bottom of Pipe; Assumes Surface Elevation of 19.7 Feet MLLW Across Jorgensen Forge Property
- Property Boundary
- Approximate Former Embayment
- Railroad Spur
- Fence
- Catch Basin
- Transformer

All results in micrograms per kilogram (ug/kg)

BOLD Indicate Concentrations Above The Sediment Management Standards 2 Lowest Apparent Threshold Screening Level

U No Detecable Concentrations Above the Listed Laboratory Reporting Limit

Y Analyte reporting limit is raised due to a positive chromatographic interference. The compound is not detected above the raised limit but may be present at or below the limit

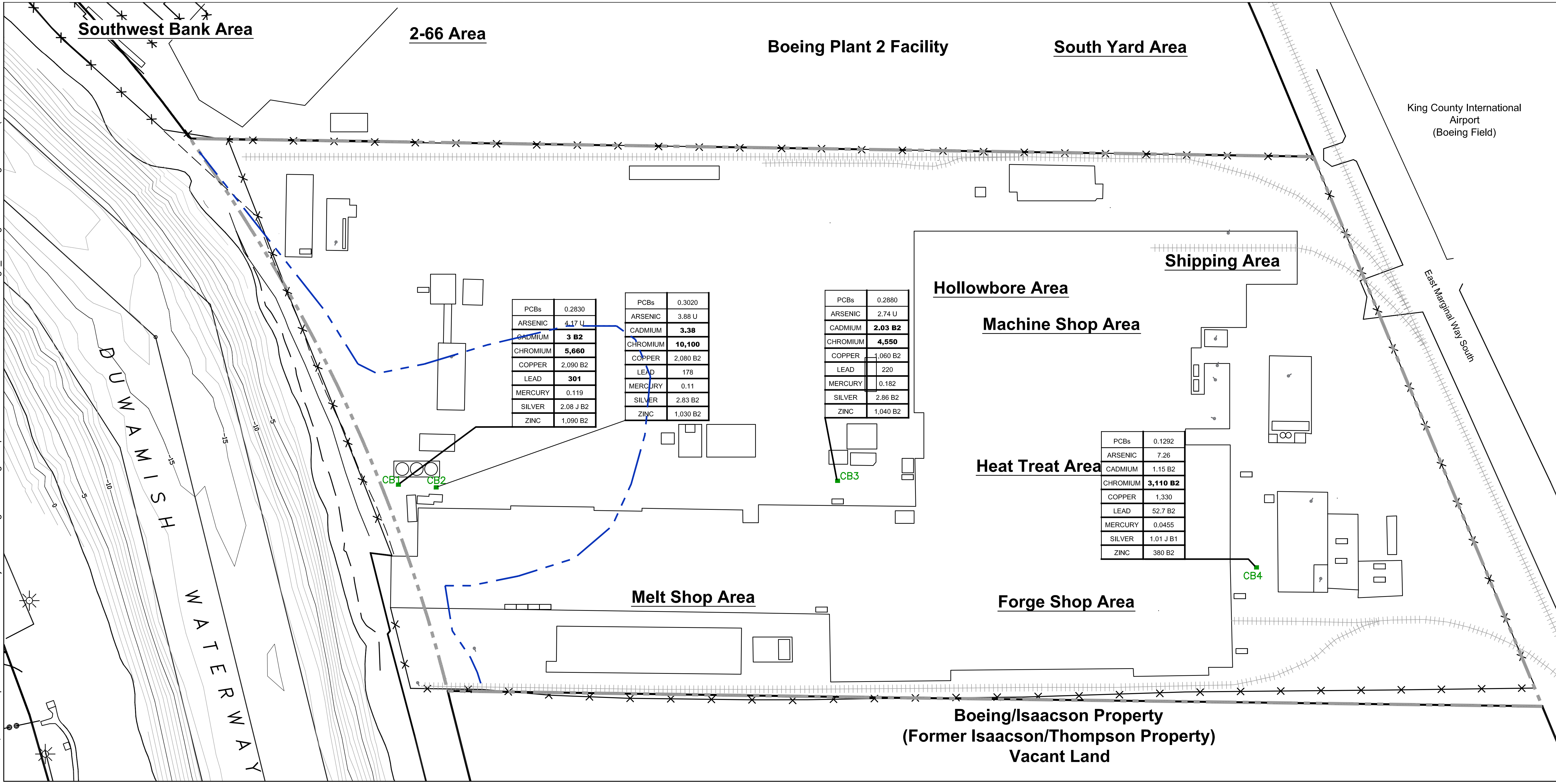
0 60 120
Scale in Feet

ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

Figure 5-18
STORMWATER LINE PCB ANALYTICAL RESULTS
Jorgensen Forge Facility
8531 East Marginal Way South
Seattle, Washington

H:\Projects\394 Jorgensen Forge Corp\394002 Source Control Invest\Drawings_Plots\394-002SWPCB.dwg SW PCB
Apr 15, 2008 11:16am dwest



PCBs	0.2830
ARSENIC	4.17 U
CADMIUM	**3 B2**
CHROMIUM	**5,660**
COPPER	2,090 B2
LEAD	**301**
MERCURY	0.119
SILVER	2.08 J B2
ZINC	1,090 B2

PCBs	0.3020
ARSENIC	3.88 U
CADMIUM	**3.38**
CHROMIUM	**10,100**
COPPER	2,080 B2
LEAD	178
MERCURY	0.11
SILVER	2.83 B2
ZINC	1,030 B2

PCBs	0.2880
ARSENIC	2.74 U
CADMIUM	**2.03 B2**
CHROMIUM	**4,550**
COPPER	1,060 B2
LEAD	220
MERCURY	0.182
SILVER	2.86 B2
ZINC	1,040 B2

PCBs	0.1292
ARSENIC	7.26
CADMIUM	1.15 B2
CHROMIUM	**3,110 B2**
COPPER	1,330
LEAD	52.7 B2
MERCURY	0.0455
SILVER	1.01 J B1
ZINC	380 B2

Legend

- CB2 — Catch Basin Sample Location by Farallon Consulting (8/2004)
- Property Boundary
- Approximate Former Embayment
- Fence
- Transformer
- Railroad Spur

All Results Shown in milligrams per kilogram (mg/kg)

BOLD = Indicates Concentrations Exceed the Source Control Elevation Screening Level Value

U = No Detectable Concentration Above The Listed Laboratory Practical Quantitation Limit

J = Denotes Result Reported Is An Estimate

B2 = The Analyte Was Detected In The Associated Method Blank at a Level Above One-Tenth The Sample Concentration

0 60 120
Scale in Feet

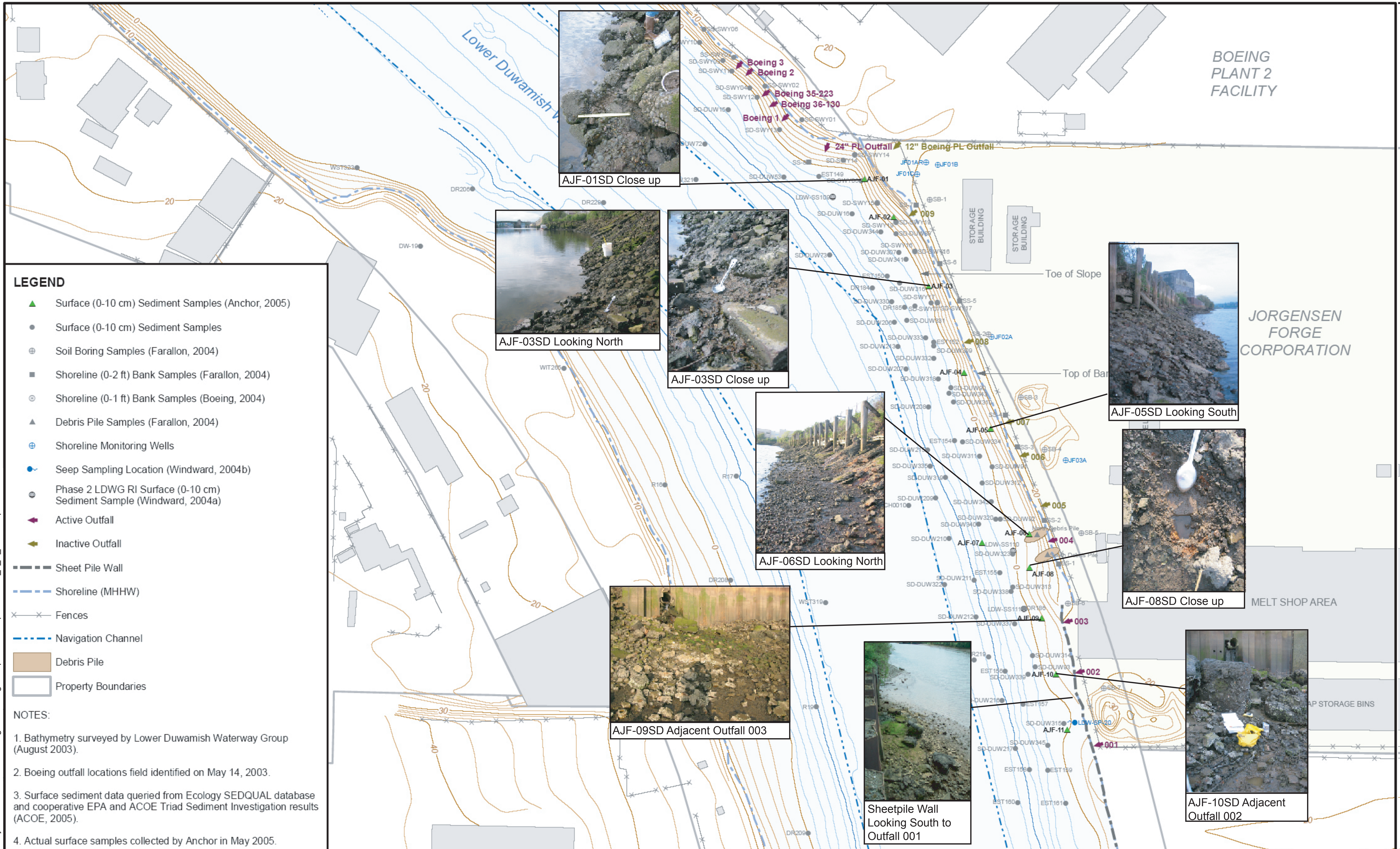
ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

Figure 5-19

SIA PLAN SHOWING ANALYTICAL RESULTS OF CATCH BASIN SAMPLING

Jorgensen Forge Facility
8531 East Marginal Way South
Seattle, Washington



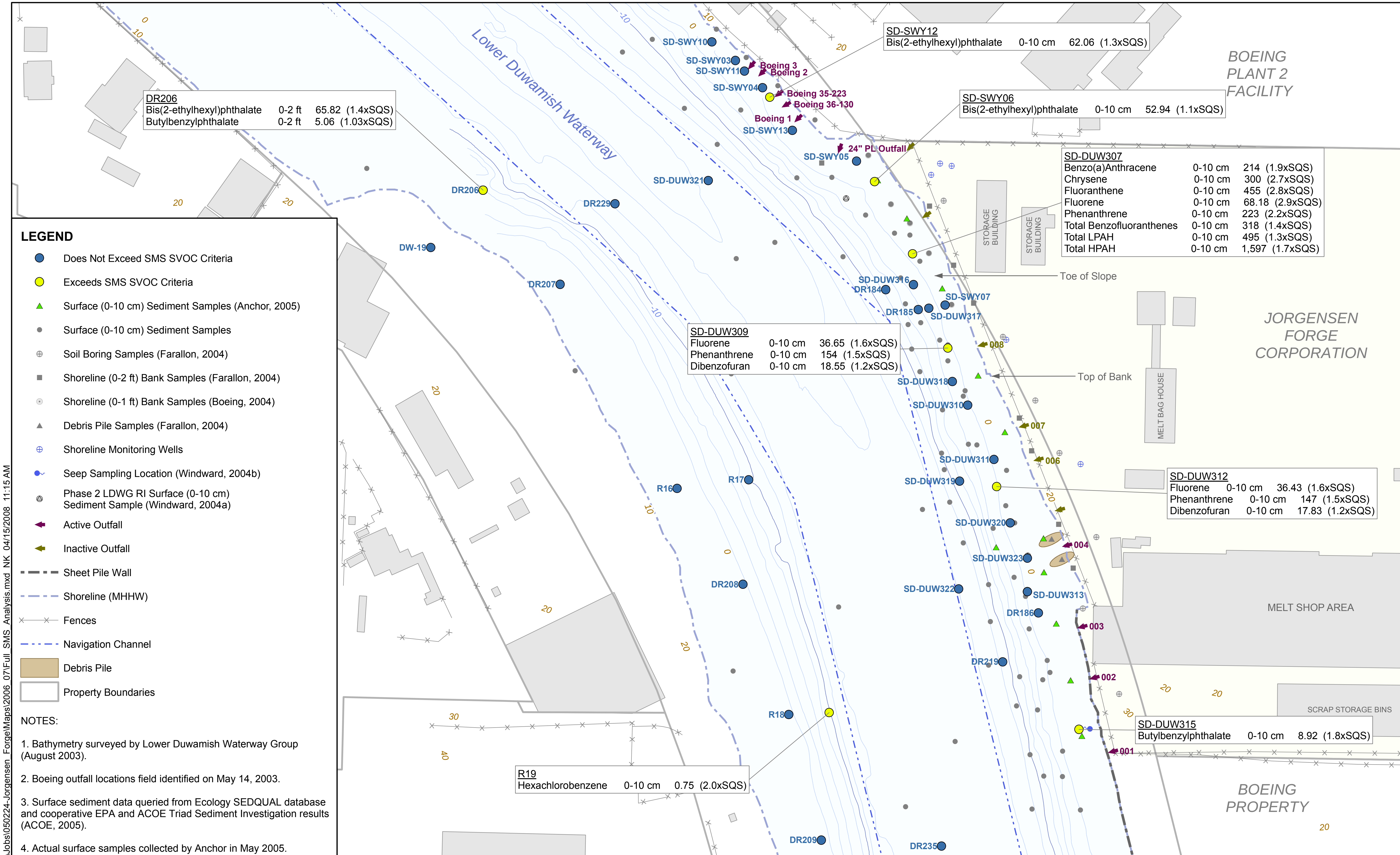
I:\Projects\Duwamish River\Jorgensen Forge Corporation\Maps\FIGURE_4_w_Photos2.pdf BY 01/11/08 11:54 a.m.

ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

0 50 100 200
Scale in Feet

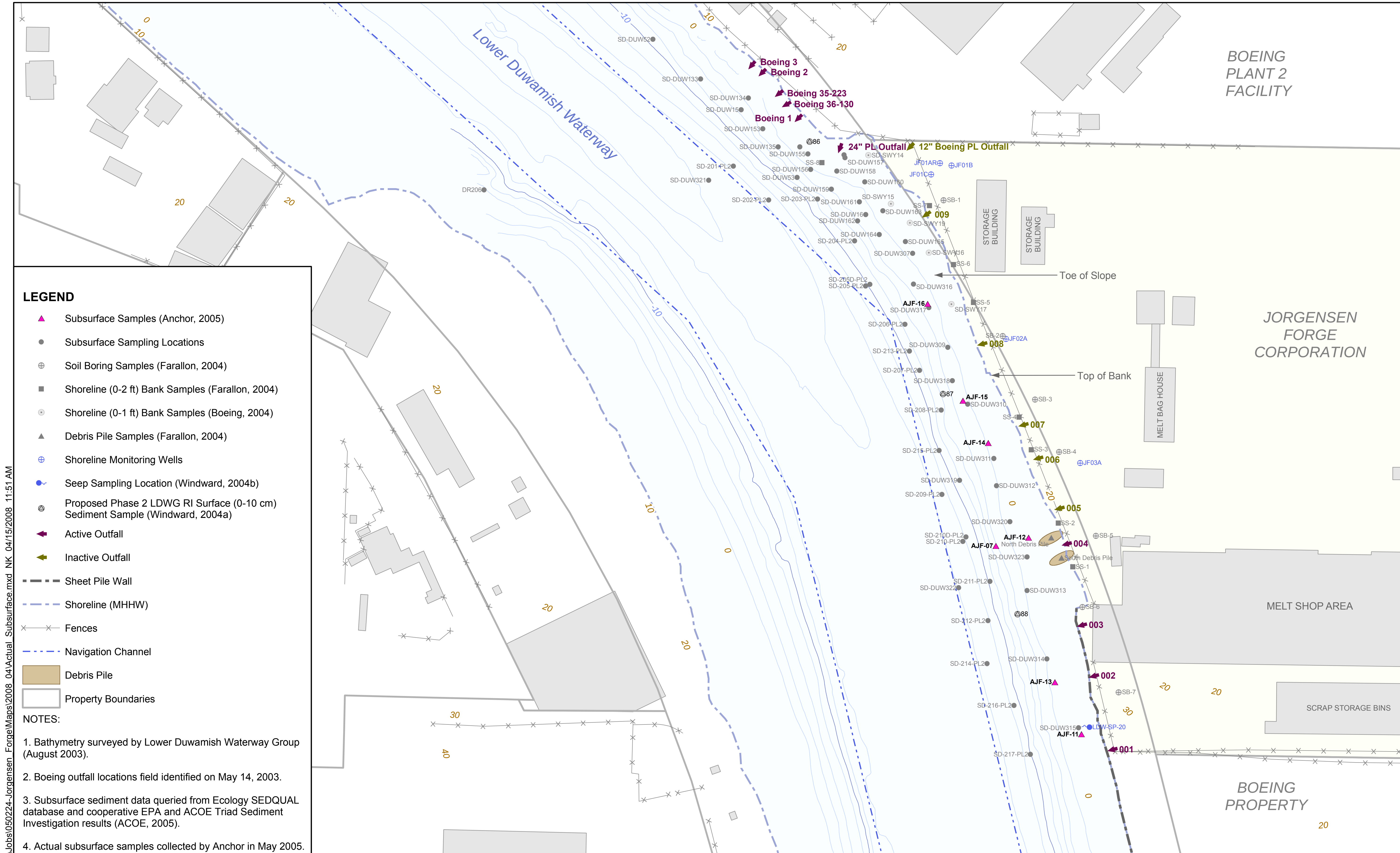
Figure 5-20
SURFACE SEDIMENT SAMPLE LOCATIONS
Jorgensen Forge Facility



J:\Jobs\050224-Jorgensen_Forge\Maps\2006_07\Full_SMS_Analysis.mxd NK 04/15/2008 11:15 AM

ANCHOR ENVIRONMENTAL, L.L.C.

Figure 5-21
SURFACE SEDIMENT SAMPLES – FULL SMS ANALYSIS
Jorgensen Forge Facility



ANCHOR ENVIRONMENTAL, L.L.C.

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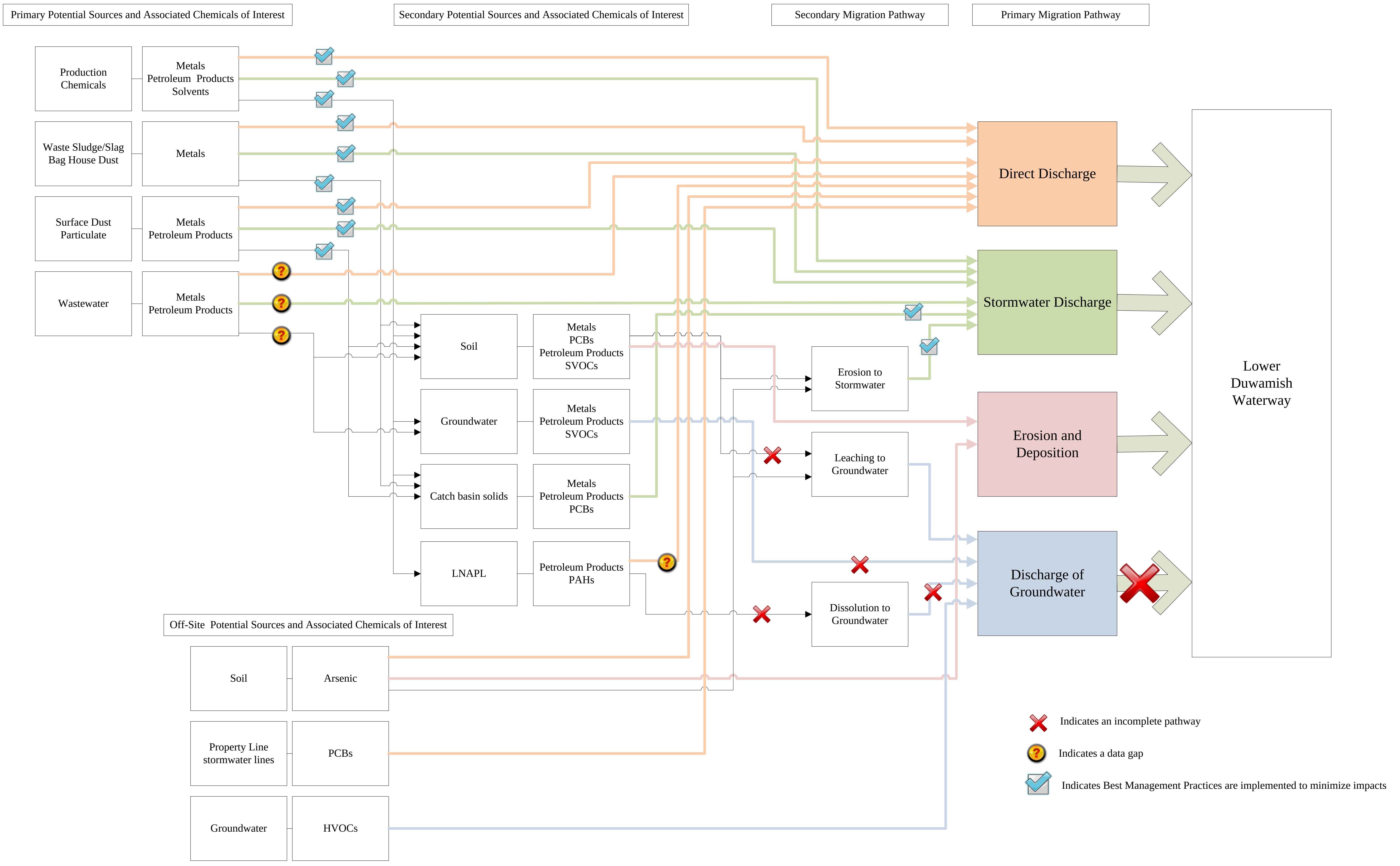
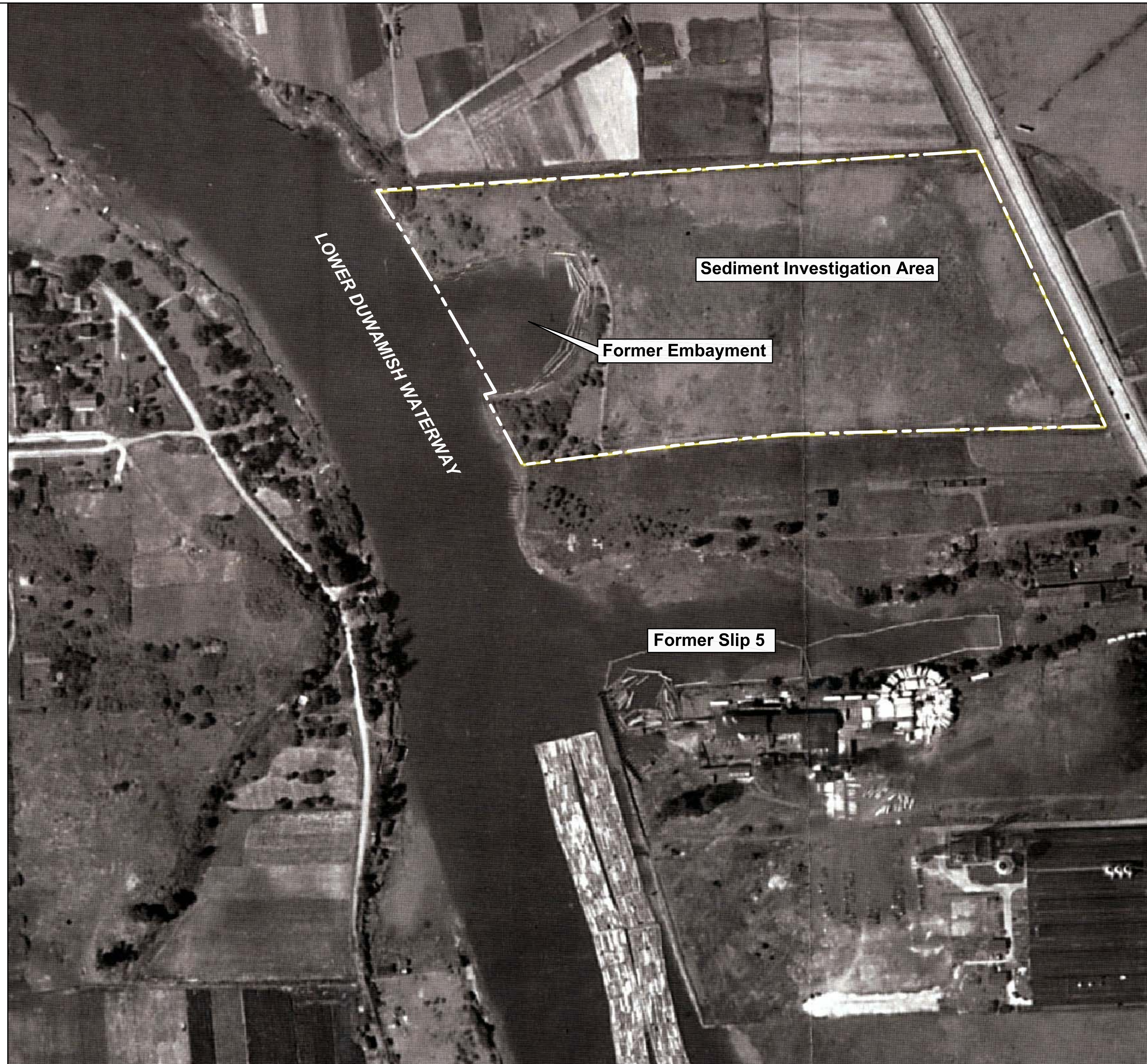
0 50 100
Scale in Feet

Figure 5-22
SUBSURFACE SEDIMENT SAMPLE LOCATIONS
Jorgensen Forge Facility

Figure 6-1
Schematic Diagram Presenting Conceptual Site Model



APPENDIX A
AERIAL PHOTOGRAPH SUMMARY



Not to Scale

Source: 1936 Aerial Photograph

Jan 10, 2008 5:14pm cdavidson K:\Jobs\010128-JORGENSEN_FORGE\01012802\01012802-005.dwg A-1

ANCHOR ENVIRONMENTAL, L.L.C.

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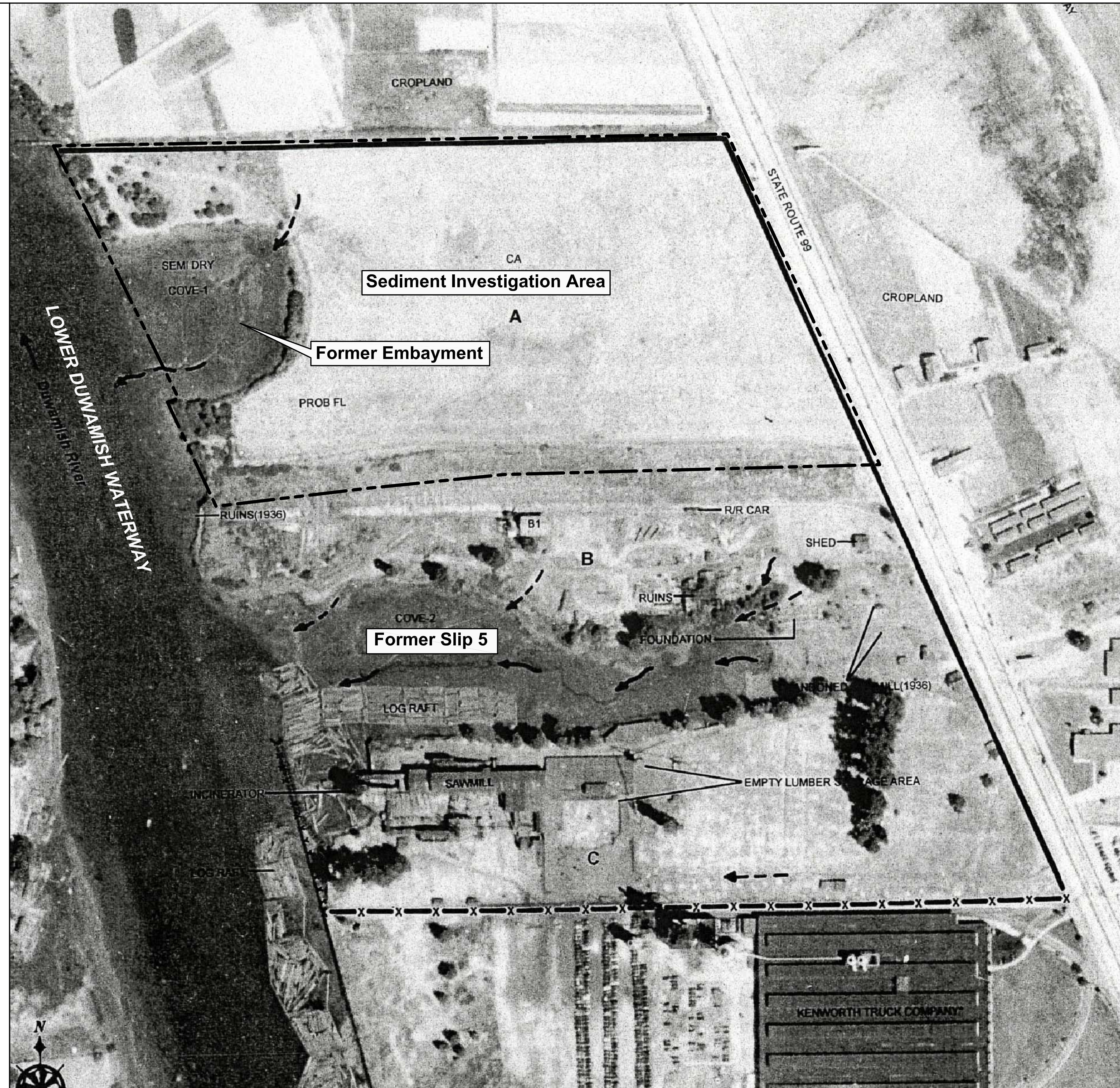
Figure A-1
1936 Aerial Photograph of Sediment Investigation Area
Jorgensen Forge Facility



Not to Scale

Source: Aerial Photograph Analysis of Jorgensen Forge Corporation/Duwamish River - Seattle, Washington (EPA 2003).

Jan 10, 2008 5:15pm cdavidson K:\Jobs\010128-JORGENSEN_FORGE\01012802\01012802-005.dwg A-2

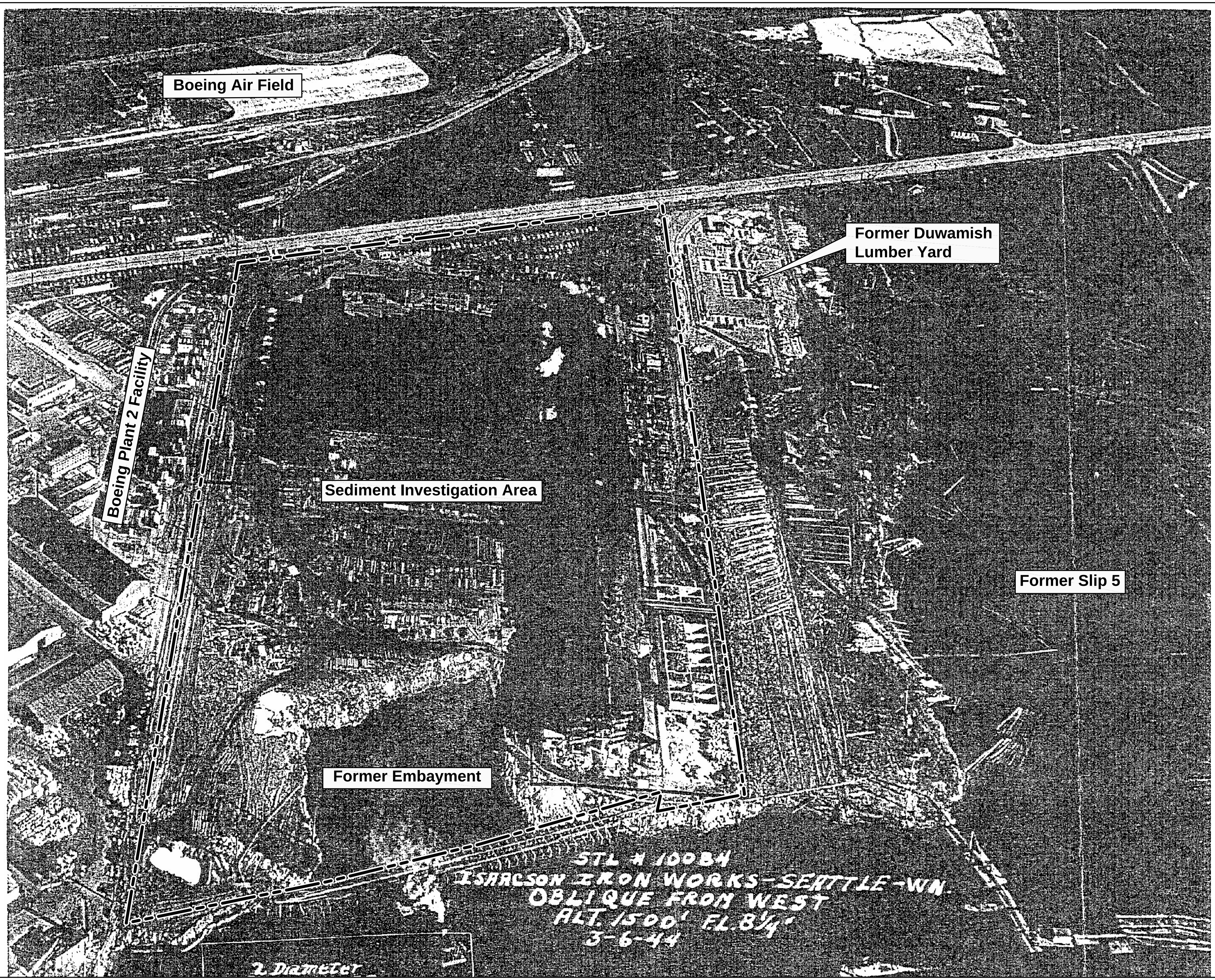
ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

Figure A-2

1940 Aerial Photograph of Sediment Investigation Area

Jorgensen Forge Facility



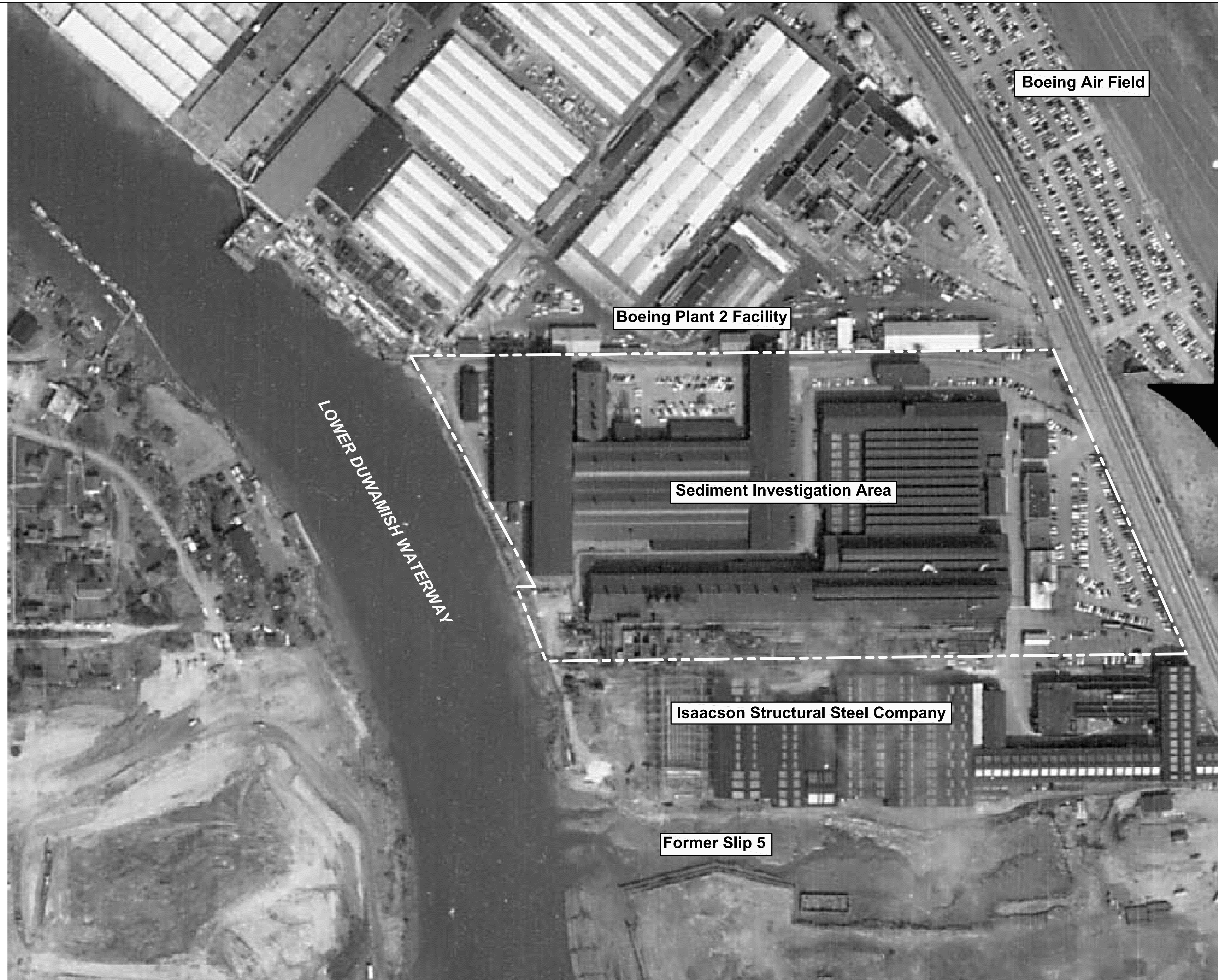
Not to Scale

Source: Aerial photograph photocopy obtained from Jorgensen Forge files.

Jan 10, 2008 5:16pm cdavidson K:\Jobs\010128-JORGENSEN_FORGE\01012802\01012802-005.dwg A-3

Figure A-3
1944 Aerial Photograph of Sediment Investigation Area
Jorgensen Forge Facility

ANCHOR ENVIRONMENTAL, L.L.C.
FARALLON CONSULTING



Not to Scale

Source: 1956 Aerial Photograph

Jan 10, 2008 5:17pm cdavidson K:\Jobs\010128-JORGENSEN_FORGE\01012802\01012802-005.dwg A-4

ANCHOR ENVIRONMENTAL, L.L.C.

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Figure A-4
1956 Aerial Photograph of Sediment Investigation Area
Jorgensen Forge Facility

Not to Scale

Source: 1969 Aerial Photograph

Jan 10, 2008 5:17pm cdavidson K:\Jobs\010128-JORGENSEN_FORGE\01012802\01012802-005.dwg A-5

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Figure A-5
1969 Aerial Photograph of Sediment Investigation Area
Jorgensen Forge Facility

Jan 10, 2008 5:18pm cdavidson K:\Jobs\010128-JORGENSEN_FORGE\01012802\01012802-005.dwg A-6

Figure A-6
1974 Aerial Photograph of Sediment Investigation Area
Jorgensen Forge Facility

ANCHOR ENVIRONMENTAL, L.L.C.
FARALLON CONSULTING

Not to Scale

Source: 1985 Aerial Photograph

Jan 10, 2008 5:19pm cdavidson K:\Jobs\010128-JORGENSEN_FORGE\01012802\01012802-005.dwg A-7

ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

Figure A-7
1985 Aerial Photograph of Sediment Investigation Area
Jorgensen Forge Facility

N
Not to Scale

Source: 1995 Aerial Photograph

Jan 10, 2008 5:19pm cdavidson K:\Jobs\010128-JORGENSEN_FORGE\01012802\01012802-005.dwg A-8

ANCHOR ENVIRONMENTAL, L.L.C.

FARALLON CONSULTING

Figure A-8
1995 Aerial Photograph of Sediment Investigation Area
Jorgensen Forge Facility

Jan 10, 2008 5:21pm cdavidson K:\Jobs\010128-JORGENSEN_FORGE\01012802\01012802-004.dwg A-9

Figure A-9
2006 Aerial Photograph of Sediment Investigation Area
Jorgensen Forge Facility

ANCHOR ENVIRONMENTAL, L.L.C.
FARALLON CONSULTING

APPENDIX B

EXISTING LOWER DUWAMISH WATERWAY SURFACE AND SUBSURFACE SEDIMENT RESULTS – VICINITY OF JORGENSEN FACILITY

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID		SMS Criteria			CH0009	CH0010	CH0011	DR184	DR185	DR186	DR206	DR206	DR206	DR207	DR208	DR209	DR219
Sample ID					CH03-01	CH03-02	CH03-03	SD-184-0000	SD-185-0000	SD-186-0000	SD-206-0000	SD-206-0000A	SD-206-0020	SD-207-0000	SD-208-0000	SD-209-0000	SD-219-0000
Sample Date					10/15/1997	10/15/1997	10/15/1997	8/19/1998	8/27/1998	8/27/1998	8/27/1998	9/22/1998	9/22/1998	8/27/1998	8/27/1998	8/27/1998	9/14/1998
Depth Interval	SQS	CSL	LAET	2LAET	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-2 ft	2-4 ft	0-10 cm	0-10 cm	0-10 cm	0-10 cm
Conventionals																	
Total solids (%)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total organic carbon (%)	--	--	--	--	**1.91**	**1.74**	**1.89**	**2.21**	**1.96**	**2.01**	**2.97**	**0.79**	**2.45**	**3.17**	**1.29**	**1.03**	**2.22**
Metals (mg/kg)																	
Aluminum	--	--	--	--	--	--	--	**20900**	**22300**	**17900**	**26600**	**22300 J**	**22100**	**15300**	**15500**	**22400**	**21300**
Antimony	--	--	--	--	--	--	--	10 UJ	10 U	10 U	10 UJ	10 UJ	10 UJ	**6 J**	10 U	10 U	10 U
Arsenic	57	93	57	93	--	--	--	**10.1**	**9.5**	**24.9**	**7.4**	**7 J**	**8**	**15.9**	**9.6**	**9.8**	**10.8**
Barium	--	--	--	--	--	--	--	**69**	**64**	**69**	**75**	**73 J**	**91**	**52**	**41**	**72**	**72**
Beryllium	--	--	--	--	--	--	--	**0.45**	**0.4**	**0.34**	**0.49**	**0.39 J**	**0.41**	**0.3**	**0.28**	**0.39**	**0.4 J**
Cadmium	5.1	6.7	5.1	6.7	--	--	--	**0.3**	**0.4**	**1**	**0.4**	**0.39 J**	**0.74**	**0.2**	**0.2**	**0.2**	**0.3**
Calcium	--	--	--	--	--	--	--	**5910**	**6160**	**5570**	**6920**	**5850 J**	**6150**	**7010**	**4780**	**3020**	**5840**
Chromium	260	270	260	270	--	--	--	**27**	**31**	**180**	**34**	**29 J**	**30**	**26**	**22**	**14**	**28**
Cobalt	--	--	--	--	--	--	--	**10**	**10**	**10**	**11**	**10 J**	**9**	**8**	**7**	**6**	**10**
Copper	390	390	390	390	--	--	--	**47**	**44**	**157**	**46**	**50 J**	**53**	**42**	**32**	**26**	**44**
Iron	--	--	--	--	--	--	--	**28100 J**	**28800**	**32000**	**32300 J**	**28600 J**	**28600**	**26700 J**	**24000**	**23900**	**30500**
Lead	450	530	450	530	--	--	--	**18.5**	**26.2**	**152**	**16.9**	**31.6 J**	**48.2**	**46.4**	**25.9**	**12.7**	**24.6 J**
Magnesium	--	--	--	--	--	--	--	**8500**	**8250**	**6780**	**9440**	**8110 J**	**7020**	**6850**	**5520**	**5780**	**8130**
Manganese	--	--	--	--	--	--	--	**300**	**293**	**721**	**317**	**282 J**	**276**	**411**	**327**	**533**	**316**
Mercury	0.41	0.59	0.41	0.59	--	--	--	**0.13**	**0.13**	**0.19**	**0.1**	**0.2 J**	**0.2**	**0.1**	**0.07**	**0.04 J**	**0.14**
Nickel	--	--	--	--	--	--	--	**21.3**	**24.5**	**96.4**	**24.2**	**19.9 J**	**17.6**	**17.6**	**15.9**	**9.1**	**22.2**
Potassium	--	--	--	--	--	--	--	**2700**	**2680**	**1900**	**3400**	**3100 J**	**2600**	**2800**	**2480**	**11100**	**2600**
Selenium	--	--	--	--	--	--	--	**6 J**	**15.9**	**15**	**17.5 J**	2 UJ	2 U	**11 J**	**12**	**13**	1 U
Silver	6.1	6.1	6.1	6.1	--	--	--	**0.25**	**0.21**	**0.43**	**0.19**	**0.33 J**	**0.54**	**0.15**	**0.16**	**0.29**	**0.22**
Sodium	--	--	--	--	--	--	--	**13200**	**12000**	**8520**	**14600**	**10700 J**	**5870**	**8200**	**8060**	**13000**	**12300**
Thallium	--	--	--	--	--	--	--	**0.07 J**	**0.12**	**0.11**	**0.1**	**0.07 J**	**0.1 J**	**0.04**	**0.06**	**0.04 J**	**0.08 J**
Tin	--	--	--	--	--	--	--	2 UJ	4 UJ	9 UJ	4 UJ	**5 J**	**6**	**6**	4 UJ	3 UJ	4 UJ
Vanadium	--	--			--	--	--	**60**	**67**	**66**	**81**	**65 J**	**65**	**61**	**55**	**39**	**65**
Zinc	410	960	410	960	--	--	--	**95**	**94**	**240**	**93**	**113 J**	**120**	**131**	**79**	**66**	**96**
PCBs (µg/kg)																	
Total PCBs	--	--	130	1000	--	--	--	**139 J ***	**75 J**	**1178 J * #**	**205 J ***	**1250 J * #**	40 UJ	**12000 J * #**	**388 J ***	**67 J**	**186 J ***
Total PCBs (field)	--	--	130	1000	--	**10.22**	**73.63 * #**	**22.7 ***	--	**14.29 ***	**40.83 ***	**13.51 ***	--	--	--	**8.69**	--
PCBs (mg/kg-OC)																	
Total PCBs	12	65	--	--	**3.94764**	**0.68965**	**1.60317**	**6.28 J**	**3.82 J**	**58.6 J ***	**6.9 J**	**158.22 J * #**	1.63 UJ	**378.54 J * #**	**30.07 J ***	**6.5 J**	**8.37 J**
Total PCBs (field)	12	65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID					DR229	DR235	DW-19	DW-19	EST149	EST150	EST152	EST154	EST155	EST156	EST157	SD-DUW314/	SD-DUW314/	SD-DUW314/
Sample ID					SD-229-0000	SD-235-0000	DAC-DW-19	DAC-DW-19A	EST11-01	EST11-02	EST11-03	EST11-04	EST11-05	EST11-06	EST11-07	EST11-08	EST11-09	EST11-10
Sample Date	SMS Criteria				8/27/1998	8/26/1998	6/15/1994	6/15/1994	11/13/1997	10/21/1997	9/24/1997	9/24/1997	9/24/1997	9/24/1997	9/24/1997	9/24/1997	9/24/1997	9/25/1997
Depth Interval	SQS	CSL	LAET	2LAET	0-10 cm	0-10 cm	0-10 cm	0-2 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm
Conventionals																		
Total solids (%)	--	--	--	--	--	--	49.7	--	--	--	--	--	--	--	--	--	--	--
Total organic carbon (%)	--	--	--	--	2.04	1.92	2.39	--	2.03	1.88	1.97	1.54	1.71	1.55	1.79	1.52	1.19	1.59
Metals (mg/kg)																		
Aluminum	--	--	--	--	21800	21000	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	10 UJ	10 U	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	7.7	10	20	--	--	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	71	69	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	0.42	0.4	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	0.4	0.3	0.6	--	--	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	6180	5980	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	29	27	42	--	--	--	--	--	--	--	--	--	--	--
Cobalt	--	--	--	--	10	9	--	--	--	--	--	--	--	--	--	--	--	--
Copper	390	390	390	390	39	39	61.4	--	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	28400 J	28800	--	--	--	--	--	--	--	--	--	--	--	--
Lead	450	530	450	530	16.6	18.5	46	--	--	--	--	--	--	--	--	--	--	--
Magnesium	--	--	--	--	7740	7650	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	305	299	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	0.13	0.13	0.34	--	--	--	--	--	--	--	--	--	--	--
Nickel	--	--	--	--	21.5	22	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	2600	2460	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	14.7 J	14	--	--	--	--	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	0.23	0.16	1.4	--	--	--	--	--	--	--	--	--	--	--
Sodium	--	--	--	--	11000	11200	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	0.08	0.11	--	--	--	--	--	--	--	--	--	--	--	--
Tin	--	--	--	--	5	4 UJ	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--			70	65	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	85	85	146	--	--	--	--	--	--	--	--	--	--	--
PCBs (µg/kg)																		
Total PCBs	--	--	130	1000	22 J	75 J	130 J *	990 J *	--	--	--	--	--	--	--	--	--	--
Total PCBs (field)	--	--	130	1000	150 * #	399 * #	618 * #	--	171 * #	--	--	--	3.54	--	--	--	--	0.81 U
PCBs (mg/kg-OC)																		
Total PCBs	12	65	--	--	1.07 J	3.9 J	5.43 J	--	66.20 * #	4.505	12.48 *	8.27	16.26 *	12.26 *	1.23	3.80	7.74	2.07
Total PCBs (field)	12	65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID					SD-DUW314A	SD-DUW314A	R17	R18	R19	SD-201-PL2	SD-201-PL2	SD-201-PL2	SD-201-PL2	SD-201-PL2	SD-201-PL2
Sample ID					EST11-11	SD0011	SD0010	SD0018	SD0019	SD-201-0000-PL2	SD-201-0010-PL2	SD-201-0020-PL2	SD-201-0030-PL2	SD-201-0040-PL2	SD-201-0050-PL2
Sample Date	SMS Criteria				11/13/1997	10/10/1997	10/9/1997	10/11/1997	10/11/1997	4/21/2004	4/21/2004	4/21/2004	4/21/2004	4/21/2004	4/21/2004
Depth Interval	SQS	CSL	LAET	2LAET	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-1 ft	1-2 ft	2-3 ft	3-4 ft	4-5 ft	5-5.7 ft
Conventionals															
Total solids (%)	--	--	--	--	--	**52.8**	**49.9**	**56.3**	**47.9**	**52.5**	**55.1**	**66.1**	**53.9**	**65.6**	**66.7**
Total organic carbon (%)	--	--	--	--	**0.85**	**1.1**	**1.2**	**1**	**1.3**	**2.1**	**2.47**	**2.08**	**2.35**	**1.42**	**2.61**
Metals (mg/kg)															
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	--	**12.4**	**10.6**	**11.9**	**13.6**	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	--	0.4 U	0.4 U	0.4 U	0.4 U	**0.7**	**1.2**	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	--	**26**	**27**	**21**	**28**	**32.1**	**37.9**	--	--	--	--
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	390	390	390	390	--	**37**	**44**	**32**	**41**	**64.8**	**62.5**	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	450	530	450	530	--	**19**	**21**	**21**	**18**	**42**	**53**	--	--	--	--
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	--	**0.09**	**0.1**	0.08 U	**0.12**	**0.27**	**0.32**	--	--	--	--
Nickel	--	--	--	--	--	**24**	**24**	**17**	**25**	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	--	0.4 U	0.4 U	0.4 U	0.4 U	**0.8**	**0.8**	--	--	--	--
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--			--	--	--	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	--	**88**	**95**	**79**	**86**	**133**	**158**	--	--	--	--
PCBs (µg/kg)															
Total PCBs	--	--	130	1000	--	**2400 * #**	**177 ***	**201 ***	**193 ***	**338 ***	**2500 * #**	**3440 * #**	**319 ***	**217 ***	**50**
Total PCBs (field)	--	--	130	1000	--	--	--	5.38 U	--	--	--	**44.27 ***	**41.65 ***	**200 * #**	--
PCBs (mg/kg-OC)															
Total PCBs	12	65	--	--	**18.65 ***	**218 * #**	**14.75 ***	**20.1 ***	**14.84 ***	**16.09 ***	**101 * #**	**165 * #**	**13.57 ***	**15.28 ***	**1.91**
Total PCBs (field)	12	65	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID	SMS Criteria				SD-202-PL2	SD-202-PL2	SD-203-PL2	SD-203-PL2	SD-203-PL2	SD-204-PL2	SD-204-PL2	SD-204-PL2	SD-204-PL2
Sample ID					SD-202-0000-PL2	SD-202-0010-PL2	SD-203-0000-PL2	SD-203-0010-PL2	SD-203-0020-PL2	SD-204-0000-PL2	SD-204-0010-PL2	SD-204-0020-PL2	SD-204-0030-PL2
Sample Date					4/22/2004	4/22/2004	4/22/2004	4/22/2004	4/22/2004	4/22/2004	4/22/2004	4/22/2004	4/22/2004
Depth Interval	SQS	CSL	LAET	2LAET	0-1 ft	1-2 ft	0-1 ft	1-2 ft	2-2.9 ft	0-1 ft	1-2 ft	2-3 ft	3-4 ft
Conventionals													
Total solids (%)	--	--	--	--	**48.3**	**49.2**	**68.7**	**75.6**	**92.6**	**52.8**	**53.3**	**65.6**	**54.8**
Total organic carbon (%)	--	--	--	--	**2.88**	**2.03**	**1.39**	**1.05**	**0.28**	**2.28**	**1.84**	**1.35**	**2.23**
Metals (mg/kg)													
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	0.4 U	0.4 U	**0.8**	**2.4**	--	0.4 U	**0.5**	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	**30 J**	**32 J**	**44.2 J**	**94.9 J**	**26.2 J**	**31 J**	**32 J**	--	--
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	390	390	390	390	**56.3**	**48.6**	**55.3**	**45.3**	**23.9 J**	**47.1**	**51.4**	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	450	530	450	530	**28**	**21**	**66**	**152**	--	**26**	**30**	--	--
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	**0.2**	**0.22**	**0.13**	**0.18**	--	**0.12**	**0.15**	--	--
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	0.6 U	0.6 U	**0.5**	**0.9**	--	0.6 U	0.6 U	--	--
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--			--	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	**113**	**97**	**183**	**567 ***	--	**106**	**116**	--	--
PCBs (µg/kg)													
Total PCBs	--	--	130	1000	**110**	**48 J**	**7100 J * #**	**6500 * #**	**38**	**125**	**243 ***	**281 ***	**7570 * #**
Total PCBs (field)	--	--	130	1000	**76.45 * #**	**495 * #**	**202 * #**	--	--	--	--	**5.99**	--
PCBs (mg/kg-OC)													
Total PCBs	12	65	--	--	**3.81**	**2.36 J**	**511 J * #**	**619 * #**	**13.57 ***	**5.48**	**13.2 ***	**20.81 ***	**339 * #**
Total PCBs (field)	12	65	--	--	--	--	--	--	--	--	--	--	--

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID / Sample ID / Sample Date / Depth Interval	SMS Criteria SQS	CSL	LAET	2LAET	SD-204-PL2 / SD-204-0040-PL2 / 4/22/2004 / 4-5 ft	SD-204-PL2 / SD-204-0050-PL2 / 4/22/2004 / 5-6 ft	SD-204-PL2 / SD-204-0060-PL2 / 4/22/2004 / 6-6.9 ft	SD-204-PL2 / SD-204-0070-PL2 / 4/22/2004 / 7-7.8 ft	SD-204-PL2 / SD-204-0080-PL2 / 4/22/2004 / 8-8.7 ft	SD-205D-PL2 / SD-205D-0000-PL2 / 4/23/2004 / 0-1 ft	SD-205D-PL2 / SD-205D-0010-PL2 / 4/23/2004 / 1-2 ft	SD-205-PL2 / SD-205-0000-PL2 / 4/22/2004 / 0-1 ft	SD-205-PL2 / SD-205-0010-PL2 / 4/22/2004 / 1-2 ft
Conventionals													
Total solids (%)	--	--	--	--	**61.9**	**58.4**	**67.5**	**85.9**	**78.6**	**47.8**	**50.4**	**52**	**52.4**
Total organic carbon (%)	--	--	--	--	**2.03**	**2.12**	**1.62**	**0.61**	**0.73**	**2.82**	**2.51**	**2.25**	**2.03**
Metals (mg/kg)													
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	--	--	--	--	--	**0.4**	**0.5**	0.4 U	**0.5**
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	--	--	--	--	--	**31.3**	**30.9**	**30.3 J**	**32.8 J**
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	390	390	390	390	--	--	--	--	--	**50.5**	**53**	**48.2**	**55.6**
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	450	530	450	530	--	--	--	--	--	**26**	**32**	**24**	**39**
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	--	--	--	--	--	**0.13**	**0.15**	**0.1**	**0.18**
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	--	--	--	--	--	0.6 U	0.5 U	0.6 U	0.5 U
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--			--	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	--	--	--	--	--	**106**	**113**	**103**	**130**
PCBs (µg/kg)													
Total PCBs	--	--	130	1000	**4800 * #**	**4740 * #**	**2070 * #**	**542 ***	**690 ***	**83**	**158 ***	**117**	**128**
Total PCBs (field)	--	--	130	1000	--	**66.11 * #**	**51.63 * #**	**13.06 * #**	**32.03 ***	--	--	**44.49 ***	**18.26 ***
PCBs (mg/kg-OC)													
Total PCBs	12	65	--	--	**236 * #**	**224 * #**	**128 * #**	**88.85 * #**	**94.52 * #**	**2.94**	**6.29**	**5.2**	**6.3**
Total PCBs (field)	12	65	--	--	--	--	--	--	--	--	--	--	--

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID	SMS Criteria				SD-206-PL2	SD-206-PL2	SD-206-PL2	SD-207-PL2	SD-207-PL2	SD-208-PL2	SD-208-PL2	SD-209-PL2	SD-209-PL2
Sample ID					SD-206-0000-PL2	SD-206-0010-PL2	SD-206-0020-PL2	SD-207-0000-PL2	SD-207-0010-PL2	SD-208-0000-PL2	SD-208-0010-PL2	SD-209-0000-PL2	SD-209-0010-PL2
Sample Date					4/20/2004	4/20/2004	4/20/2004	4/20/2004	4/20/2004	4/20/2004	4/20/2004	4/20/2004	4/20/2004
Depth Interval	SQS	CSL	LAET	2LAET	0-1 ft	1-2 ft	2-3 ft	0-1 ft	1-2 ft	0-1 ft	1-2 ft	0-1 ft	1-2 ft
Conventionals													
Total solids (%)	--	--	--	--	**48.7**	**52.3**	**61.6**	**48.8**	**53.8**	**53.3**	**61.3**	**46.1**	**50**
Total organic carbon (%)	--	--	--	--	**2.1**	**1.82**	**2.79**	**1.92**	**2.14**	**1.96**	**1.97**	**2.64**	**2.1**
Metals (mg/kg)													
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	**0.4**	**0.8**	--	**0.4**	**0.8**	**0.5**	**1.1**	0.4 U	0.4 U
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	**33**	**32.6**	--	**33.5**	**34.7**	**36.6**	**37**	**31**	**31.4**
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	390	390	390	390	**48.6**	**55.9**	--	**53.2**	**60.7**	**50**	**50.2**	**54.5**	**50.3**
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	450	530	450	530	**29**	**52**	--	**34**	**58**	**37**	**41**	**27**	**24**
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	**0.19 J**	**0.16 J**	--	**0.17 J**	**0.16 J**	**0.12 J**	**0.26 J**	**0.1 J**	**0.17 J**
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	0.6 U	**0.8**	--	0.6 U	**0.9**	0.5 U	0.5 U	0.6 U	0.6 U
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--			--	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	**118**	**139**	--	**119**	**144**	**118**	**178**	**117**	**109**
PCBs (µg/kg)													
Total PCBs	--	--	130	1000	**74**	**221 ***	**146 ***	**175 ***	**156 ***	**94**	**137 ***	**19 J**	**26**
Total PCBs (field)	--	--	130	1000	**16.78 ***	--	**50.68 ***	**105 * #**	**51.13 ***	**8.75**	**27.29 ***	**11.44**	--
PCBs (mg/kg-OC)													
Total PCBs	12	65	--	--	**3.52**	**12.14 ***	**5.23**	**9.11**	**7.28**	**4.79**	**6.95**	**0.71 J**	**1.23**
Total PCBs (field)	12	65	--	--	--	--	--	--	--	--	--	--	--

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID					SD-210D-PL2	SD-210D-PL2	SD-210-PL2	SD-210-PL2	SD-211-PL2	SD-211-PL2	SD-211-PL2	SD-211-PL2	SD-211-PL2
Sample ID					SD-210D-0000-PL2	SD-210D-0010-PL2	SD-210-0000-PL2	SD-210-0010-PL2	SD-211-0000-PL2	SD-211-0010-PL2	SD-211-0020-PL2	SD-211-0030-PL2	SD-211-0040-PL2
Sample Date	SMS Criteria				4/21/2004	4/21/2004	4/20/2004	4/20/2004	4/21/2004	4/21/2004	4/21/2004	4/21/2004	4/21/2004
Depth Interval	SQS	CSL	LAET	2LAET	0-1 ft	1-2 ft	0-1 ft	1-2 ft	0-1 ft	1-2 ft	2-3 ft	3-4 ft	4-4.8 ft
Conventionals													
Total solids (%)	--	--	--	--	**62.5 J**	**50.3**	**45.5 J**	**49.5 J**	**51.6**	**55**	**74.2**	**72.4**	**83.9**
Total organic carbon (%)	--	--	--	--	**1.68 J**	**1.87**	**2.86 J**	**2.34 J**	**1.99**	**1.89**	**1.5**	**1.44**	**0.74**
Metals (mg/kg)													
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	--	--	**0.4**	**0.4**	**1**	**0.9**	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	--	--	**33**	**32.5**	**57.3**	**40.3**	--	--	--
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	390	390	390	390	--	--	**56.9**	**54.3**	**85**	**76.2**	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	450	530	450	530	--	--	**30**	**30**	**158**	**112**	--	--	--
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	--	--	**0.1 J**	**0.13 J**	**0.15**	**0.16**	--	--	--
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	--	--	0.6 U	0.5 U	**1.4**	**1.4**	--	--	--
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--			--	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	--	--	**123**	**118**	**200**	**168**	--	--	--
PCBs (µg/kg)													
Total PCBs	--	--	130	1000	20 U	**299 ***	**31**	**90**	**1170 J * #**	**670 ***	**1540 J * #**	**1660 * #**	**653 ***
Total PCBs (field)	--	--	130	1000	--	--	**61.45 ***	--	--	**16.11 ***	--	**13.52 ***	--
PCBs (mg/kg-OC)													
Total PCBs	12	65	--	--	1.19 U	**15.98 ***	**1.08**	**3.84**	**58.79 J ***	**35.44 ***	**103 J * #**	**115 * #**	**88.24 * #**
Total PCBs (field)	12	65	--	--	--	--	--	--	--	--	--	--	--

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID	SMS Criteria				SD-211-PL2	SD-211-PL2	SD-DUW338A	SD-DUW338A	SD-212-PL2	SD-213-PL2	SD-213-PL2	SD-214-PL2	SD-214-PL2
Sample ID					SD-211-0050-PL2	SD-211-0060-PL2	SD-212-0000-PL2	SD-212-0010-PL2	SD-212-0020-PL2	SD-213-0000-PL2	SD-213-0010-PL2	SD-214-0000-PL2	SD-214-0010-PL2
Sample Date					4/21/2004	4/21/2004	4/21/2004	4/21/2004	4/21/2004	4/20/2004	4/20/2004	4/21/2004	4/21/2004
Depth Interval	SQS	CSL	LAET	2LAET	5-5.8 ft	6-7 ft	0-1 ft	1-2 ft	2-3 ft	0-1 ft	1-2 ft	0-1 ft	1-2 ft
Conventionals													
Total solids (%)	--	--	--	--	**84.6**	**83.2**	**48.5**	**60.5**	**69.6**	**48.9**	**53**	**48.2**	**57.1**
Total organic carbon (%)	--	--	--	--	**0.1**	**0.08**	**2.02**	**1.67**	**1.72**	**2.18**	**2.08**	**2.43**	**1.72**
Metals (mg/kg)													
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	--	--	0.4 U	**0.6**	--	0.4 U	**0.6**	0.4 U	**0.6**
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	--	--	**33**	**46.9**	--	**32.2**	**32.7**	**30**	**30.4**
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	390	390	390	390	--	--	**50.4**	**66**	--	**48.2**	**54**	**50.3**	**56.3**
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	450	530	450	530	--	--	**32**	**53**	--	**26**	**41**	**25**	**46**
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	--	--	**0.13**	**0.15**	--	**0.1 J**	**0.18 J**	**0.15**	**0.14**
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	--	--	0.6 U	**0.8**	--	0.6 U	0.5 U	0.6 U	**0.8**
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--			--	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	--	--	**106**	**125**	--	**103**	**127**	**102**	**120**
PCBs (µg/kg)													
Total PCBs	--	--	130	1000	19 U	19 U	**26**	**225 ***	**29**	**35**	**186 ***	**27**	**171 ***
Total PCBs (field)	--	--	130	1000	--	**64.47 ***	--	--	--	--	--	**97.79 * #**	--
PCBs (mg/kg-OC)													
Total PCBs	12	65	--	--	19 U	23.75 U	**1.28**	**13.47 ***	**1.68**	**1.6**	**8.94**	**1.11**	**9.94**
Total PCBs (field)	12	65	--	--	--	--	--	--	--	--	--	--	--

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID	SMS Criteria				SD-215-PL2	SD-215-PL2	SD-215-PL2	SD-216-PL2	SD-216-PL2	SD-216-PL2	SD-216-PL2	SD-216-PL2	SD-216-PL2
Sample ID					SD-215-0000-PL2	SD-215-0010-PL2	SD-215-0020-PL2	SD-216-0000-PL2	SD-216-0010-PL2	SD-216-0020-PL2	SD-216-0030-PL2	SD-216-0040-PL2	SD-216-0050-PL2
Sample Date					4/20/2004	4/20/2004	4/20/2004	4/21/2004	4/21/2004	4/21/2004	4/21/2004	4/21/2004	4/21/2004
Depth Interval	SQS	CSL	LAET	2LAET	0-1 ft	1-2 ft	2-3 ft	0-1 ft	1-2 ft	2-3 ft	3-4 ft	4-5 ft	5-5.9 ft
Conventionals													
Total solids (%)	--	--	--	--	**56.8**	**58.2**	**65.2**	**49.1**	**61.4**	**70.4**	**65.9**	**73.2**	**71.6**
Total organic carbon (%)	--	--	--	--	**1.98**	**2.19**	**1.78**	**1.61**	**1.58**	**1.43**	**1.33**	**1.13**	**1.02**
Metals (mg/kg)													
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	**1.2**	**1.2**	--	**0.6**	**1.5**	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	**36.7**	**36.5**	--	**33.3**	**49.1**	--	--	--	--
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	390	390	390	390	**47.1**	**54.5**	--	**51.8**	**80.8**	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	450	530	450	530	**38**	**63**	--	**33**	**119**	--	--	--	--
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	**0.19 J**	**0.19 J**	--	**0.12**	**0.16**	--	--	--	--
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	0.5 U	**0.6**	--	0.6 U	**1.6**	--	--	--	--
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--			--	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	**197**	**174**	--	**108**	**172**	--	--	--	--
PCBs (µg/kg)													
Total PCBs	--	--	130	1000	**121**	**420 ***	**105 J**	**62 J**	**230 ***	**527 J ***	**980 ***	**483 ***	**236 ***
Total PCBs (field)	--	--	130	1000	--	**14.67 ***	755 * #	--	--	197 * #	--	--	--
PCBs (mg/kg-OC)													
Total PCBs	12	65	--	--	**6.11**	**19.17 ***	**5.89 J**	**3.85 J**	**14.55 ***	**36.85 J ***	**73.68 * #**	**42.74 ***	**23.13 ***
Total PCBs (field)	12	65	--	--	--	--	--	--	--	--	--	--	--

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID	SMS Criteria				SD-216-PL2	SD-216-PL2	SD-217-PL2	SD-217-PL2	SD-217-PL2	SD-217-PL2	SD-217-PL2	SD-217-PL2	SD-DUW133
Sample ID					SD-216-0060-PL2	SD-216-0070-PL2	SD-217-0000-PL2	SD-217-0010-PL2	SD-217-0020-PL2	SD-217-0030-PL2	SD-217-0040-PL2	SD-217-0050-PL2	DUW133-0020
Sample Date					4/21/2004	4/21/2004	4/22/2004	4/22/2004	4/22/2004	4/22/2004	4/22/2004	4/22/2004	6/8/2001
Depth Interval	SQS	CSL	LAET	2LAET	6-7 ft	7-7.7 ft	0-0.9 ft	1-1.9 ft	2-2.9 ft	3-3.7 ft	4-4.5 ft	5-5.6 ft	2-2.7 ft
Conventionals													
Total solids (%)	--	--	--	--	**77.6**	**75.4**	**61.2**	**61.4**	**78**	**78.3**	**82.9**	**81.2**	--
Total organic carbon (%)	--	--	--	--	**1.09**	**0.96**	**1.73**	**1.51**	**1.15**	**1.09**	**0.28**	**0.07**	**1.1**
Metals (mg/kg)													
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	--	--	**0.7**	**0.6**	--	--	--	--	**0.7**
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	--	--	**143 J**	**37.4 J**	--	--	--	--	**34.9 J**
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	390	390	390	390	--	--	**69.5**	**72.4**	--	--	--	--	**62.5 J**
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	450	530	450	530	--	--	**97**	**106**	--	--	--	--	**80 J**
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	--	--	**0.16**	**0.13**	--	--	--	--	**0.18**
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	--	--	**1.3**	**1.5**	--	--	--	--	**0.6**
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--			--	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	--	--	**150**	**141**	--	--	--	--	**153 J**
PCBs (µg/kg)													
Total PCBs	--	--	130	1000	**1290 * #**	**910 ***	**400 ***	**690 ***	**279 ***	**456 ***	**34.3**	19 U	**16200 * #**
Total PCBs (field)	--	--	130	1000	--	--	--	--	--	--	--	--	--
PCBs (mg/kg-OC)													
Total PCBs	12	65	--	--	**118 * #**	**94.79 * #**	**23.12 ***	**45.69 ***	**24.26 ***	**41.83 ***	**12.25 ***	27.14 U	**1472.7 * #**
Total PCBs (field)	12	65	--	--	--	--	--	--	--	--	--	--	--

Location ID					SD-DUW133	SD-DUW133	SD-DUW134	SD-DUW134	SD-DUW134	SD-DUW134	SD-DUW135	SD-DUW135	SD-DUW135	SD-DUW135	SD-DUW15
Sample ID					DUW133-0040	DUW133-0050	DUW134-0020	DUW134-0030	DUW134-0040	DUW134-0060	DUW135-0020	DUW135-0040	DUW135-0050	DUW135-0060	DUW15-0000
Sample Date	SMS Criteria				6/8/2001	6/8/2001	6/13/2001	6/13/2001	6/13/2001	6/13/2001	6/14/2001	6/14/2001	6/14/2001	6/14/2001	10/23/1995
Depth Interval	SQS	CSL	LAET	2LAET	4-4.9 ft	5-5.7 ft	2-3 ft	3-4 ft	4-5 ft	6-7 ft	2-3 ft	4-5 ft	5-5.7 ft	6-6.8 ft	0-10 cm
Conventionals															
Total solids (%)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total organic carbon (%)	--	--	--	--	**0.24**	**2.1**	**1.6**	**3.7**	**2.2**	**0.76**	**1.7**	**1.5**	**1.4**	**1.3**	**1.2**
Metals (mg/kg)															
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**15000**
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	--	--	--	--	--	--	--	--	--	--	**23**
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**67**
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0.2**
Cadmium	5.1	6.7	5.1	6.7	0.3 U	--	**9.8 * #**	--	**0.5**	0.2 U	**8 * #**	**1.6**	--	--	**0.7**
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**5200 J**
Chromium	260	270	260	270	**19.5**	--	**214**	--	**17.2**	**10**	**86.7**	**40**	--	--	**42**
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**7.3**
Copper	390	390	390	390	**18.7**	--	**441 * #**	--	**22.4**	**10.7**	**599 * #**	**67.3**	--	--	**110**
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**31000**
Lead	450	530	450	530	**20**	--	**300**	--	**12**	**3**	**356**	**64**	--	--	**110**
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**5100**
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**260**
Mercury	0.41	0.59	0.41	0.59	**0.06**	--	**0.31**	--	0.05 U	0.05 U	**0.36**	**0.24 J**	--	--	**0.14**
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**22**
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**1700**
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9 U
Silver	6.1	6.1	6.1	6.1	0.4 U	--	**3.3**	--	0.4 U	0.4 U	**7.3 * #**	**1.2**	--	--	**0.7**
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**8600**
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	9 U
Tin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--			--	--	--	--	--	--	--	--	--	--	**51**
Zinc	410	960	410	960	**62.6**	--	**1770 * #**	--	**81.7**	**24.8**	**1150 * #**	**310**	--	--	**260**
PCBs (µg/kg)															
Total PCBs	--	--	130	1000	**310 ***	**105**	**29400 J * #**	**9100 * #**	**409 J ***	35 U	**560 J ***	**1720 * #**	**158 ***	**125**	**2800 * #**
Total PCBs (field)	--	--	130	1000	--	--	--	--	--	--	--	--	603 * #	66.86 * #	--
PCBs (mg/kg-OC)															
Total PCBs	12	65	--	--	**129.2 * #**	**5.0**	**1837.5 J * #**	**245.9 * #**	**18.6 JM ***	4.6 U	**32.9 J ***	**115 * #**	**11.3**	**9.62**	**233.33 * #**
Total PCBs (field)	12	65	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID					SD-DUW15	SD-DUW15	SD-DUW15	SD-DUW153	SD-DUW153	SD-DUW153	SD-DUW154	SD-DUW154	SD-DUW154
Sample ID					DUW15-0000C	DUW15-0040	DUW15-0080	SD-DUW153-0000	SD-DUW153-0020	SD-DUW153-0040	SD-DUW154-0000	SD-DUW154-0020	SD-DUW154-0040
Sample Date	SMS Criteria				3/20/1996	3/20/1996	3/20/1996	8/21/2003	8/21/2003	8/21/2003	8/20/2003	8/20/2003	8/20/2003
Depth Interval	SQS	CSL	LAET	2LAET	0-4 ft	4-8 ft	8-9.1 ft	0-1 ft	2-4 ft	4-5 ft	0-1 ft	2-4 ft	4-6 ft
Conventionals													
Total solids (%)	--	--	--	--	--	--	--	**56.2**	**66**	**64.4**	**84.7**	**79**	**70.5**
Total organic carbon (%)	--	--	--	--	**1.9**	**0.92**	**0.24**	**4**	**3.4**	**3.5**	**0.4**	**0.48**	**1.4**
Metals (mg/kg)													
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	--	--	--	--	--	--	--	--	--
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	390	390	390	390	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	450	530	450	530	--	--	--	--	--	--	--	--	--
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	--	--	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	--	--	--	--	--	--	--	--	--
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--			--	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	--	--	--	--	--	--	--	--	--
PCBs (µg/kg)													
Total PCBs	--	--	130	1000	**8500 * #**	**1190 * #**	**380 ***	**160000 * #**	**6200 * #**	**1740 * #**	**970 ***	**1390 * #**	**1010 * #**
Total PCBs (field)	--	--	130	1000	--	--	316 * #	--	--	--	--	--	--
PCBs (mg/kg-OC)													
Total PCBs	12	65	--	--	**447.36 * #**	**129.34 * #**	**158.33 * #**	**4000 * #**	**182 * #**	**49.71 ***	**243 * #**	**290 * #**	**72.14 * #**
Total PCBs (field)	12	65	--	--	--	--	--	--	--	--	--	--	--

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID		SMS Criteria			SD-DUW155	SD-DUW155	SD-DUW155	SD-DUW156	SD-DUW156	SD-DUW156	SD-DUW157	SD-DUW157	SD-DUW157
Sample ID					SD-DUW155-0000	SD-DUW155-0020	SD-DUW155-0040	SD-DUW156-0000	SD-DUW156-0020	SD-DUW156-0040	SD-DUW157-0000	SD-DUW157-0020	SD-DUW157-0040
Sample Date					8/20/2003	8/20/2003	8/20/2003	8/20/2003	8/20/2003	8/20/2003	8/21/2003	8/21/2003	8/21/2003
Depth Interval	SQS	CSL	LAET	2LAET	0-1 ft	2-3.7 ft	4-5 ft	0-0.8 ft	2-3 ft	4-4.8 ft	0-1 ft	2-3 ft	4-6 ft
Conventionals													
Total solids (%)	--	--	--	--	**73.2**	**72.5**	**73.3**	**55.3**	**64.5**	**59.5**	**69**	**80.1**	**82**
Total organic carbon (%)	--	--	--	--	**1.1**	**2.2**	**4.4**	**2**	**1.5**	**1.8**	**2.1**	**1.3**	**0.19**
Metals (mg/kg)													
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	--	--	--	--	--	--	--	--	--
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	390	390	390	390	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	450	530	450	530	--	--	--	--	--	--	--	--	--
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	--	--	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	--	--	--	--	--	--	--	--	--
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--			--	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	--	--	--	--	--	--	--	--	--
PCBs (µg/kg)													
Total PCBs	--	--	130	1000	**2490 * #**	**3100 * #**	**2760 * #**	**830 ***	**373 ***	**1230 * #**	**30000 * #**	130 U	39 U
Total PCBs (field)	--	--	130	1000	--	--	--	--	--	--	--	--	--
PCBs (mg/kg-OC)													
Total PCBs	12	65	--	--	**226 * #**	**141 * #**	**62.72 ***	**41.5 ***	**24.86 ***	**68.33 * #**	**1429 * #**	10 U	21 U
Total PCBs (field)	12	65	--	--	--	--	--	--	--	--	--	--	--

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID	SMS Criteria				SD-DUW157D	SD-DUW157D	SD-DUW158	SD-DUW158	SD-DUW158	SD-DUW159	SD-DUW159	SD-DUW159	SD-DUW16
Sample ID					SD-DUW157D-0000	SD-DUW157D-0020	SD-DUW158-0000	SD-DUW158-0020	SD-DUW158-0040	SD-DUW159-0000	SD-DUW159-0020	SD-DUW159-0040	DUW16-0000
Sample Date					8/22/2003	8/22/2003	8/21/2003	8/21/2003	8/21/2003	8/20/2003	8/20/2003	8/20/2003	10/23/1995
Depth Interval	SQS	CSL	LAET	2LAET	0-1 ft	2-3 ft	0-1 ft	2-2.9 ft	4-4.9 ft	0-1 ft	2-2.8 ft	4-5 ft	0-10 cm
Conventionals													
Total solids (%)	--	--	--	--	**71.8**	**80.5**	**61.5**	**77.8**	**80.5**	**63.7**	**78.2**	**74.7**	--
Total organic carbon (%)	--	--	--	--	**3.1**	**1.3**	**1.8**	**1.4**	**0.2**	**1.7**	**1**	**0.8**	**2.4**
Metals (mg/kg)													
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	**22000**
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	--	--	--	--	--	--	--	--	**20**
Barium	--	--	--	--	--	--	--	--	--	--	--	--	**87**
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	**0.4**
Cadmium	5.1	6.7	5.1	6.7	--	--	--	--	--	--	--	--	0.5 U
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	**7200 J**
Chromium	260	270	260	270	--	--	--	--	--	--	--	--	**41**
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	**7.1**
Copper	390	390	390	390	--	--	--	--	--	--	--	--	**57**
Iron	--	--	--	--	--	--	--	--	--	--	--	--	**59000**
Lead	450	530	450	530	--	--	--	--	--	--	--	--	**94**
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	**8000**
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	**360**
Mercury	0.41	0.59	0.41	0.59	--	--	--	--	--	--	--	--	**0.1**
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	**30**
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	**2800**
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	10 U
Silver	6.1	6.1	6.1	6.1	--	--	--	--	--	--	--	--	0.7 U
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	**14000**
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	10 U
Tin	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--			--	--	--	--	--	--	--	--	**73**
Zinc	410	960	410	960	--	--	--	--	--	--	--	--	**180**
PCBs (µg/kg)													
Total PCBs	--	--	130	1000	**37000 * #**	**489 ***	**5000 * #**	**177 ***	39 U	**2290 * #**	**380 ***	38 U	**2510 * #**
Total PCBs (field)	--	--	130	1000	--	--	--	--	--	--	--	--	--
PCBs (mg/kg-OC)													
Total PCBs	12	65	--	--	**1194 * #**	**37.61 ***	**278 * #**	**12.64 ***	19.5 U	**135 * #**	**38 ***	4.75 U	**105 * #**
Total PCBs (field)	12	65	--	--	--	--	--	--	--	--	--	--	--

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID Sample ID Sample Date Depth Interval	SMS Criteria SQS	CSL	LAET	2LAET	SD-DUW16 DUW16-0000C 3/20/1996 0-3.6 ft	SD-DUW16 DUW16-0036 3/20/1996 3.6-7.6 ft	SD-DUW160 SD-DUW160-0000 8/21/2003 0-0.9 ft	SD-DUW160 SD-DUW160-0020 8/21/2003 2-3 ft	SD-DUW160 SD-DUW160-0040 8/21/2003 4-4.6 ft	SD-DUW161 SD-DUW161-0000 8/20/2003 0-0.5 ft	SD-DUW161 SD-DUW161-0020 8/20/2003 2-3 ft	SD-DUW161 SD-DUW161-0040 8/20/2003 4-5 ft	SD-DUW162 SD-DUW162-0000 8/21/2003 0-0.8 ft
Conventionals													
Total solids (%)	--	--	--	--	--	--	**52.2**	**59.5**	**76.8**	**60**	**77.9**	**81**	**57.3**
Total organic carbon (%)	--	--	--	--	**1.5**	**0.14**	**2.3**	**4.3**	**0.14**	**2**	**0.94**	**0.16**	**1.6**
Metals (mg/kg)													
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	--	--	--	--	--	--	--	--	--
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	390	390	390	390	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	450	530	450	530	--	--	--	--	--	--	--	--	--
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	--	--	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	--	--	--	--	--	--	--	--	--
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--			--	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	--	--	--	--	--	--	--	--	--
PCBs (µg/kg)													
Total PCBs	--	--	130	1000	**7600 * #**	39 U	**3100 * #**	**390 ***	39 U	**12900 * #**	**32**	40 U	**1580 * #**
Total PCBs (field)	--	--	130	1000	--	--	--	--	--	--	--	--	--
PCBs (mg/kg-OC)													
Total PCBs	12	65	--	--	**506.66 * #**	27.85 U	**135 * #**	**9.06**	27.85 U	**645 * #**	**3.4**	25 U	**98.75 * #**
Total PCBs (field)	12	65	--	--	--	--	--	--	--	--	--	--	--

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID					SD-DUW162	SD-DUW162	SD-DUW163	SD-DUW163	SD-DUW163	SD-DUW164	SD-DUW164	SD-DUW165	SD-DUW165
Sample ID					SD-DUW162-0020	SD-DUW162-0040	SD-DUW163-0000	SD-DUW163-0020	SD-DUW163-0040	SD-DUW164-0000	SD-DUW164-0020	SD-DUW165-0000	SD-DUW165-0020
Sample Date	SMS Criteria				8/21/2003	8/21/2003	8/22/2003	8/22/2003	8/22/2003	8/20/2003	8/20/2003	8/22/2003	8/22/2003
Depth Interval	SQS	CSL	LAET	2LAET	2-3 ft	4-4.6 ft	0-0.7 ft	2-2.6 ft	4-5.1 ft	0-0.6 ft	2-3 ft	0-0.7 ft	2-2.7 ft
Conventionals													
Total solids (%)	--	--	--	--	**79.9**	**84.1**	**71.1**	**81**	**78.5**	**51.4**	**81.2**	**64.3**	**77**
Total organic carbon (%)	--	--	--	--	**1.9**	**0.45**	**1.6**	**0.057**	**1**	**1.9**	**0.33**	**2.4**	**0.081**
Metals (mg/kg)													
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	--	--	--	--	--	--	--	--	--
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	390	390	390	390	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	450	530	450	530	--	--	--	--	--	--	--	--	--
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	--	--	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	--	--	--	--	--	--	--	--	--
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--			--	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	--	--	--	--	--	--	--	--	--
PCBs (µg/kg)													
Total PCBs	--	--	130	1000	**13500 * #**	**660 ***	**1080 * #**	40 U	39 U	**5210 * #**	**1980 * #**	**4800 * #**	**37**
Total PCBs (field)	--	--	130	1000	--	--	--	--	--	--	--	--	--
PCBs (mg/kg-OC)													
Total PCBs	12	65	--	--	**711 * #**	**147 * #**	**67.5 * #**	70.17 U	3.9 U	**274 * #**	**600 * #**	**200 * #**	**45.67 ***
Total PCBs (field)	12	65	--	--	--	--	--	--	--	--	--	--	--

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID					SD-DUW165	SD-DUW206	SD-DUW207A	SD-DUW207A	SD-DUW208	SD-DUW209	SD-DUW210	SD-DUW211	SD-DUW212	SD-DUW213
Sample ID					SD-DUW165-0040	SD-206-0000-04	SD-207-0000-04	SD-433-0000	SD-208-0000-04	SD-209-0000-04	SD-210-0000-04	SD-211-0000-04	SD-212-0000-04	SD-213-0000-04
Sample Date	SMS Criteria				8/22/2003	8/26/2004	8/26/2004	8/26/2004	8/26/2004	8/26/2004	8/27/2004	8/27/2004	8/27/2004	8/27/2004
Depth Interval	SQS	CSL	LAET	2LAET	4-4.5 ft	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm
Conventionals														
Total solids (%)	--	--	--	--	78.1	--	--	--	--	--	--	--	--	--
Total organic carbon (%)	--	--	--	--	0.08	2.34	2.11	1.56	1.46	2.71	2.65	2.16	2.33	2.17
Metals (mg/kg)														
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	--	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	--	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	--	--	--	--	--	--	--	--	--	--
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	390	390	390	390	--	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	450	530	450	530	--	--	--	--	--	--	--	--	--	--
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	--	--	--	--	--	--	--	--	--	--
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	--	--	--	--	--	--	--	--	--	--
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Tin	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--			--	--	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	--	--	--	--	--	--	--	--	--	--
PCBs (μg/kg)														
Total PCBs	--	--	130	1000	39 U	280 *	146 *	97 U	341 *	77.7	130 *	610 *	68.9	610 *
Total PCBs (field)	--	--	130	1000	--	298 *	259 *	256 *	443 *	210 *	187 *	248 *	204 *	291 *
PCBs (mg/kg-OC)														
Total PCBs	12	65	--	--	48.75 U	11.96	6.91	6.21 U	23.35 *	2.86	4.9	28.24 *	2.95	28.11 *
Total PCBs (field)	12	65	--	--	--	12.74 *	12.27 *	16.41 *	30.34 *	7.75	7.06	11.48	8.76	13.41 *

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID	SMS Criteria				SD-DUW214	SD-DUW215	SD-DUW216	SD-DUW217	SD-DUW52	SD-DUW52	SD-DUW52	SD-DUW52	SD-DUW52	SD-DUW53	SD-DUW53
Sample ID					SD-214-0000-04	SD-215-0000-04	SD-216-0000-04	SD-217-0000-04	DUW52-0000	DUW52-0000C	DUW52-0040	DUW52-0080	DUW52-0113	DUW53-0000	DUW53-0000C
Sample Date					8/27/2004	8/27/2004	8/26/2004	8/26/2004	10/23/1995	3/19/1996	3/19/1996	3/19/1996	3/19/1996	10/23/1995	3/20/1996
Depth Interval	SQS	CSL	LAET	2LAET	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-4 ft	4-8 ft	8-11.3 ft	11.3-14.5 ft	0-10 cm	0-4 ft
Conventionals															
Total solids (%)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total organic carbon (%)	--	--	--	--	**2.78**	**1.64**	**2.02**	**1.84**	**2**	**2**	**1.9**	**2.6**	**0.29**	**1.4**	**2**
Metals (mg/kg)															
Aluminum	--	--	--	--	--	--	--	--	**23000**	--	--	--	--	**16000**	**20000**
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--	--	8 UJ
Arsenic	57	93	57	93	--	--	--	--	**10**	--	--	--	--	**14**	**10**
Barium	--	--	--	--	--	--	--	--	**79**	--	--	--	--	**76**	**170**
Beryllium	--	--	--	--	--	--	--	--	**0.4**	--	--	--	--	**0.2**	**0.4**
Cadmium	5.1	6.7	5.1	6.7	--	--	--	--	**1**	--	--	--	--	**1.1**	**3.7 J**
Calcium	--	--	--	--	--	--	--	--	**6300 J**	--	--	--	--	**9200 J**	**5900**
Chromium	260	270	260	270	--	--	--	--	**41**	--	--	--	--	**52**	**95 J-**
Cobalt	--	--	--	--	--	--	--	--	**8.8**	--	--	--	--	**6.8**	**9.2**
Copper	390	390	390	390	--	--	--	--	**77**	--	--	--	--	**82**	**84**
Iron	--	--	--	--	--	--	--	--	**27000**	--	--	--	--	**23000**	**27000**
Lead	450	530	450	530	--	--	--	--	**58**	--	--	--	--	**77**	**170**
Magnesium	--	--	--	--	--	--	--	--	**7200**	--	--	--	--	**5000**	**5900**
Manganese	--	--	--	--	--	--	--	--	**260**	--	--	--	--	**280**	**300**
Mercury	0.41	0.59	0.41	0.59	--	--	--	--	**0.14**	--	--	--	--	**0.24**	**0.84 J+ * #**
Nickel	--	--	--	--	--	--	--	--	**28**	--	--	--	--	**24**	**35**
Potassium	--	--	--	--	--	--	--	--	**2900**	--	--	--	--	**1700**	**2000**
Selenium	--	--	--	--	--	--	--	--	9 U	--	--	--	--	7 U	8 U
Silver	6.1	6.1	6.1	6.1	--	--	--	--	**0.7**	--	--	--	--	**0.7**	**2.7**
Sodium	--	--	--	--	--	--	--	--	**11000**	--	--	--	--	**6600**	**7100**
Thallium	--	--	--	--	--	--	--	--	9 U	--	--	--	--	7 U	8 U
Tin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--			--	--	--	--	**67**	--	--	--	--	**57**	**69**
Zinc	410	960	410	960	--	--	--	--	**180**	--	--	--	--	**580 ***	**1600 * #**
PCBs (µg/kg)															
Total PCBs	--	--	130	1000	**9**	**880 ***	**360 ***	**293 ***	**2050 * #**	**18170 * #**	**540 ***	**990 ***	39 U	**670 ***	**3920 * #**
Total PCBs (field)	--	--	130	1000	**165 ***	**515 ***	**195 ***	**705 ***	--	--	--	--	--	--	--
PCBs (mg/kg-OC)															
Total PCBs	12	65	--	--	**0.32**	**53.65 ***	**17.82 ***	**15.92 ***	**103 * #**	**908.5 * #**	**28.42 ***	**38.07 ***	13.44 U	**47.85 ***	**196 * #**
Total PCBs (field)	12	65	--	--	**5.94**	**31.4 ***	**9.65**	**38.32 ***	--	--	--	--	--	--	--

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID					SD-DUW53	SD-DUW53	SD-DUW53	SD-DUW71	SD-DUW72	SD-DUW73	SD-DUW83	SD-DUW89	SD-DUW90	SD-DUW91	SD-DUW92	SD-DUW93
Sample ID					DUW53-0040	DUW53-0080	DUW53-0120	DUW71-0000	DUW72-0000	DUW73-0000	DUW83-0000	DUW89-0000	DUW90-0000	DUW91-0000	DUW92-0000	DUW93-0000
Sample Date	SMS Criteria				3/20/1996	3/20/1996	3/20/1996	4/3/1996	4/3/1996	4/3/1996	4/3/1996	4/4/1996	4/4/1996	4/2/1996	4/2/1996	4/2/1996
Depth Interval	SQS	CSL	LAET	2LAET	4-8 ft	8-12 ft	12-15.6 ft	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm
Conventionals																
Total solids (%)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total organic carbon (%)	--	--	--	--	1.9	1.8	1.4	1.8	2.7	2.1	2	2.2	2.3	1.8	2.1	1.8
Metals (mg/kg)																
Aluminum	--	--	--	--	23000	20000	14000	--	31000	29000	28000	23000	19000	27000	28000	23000
Antimony	--	--	--	--	8 UJ	8 UJ	7 UJ	--	--	9 J-	--	12 J-	11 J-	--	--	--
Arsenic	57	93	57	93	13	31	20	--	10 U	10	9 U	16	16	10	12	19
Barium	--	--	--	--	150	110	95	--	98	93	88	94	75	110	110	88
Beryllium	--	--	--	--	0.4	0.4	0.3	--	0.6	0.5	0.5	0.5	0.4	0.5	0.6	0.4
Cadmium	5.1	6.7	5.1	6.7	2.4 J	2.6 J	0.9 J	--	0.7	0.5	0.8	1.8	0.7	0.5	0.9	0.9
Calcium	--	--	--	--	6500	6000	4700	--	7600	7500	7400	7100	7400	7300	7900	7500
Chromium	260	270	260	270	98 J-	54 J-	28 J-	--	38 J	38 J	34 J	82 J	110 J	49 J	89 J	140 J
Cobalt	--	--	--	--	9.7	8.2	6.9	--	11	10	11	14	13	12	14	11
Copper	390	390	390	390	50	44	29	--	59 J	53 J	46 J	98 J	97 J	45 J	70 J	81 J
Iron	--	--	--	--	27000	24000	17000	--	36000	33000	32000	58000	55000	34000	41000	39000
Lead	450	530	450	530	86	56	30	--	39	42	31	420	1300 * #	37	150	100
Magnesium	--	--	--	--	6200	5600	4000	--	9300	8700	8400	7400	7000	8500	8400	7300
Manganese	--	--	--	--	340	240	150	--	420	350	360	1700	1000	540	830	840
Mercury	0.41	0.59	0.41	0.59	0.2 J+	0.16 J+	0.17 J+	--	0.17	0.2	0.12	0.09	0.07	0.12	0.16	0.12
Nickel	--	--	--	--	23	22	17	--	29	26	27	170	75	40	74	130
Potassium	--	--	--	--	2200	2000	1300	--	3800	3500	3300	2100	1700	2500	2600	2400
Selenium	--	--	--	--	8 U	8 U	7 U	--	10 U	9 U	9 U	8 U	8 U	8 U	9 U	9 U
Silver	6.1	6.1	6.1	6.1	2.4	1.1	0.6	--	0.7	0.6	0.6	1.4	0.5 U	0.5 U	0.9	1
Sodium	--	--	--	--	7600	6500	3300	--	14000	13000	12000	5200	3700	7900	7200	8100
Thallium	--	--	--	--	8 U	8 U	7 U	--	10 U	9 U	9 U	11	10	8 U	9 U	9 U
Tin	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--			67	61	54	--	81	76	78	85	67	75	81	76
Zinc	410	960	410	960	290	170	59	--	130	120	100	3500 * #	280	88	210	180
PCBs (µg/kg)																
Total PCBs	--	--	130	1000	2280 * #	410 *	45 U	300 *	239 *	386 *	138 *	2710 * #	7480 * #	200 *	1470 * #	600 *
Total PCBs (field)	--	--	130	1000	--	--	--	--	--	--	--	--	--	--	--	--
PCBs (mg/kg-OC)																
Total PCBs	12	65	--	--	120 * #	22.77 *	3.21 U	16.66 *	8.85	18.38 *	6.9	123 * #	325.21 * #	11.11	70 * #	33.33 *
Total PCBs (field)	12	65	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Location ID	SMS Criteria				CH0009	SD-DUW307	SD-DUW307	SD-DUW307	SD-DUW309	SD-DUW309	SD-DUW309	SD-DUW309	SD-DUW310	SD-DUW310	SD-DUW310	SD-DUW310	SD-DUW311
Sample ID					SD-307-0000	SD-307-0001	SD-307-0002	SD-307-0003	SD-309-0000	SD-309-0001	SD-309-0002	SD-309-0003	SD-310-0000	SD-310-0001	SD-310-0002	SD-310-0003	SD-311-0000
Sample Date					8/16/2004	8/19/2004	8/19/2004	8/19/2004	8/16/2004	8/19/2004	8/19/2004	8/19/2004	8/16/2004	8/19/2004	8/19/2004	8/19/2004	8/16/2004
Depth Interval	SQS	CSL	LAET	2LAET	0-10 cm	1-2 ft	2-3 ft	3-4 ft	0-10 cm	1-2 ft	2-3 ft	3-4 ft	0-10 cm	1-2 ft	2-3 ft	3-4 ft	0-10 cm
Conventionals																	
Total solids (%)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total organic carbon (%)	--	--	--	--	**2.2**	**0.8**	**0.226**	**0.317**	**2.21**	**1.77**	**1.32**	**0.941**	**1.98**	**1.54**	**1.5**	**0.986**	**1.84**
Metals (mg/kg)																	
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	**15**	**5.2**	--	--	**14**	**11**	--	--	**12**	**18**	--	--	**13**
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	**1.76**	0.5 U	--	--	**1.3**	**1.2**	--	--	**1.1**	**1.65**	--	--	**1**
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	**43.2**	**11.7**	--	--	**81.7**	**35.2**	--	--	**59.9**	**34.3**	--	--	**69.7**
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	390	390	390	390	**45.9**	**12.1**	--	--	**58**	**55.1**	--	--	**52.5**	**43.4**	--	--	**60.3**
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	450	530	450	530	**209**	**2.8**	--	--	**108**	**44.8**	--	--	**287**	**26.7**	--	--	**169**
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	**0.09 J**	--	--	--	**0.24 J**	--	--	--	**0.14 J**	--	--	--	**0.11 J**
Nickel	--	--	--	--	**50**	**9.07**	--	--	**48.3**	**29.5**	--	--	**37.9**	**22.8**	--	--	**58**
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	1 U	1 U	--	--	0.99 U	1 U	--	--	0.99 U	1 U	--	--	0.99 U
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	**1380 * #**	**298**	--	--	**157**	**127**	--	--	**142**	**157**	--	--	**160**
PCBs (µg/kg)																	
Total PCBs	--	--	130	1000	**2600 * #**	**81.8**	**162 ***	**70.4**	**570 ***	**253 ***	**539 ***	**127**	**560 ***	--	--	**85.2**	**3300 J * #**
Total PCBs (field)	--	--	130	1000	**2615 * #**	56 U	**97 J**	**191 ***	**420 ***	**682 ***	**486 ***	**173 ***	**889 ***	**365 ***	**200 ***	73 U	**461 ***
PCBs (mg/kg-OC)																	
Total PCBs	12	65	--	--	**118 * #**	**10.22**	**73.63 * #**	**22.7 ***	**25.79 ***	**14.29 ***	**40.83 ***	**13.51 ***	**28.28 ***	--	--	**8.69**	**179 J * #**
Total PCBs (field)	12	65	--	--	**119 * #**	7 U	**42.92 J ***	**60.25 ***	**19 ***	**38.53 ***	**36.82 ***	**18.38 ***	**44.9 ***	**23.7 ***	**13.33 ***	7.4 U	**25.05 ***

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID					SD-DUW311	SD-DUW311	SD-DUW311	SD-DUW312	SD-DUW312	SD-DUW312	SD-DUW312	SD-DUW313	SD-DUW313	SD-DUW313	SD-DUW313	SD-DUW314A
Sample ID					SD-311-0001	SD-311-0002	SD-311-0003	SD-312-0000	SD-312-0001	SD-312-0002	SD-312-0003	SD-313-0000	SD-313-0001	SD-313-0002	SD-313-0003	SD-314-0000
Sample Date	SMS Criteria				8/19/2004	8/19/2004	8/19/2004	8/16/2004	8/19/2004	8/19/2004	8/19/2004	8/16/2004	8/19/2004	8/19/2004	8/19/2004	8/17/2004
Depth Interval	SQS	CSL	LAET	2LAET	1-2 ft	2-3 ft	3-4 ft	0-10 cm	1-2 ft	2-3 ft	3-4 ft	0-10 cm	1-2 ft	2-3 ft	3-4 ft	0-10 cm
Conventionals																
Total solids (%)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total organic carbon (%)	--	--	--	--	1.06	1.45	0.725	2.58	1.09	0.134	0.13	2.22	1.81	0.947	1.18	1.66
Metals (mg/kg)																
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	15	--	--	24.5	26.7	--	--	37	13	--	--	24
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	1.87	--	--	1.56	2.29	--	--	2.5 U	0.9	--	--	0.75
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	69.2	--	--	78.7	64	--	--	584 * #	23.3	--	--	108
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	390	390	390	390	79.5	--	--	71	71.1	--	--	128	38.4	--	--	72
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	450	530	450	530	500 *	--	--	196	514 *	--	--	637 * #	13.9	--	--	81.8
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	--	--	--	0.2 J	--	--	--	0.39 J	0.16 J	--	--	0.23 J
Nickel	--	--	--	--	51.1	--	--	53.1	28.4	--	--	129	19	--	--	47.6
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	1 U	--	--	1 U	0.99 U	--	--	5 U	1 U	--	--	0.99 U
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	216	--	--	174	457 *	--	--	529 *	67.1	--	--	217
PCBs (µg/kg)																
Total PCBs	--	--	130	1000	1586 * #	5789 * #	4446 * #	1200 * #	1869 * #	6 J	1 J	1150 J * #	64.2	12 U	120 U	670 *
Total PCBs (field)	--	--	130	1000	1200 * #	5072 * #	2000 * #	510 *	761 *	66.3 U	14 U	432 *	75 J	33 U	17 U	505 *
PCBs (mg/kg-OC)																
Total PCBs	12	65	--	--	150 * #	399 * #	618 * #	46.51 *	171 * #	4.47 J	0.76 J	51.8 J *	3.54	1.26 U	10.16 U	40.36 *
Total PCBs (field)	12	65	--	--	113 * #	350 * #	276 * #	19.77 *	69.82 * #	49.48 U	10.77 U	19.46 *	4.14 J	3.48 U	1.44 U	30.42 *

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID	SMS Criteria				SD-DUW314A	SD-DUW314A	SD-DUW314A	SD-DUW314A	SD-DUW315	SD-DUW315	SD-DUW315	SD-DUW315	SD-DUW316	SD-DUW316	SD-DUW316	SD-DUW316
Sample ID					SD-325-0000	SD-314-0001	SD-314-0002	SD-314-0003	SD-315-0000	SD-315-0001	SD-315-0002	SD-315-0003	SD-316-0000	SD-316-0001	SD-316-0002	SD-316-0003
Sample Date					8/17/2004	8/18/2004	8/18/2004	8/18/2004	8/17/2004	8/19/2004	8/19/2004	8/19/2004	8/16/2004	8/19/2004	8/19/2004	8/19/2004
Depth Interval	SQS	CSL	LAET	2LAET	0-10 cm	1-2 ft	2-3 ft	3-3.3 ft	0-10 cm	1-2 ft	2-3 ft	3-4 ft	0-10 cm	1-2 ft	2-3 ft	3-4 ft
Conventionals																
Total solids (%)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total organic carbon (%)	--	--	--	--	**1.73**	**2.44**	**0.237**	**0.428**	**1.57**	**0.218**	**0.305**	**0.183**	**2.25**	**1.66**	**1.87**	**1.53**
Metals (mg/kg)																
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	--	4.5 U	--	--	**12**	4.5 U	--	--	**14**	**12**	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	--	0.5 U	--	--	**0.54**	0.5 U	--	--	**0.8**	**1.2**	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	--	**11.7**	--	--	**77.7**	**9.96**	--	--	**39.7**	**35.4**	--	--
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	390	390	390	390	--	**9.53**	--	--	**68.8**	**7.32**	--	--	**52.3**	**56.1**	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	450	530	450	530	--	2.5 U	--	--	**67.6**	2.5 U	--	--	**59**	**57.5**	--	--
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	**0.2 J**	--	--	--	**0.09 J**	--	--	--	**0.15 J**	--	--	--
Nickel	--	--	--	--	--	**8.39**	--	--	**57.5**	**6.92**	--	--	**28.7**	**27**	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	--	1 U	--	--	0.99 U	0.99 U	--	--	1 U	0.99 U	--	--
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	--	**23.9**	--	--	**133**	**20.2**	--	--	**211**	**150**	--	--
PCBs (µg/kg)																
Total PCBs	--	--	130	1000	**850 ***	20 U	580 U	**224 J ***	**260 J ***	11.3 U	91 U	67 U	**940 ***	**735 ***	**779 ***	**3065 * #**
Total PCBs (field)	--	--	130	1000	**459 ***	12 U	6.3 U	3.3 U	**183 ***	0.27 U	2.5 U	0.041 U	**405 ***	**564 ***	**671 ***	**3089 * #**
PCBs (mg/kg-OC)																
Total PCBs	12	65	--	--	**49.13 ***	0.81 U	245 U	**52.33 J ***	**16.56 J ***	5.38 U	29.83 U	36.61 U	**41.77 ***	**44.27 ***	**41.65 ***	**200 * #**
Total PCBs (field)	12	65	--	--	**26.53 ***	0.49 U	2.66 U	0.77 U	**11.66**	0.12 U	0.82 U	0.022 U	**18 ***	**33.98 ***	**35.88 ***	**202 * #**

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID					SD-DUW317	SD-DUW317	SD-DUW317	SD-DUW317	SD-DUW318	SD-DUW318	SD-DUW319	SD-DUW319	SD-DUW319	SD-DUW319	SD-DUW320	SD-DUW320	SD-DUW320
Sample ID					SD-317-0000	SD-317-0001	SD-317-0002	SD-317-0003	SD-318-0000	SD-318-0001	SD-319-0000	SD-319-0001	SD-319-0002	SD-319-0003	SD-320-0000	SD-320-0001	SD-320-0002
Sample Date	SMS Criteria				8/16/2004	8/19/2004	8/19/2004	8/19/2004	8/16/2004	8/18/2004	8/16/2004	8/18/2004	8/18/2004	8/18/2004	8/16/2004	8/19/2004	8/19/2004
Depth Interval	SQS	CSL	LAET	2LAET	0-10 cm	1-2 ft	2-3 ft	3-4 ft	0-10 cm	0-1.5 ft	0-10 cm	1-2 ft	2-3 ft	3-4 ft	0-10 cm	1-2 ft	2-3 ft
Conventionals																	
Total solids (%)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total organic carbon (%)	--	--	--	--	**2.58**	**2**	**2.11**	**0.816**	**2.05**	**0.824**	**1.74**	**1.8**	**2.22**	**1.81**	**1.62**	**2.24**	**2.39**
Metals (mg/kg)																	
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	**15**	**13**	--	--	**13**	**5.9**	**13**	**21**	--	--	**20**	**20**	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	**1.1**	**1.5**	--	--	**0.57**	0.5 U	**0.71**	**1.1**	--	--	**0.78**	**2.02**	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	**44.2**	**35.9**	--	--	**54.1**	**11.4 J**	**42.5**	**30.5**	--	--	**87.1 J**	**86.1 J**	--
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	390	390	390	390	**59.6**	**67.4**	--	--	**56.4**	**10.7**	**48.9**	**39.1**	--	--	**72.7**	**86.1**	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	450	530	450	530	**69.1**	**81.7**	--	--	**82.6**	2.5 U	**204**	**23.6**	--	--	**211**	**433**	--
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	**0.1 J**	--	--	--	**0.1 J**	--	**0.16 J**	--	--	--	**0.21 J**	--	--
Nickel	--	--	--	--	**27.6**	**26.1**	--	--	**35.9**	**7.79**	**25.5**	**20.3**	--	--	**48.9**	**35.5**	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	1 U	1 U	--	--	0.99 U	1 U	0.99 U	0.99 U	--	--	**1.1**	**1.3**	--
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	**175**	**172**	--	--	**153**	**21**	**162**	**133**	--	--	**237**	**351**	--
PCBs (µg/kg)																	
Total PCBs	--	--	130	1000	**800 ***	**1529 * #**	**10438 * #**	**1635 * #**	**930 J ***	13 U	**3100 * #**	**120**	**133 ***	13 U	**8200 * #**	**1481 * #**	**1234 * #**
Total PCBs (field)	--	--	130	1000	**349 ***	**823 ***	**6485 * #**	**898 ***	**408 ***	15.7 U	**1754 * #**	**167 ***	**128 J**	**109 J**	**2143 * #**	**745 ***	**368 ***
PCBs (mg/kg-OC)																	
Total PCBs	12	65	--	--	**31 ***	**76.45 * #**	**495 * #**	**202 * #**	**45.36 J ***	1.57 U	**178 * #**	**6.66**	**5.99**	0.71 U	**506 * #**	**66.11 * #**	**51.63 * #**
Total PCBs (field)	12	65	--	--	**13.53 ***	**41.15 ***	**307 * #**	**110 * #**	**19.9 ***	1.91 U	**101 * #**	**9.28**	**5.77 J**	**6.02 J**	**132 * #**	**33.26 ***	**15.4 ***

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID					SD-DUW320	SD-DUW320a	SD-DUW321	SD-DUW321a	SD-DUW321	SD-DUW321	SD-DUW321	SD-DUW322	SD-DUW322	SD-DUW322	SD-DUW322	SD-DUW322
Sample ID					SD-320-0003	SD-328-0003	SD-321-0000	SD-324-0000	SD-321-0001	SD-321-0002	SD-321-0003	SD-322-0000	SD-322-0001	SD-322-0002	SD-322-0003	SD-322-0004
Sample Date	SMS Criteria				8/19/2004	8/19/2004	8/16/2004	8/16/2004	8/18/2004	8/18/2004	8/18/2004	8/16/2004	8/18/2004	8/18/2004	8/18/2004	8/18/2004
Depth Interval	SQS	CSL	LAET	2LAET	3-4 ft	3-4 ft	0-10 cm	0-10 cm	1-2 ft	2-3 ft	3-3.8 ft	0-10 cm	1-2 ft	2-3 ft	3-4 ft	4-5 ft
Conventionals																
Total solids (%)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total organic carbon (%)	--	--	--	--	**1.83**	**1.72**	**2.25**	**2.23**	**1.69**	**1.96**	**1.74**	**2.02**	**1.9**	**2.63**	**2.72**	**1.44**
Metals (mg/kg)																
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	--	--	**12**	--	**13**	--	--	**14**	**12**	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	--	--	**0.58**	--	**1.1**	--	--	0.5 U	**0.78**	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	--	--	**32.1**	--	**23.3**	--	--	**30.1**	**27.9**	--	--	--
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	390	390	390	390	--	--	**53.1**	--	**29.2**	--	--	**53.1**	**46.2**	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	450	530	450	530	--	--	**28**	--	**14**	--	--	**25.5**	**37.7**	--	--	--
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	--	--	**0.18 J**	**0.2 J**	--	--	--	**0.14 J**	--	--	--	--
Nickel	--	--	--	--	--	--	**23.2**	--	**16.6**	--	--	**22**	**19.8**	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	--	--	0.99 U	--	0.99 U	--	--	0.99 U	0.99 U	--	--	--
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	--	--	**112**	--	**120**	--	--	**115**	**110**	--	--	--
PCBs (µg/kg)																
Total PCBs	--	--	130	1000	**239 ***	**551 ***	**510 J ***	**630 J ***	**752 ***	**358 ***	**292 ***	**9400 J * #**	**963 ***	**2773 * #**	**1391 * #**	**126**
Total PCBs (field)	--	--	130	1000	**116 J**	**149 J ***	**217 ***	**287 ***	**425 ***	**224 ***	**145 J ***	**186 ***	**583 ***	**1273 * #**	**514 ***	**138 J ***
PCBs (mg/kg-OC)																
Total PCBs	12	65	--	--	**13.06 * #**	**32.03 ***	**22.66 J ***	**28.25 J ***	**44.49 ***	**18.26 ***	**16.78 ***	**465 J * #**	**50.68 ***	**105 * #**	**51.13 ***	**8.75**
Total PCBs (field)	12	65	--	--	**6.34 J**	**8.66 J**	**9.64**	**12.87 ***	**25.15 ***	**11.43**	**8.33 J**	**9.21**	**30.68 ***	**48.4 ***	**18.9 ***	**9.58 J**

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID					SD-DUW322	SD-DUW323	SD-DUW323	SD-DUW323	SD-DUW323	SD-DUW323a	SD-DUW330	SD-DUW331	SD-DUW332	SD-DUW333	SD-DUW333a	SD-DUW334
Sample ID					SD-322-0005	SD-323-0000	SD-323-0001	SD-323-0002	SD-323-0003	SD-326-0001	SD-330-0000	SD-331-0000	SD-332-0000	SD-333-0000	SD-431-0000	SD-334-0000
Sample Date	SMS Criteria				8/18/2004	8/17/2004	8/19/2004	8/19/2004	8/19/2004	8/19/2004	8/27/2004	8/27/2004	8/26/2004	8/27/2004	8/27/2004	8/26/2004
Depth Interval	SQS	CSL	LAET	2LAET	5-6 ft	0-10 cm	1-2 ft	2-3 ft	3-4 ft	1-2 ft	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm
Conventionals																
Total solids (%)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total organic carbon (%)	--	--	--	--	**0.852**	**2.49**	**1.65**	**2.21**	**1.31**	**1.58**	**2.15**	**2.43**	**2.24**	**2.5**	**2.24**	**1.55**
Metals (mg/kg)																
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	--	**32**	**22.8**	--	--	--	--	--	--	--	--	--
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	--	2.5 U	**0.51**	--	--	--	--	--	--	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	--	**1070 * #**	**32**	--	--	--	--	--	--	--	--	--
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Copper	390	390	390	390	--	**123**	**53.7**	--	--	--	--	--	--	--	--	--
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Lead	450	530	450	530	--	**2350 * #**	**171**	--	--	--	--	--	--	--	--	--
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	--	**0.2 J**	--	--	--	--	--	--	--	**0.1 J**	--	--
Nickel	--	--	--	--	--	**144**	**31**	--	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	--	5 U	0.99 U	--	--	--	--	--	--	--	--	--
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	--	**1590 * #**	**189**	--	--	--	--	--	--	--	--	--
PCBs (µg/kg)																
Total PCBs	--	--	130	1000	**232 ***	**285 ***	--	**4 J**	**1 J**	**971 ***	**680 J ***	--	**361 ***	**1000 * #**	**303 ***	**290 ***
Total PCBs (field)	--	--	130	1000	**81 J**	**2043 * #**	**266 ***	63 U	43 U	**275 ***	**359 ***	**446 ***	**425 ***	**783 ***	**554 ***	**305 ***
PCBs (mg/kg-OC)																
Total PCBs	12	65	--	--	**27.29 ***	**11.44**	--	**0.18 J**	**0.07 J**	**61.45 ***	**31.62 J ***	--	**16.11 ***	**40 ***	**13.52 ***	**18.7 ***
Total PCBs (field)	12	65	--	--	**9.51 J**	**82.05 ***	**16.12 ***	2.85 U	3.28 U	**17.41 ***	**16.7 ***	**18.35 ***	**18.97 ***	**31.32 ***	**24.73 ***	**19.68 ***

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID					SD-DUW335	SD-DUW337	SD-DUW338A	SD-DUW338A	SD-DUW339	SD-DUW340	SD-DUW341	SD-DUW342	SD-DUW343	SD-DUW344	SD-DUW345	SD-SWY03
Sample ID					SD-335-0000	SD-337-0000	SD-338-0000	SD-432-0000	SD-339-0000	SD-340-0000	SD-341-0000	SD-342-0000	SD-343-0000	SD-344-0000	SD-345-0000	SWY03-0000-6/13/1995
Sample Date	SMS Criteria				8/27/2004	8/27/2004	8/26/2004	8/26/2004	8/26/2004	8/26/2004	8/26/2004	8/27/2004	8/27/2004	8/26/2004	8/26/2004	6/13/1995
Depth Interval	SQS	CSL	LAET	2LAET	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm
Conventionals																
Total solids (%)	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Total organic carbon (%)	--	--	--	--	**1.98**	**1.92**	**1.81**	**1.92**	**1.7**	**1.61**	**2.68**	**1.45**	**1.96**	**2.58**	**1.24**	**3.1**
Metals (mg/kg)																
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**17000**
Antimony	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**8 J-**
Arsenic	57	93	57	93	--	--	--	--	--	--	--	--	--	--	--	**29**
Barium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**1300**
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**0.1**
Cadmium	5.1	6.7	5.1	6.7	--	--	--	--	--	--	--	--	--	--	--	**4.6**
Calcium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**6200**
Chromium	260	270	260	270	--	--	--	--	--	--	--	--	--	--	--	**190**
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**12**
Copper	390	390	390	390	--	--	--	--	--	--	--	--	--	--	--	**240**
Iron	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**30000**
Lead	450	530	450	530	--	--	--	--	--	--	--	--	--	--	--	**470 ***
Magnesium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**6400**
Manganese	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**690**
Mercury	0.41	0.59	0.41	0.59	--	--	--	--	--	--	**R**	--	--	--	--	**0.56 J ***
Nickel	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**77**
Potassium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**1400**
Selenium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	7 U
Silver	6.1	6.1	6.1	6.1	--	--	--	--	--	--	--	--	--	--	--	**17 * #**
Sodium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**5400**
Thallium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**13**
Vanadium	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	**51**
Zinc	410	960	410	960	--	--	--	--	--	--	--	--	--	--	--	**1100 * #**
PCBs (µg/kg)																
Total PCBs	--	--	130	1000	**400 ***	**1238 * #**	**430 ***	**800 ***	**480 ***	**230 J ***	--	**1418 * #**	**260 J ***	**11000 * #**	**182 ***	**23400 * #**
Total PCBs (field)	--	--	130	1000	**238 ***	**1200 * #**	**393 ***	**310 ***	**263 ***	**415 ***	**3186 * #**	**704 ***	**761 ***	**216 ***	**526 ***	--
PCBs (mg/kg-OC)																
Total PCBs	12	65	--	--	**20.2 ***	**64.47 ***	**23.75 ***	**41.66 ***	**28.23 ***	**14.28 J ***	--	**97.79 * #**	**13.26 J ***	**426 * #**	**14.67 ***	**755 * #**
Total PCBs (field)	12	65	--	--	**12.02 ***	**62.5 ***	**21.71 ***	**16.15 ***	**15.47 ***	**25.78 ***	**119 * #**	**48.55 ***	**38.83 ***	**8.37**	**42.42 ***	--

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID					SD-SWY04	SD-SWY05	SD-SWY06	SD-SWY07	SD-SWY10	SD-SWY11	SD-SWY12	SD-SWY13	SD-SWY14	SD-SWY15	SD-SWY16	SD-SWY17	SD-SWY19
Sample ID					SWY04-0000	SWY05-0000	SWY06-0000	SWY07-0000	SWY10-0000	SWY11-0000	SWY12-0000	SWY13-0000	SD-SWY14	SD-SWY15	SD-SWY16	SD-SWY17	SD-SWY19
Sample Date	SMS Criteria				6/13/1995	6/12/1995	6/13/1995	6/13/1995	6/14/1995	6/14/1995	6/14/1995	6/14/1995	9/9/2003	9/9/2003	9/9/2003	9/9/2003	9/12/2003
Depth Interval	SQS	CSL	LAET	2LAET	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-1 ft	0-1 ft	0-1 ft	0-1 ft	0-1 ft
Conventionals																	
Total solids (%)	--	--	--	--	--	--	--	--	--	--	--	--	67.5	79.6	72.2	76.5	74.1
Total organic carbon (%)	--	--	--	--	2.6	2.2	3.4	2.5	2.4 J	2.6 J	2.9 J	1.7 J	5.5	1	3.2	3.1	2.9
Metals (mg/kg)																	
Aluminum	--	--	--	--	15000	25000	20000	13000	10000	17000	46000	24000	--	--	--	--	--
Antimony	--	--	--	--	6 J-	110 J	--	--	--	--	13 J-	12 J-	--	--	--	--	--
Arsenic	57	93	57	93	16	21	20	8	8	21	28	14	--	--	--	--	--
Barium	--	--	--	--	72	340 J+	74	44	54	470	610	420	--	--	--	--	--
Beryllium	--	--	--	--	0.1	0.6 J	0.3	0.2	0.1 U	0.2 U	0.2	0.1	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	1.2	21 J * #	1.6	0.4	2.5	2.5	11 * #	9.2 * #	--	--	--	--	--
Calcium	--	--	--	--	5400	5400 J+	7200	5800	4300	5900	6700	7200	--	--	--	--	--
Chromium	260	270	260	270	42	170 J+	56	37	94	98	140	230	--	--	--	--	--
Cobalt	--	--	--	--	8.7	14	9	5.3	5.9	10	17	12	--	--	--	--	--
Copper	390	390	390	390	170	2500 J * #	85	28	74	140	2500 * #	1900 * #	--	--	--	--	--
Iron	--	--	--	--	25000	49000	34000	30000	26000	34000	49000	41000	--	--	--	--	--
Lead	450	530	450	530	140	3500 J+ * #	170	39	66	160	1900 * #	3900 * #	--	--	--	--	--
Magnesium	--	--	--	--	5100	4800 J+	8200	5100	3200	7100	6600	5500	--	--	--	--	--
Manganese	--	--	--	--	460	1100 J	370	450	150	380	2600	790	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	0.15 J	0.06	0.2 J	0.06 J	0.24 J	0.27 J	1.1 J * #	0.05 UJ	--	--	--	--	--
Nickel	--	--	--	--	26	170 J+	39	21	61	51	110	110	--	--	--	--	--
Potassium	--	--	--	--	1400	1100	2300	1400	950	1700	1700	1200	--	--	--	--	--
Selenium	--	--	--	--	6 U	7 U	8 U	6 U	6 U	9 U	8 U	6 U	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	1.4	7.2 J * #	1.2	0.4	0.8	1.6	5.4	7.9 * #	--	--	--	--	--
Sodium	--	--	--	--	5500	4100 J+	7700	5200	4900	7200	8900	4200	--	--	--	--	--
Thallium	--	--	--	--	10	7	9	10	11	16	22	24	--	--	--	--	--
Vanadium	--	--	--	--	48	56	72	57	43	55	60	43	--	--	--	--	--
Zinc	410	960	410	960	920 *	1100 J * #	850 *	100	230	610 *	1800 * #	4200 * #	--	--	--	--	--
PCBs (µg/kg)																	
Total PCBs	--	--	130	1000	1400 * #	1110 * #	6700 * #	318 *	1450 * #	5200 * #	1670 * #	188 *	34000 * #	230 *	1400 * #	460 *	3300 * #
Total PCBs (field)	--	--	130	1000	--	--	--	--	--	--	--	--	--	--	--	--	--
PCBs (mg/kg-OC)																	
Total PCBs	12	65	--	--	53.84 *	50.45 *	197 * #	12.72 *	60.41 *	200 * #	57.58 *	11.05	618 * #	23 *	43.75 *	14.83 *	114 * #
Total PCBs (field)	12	65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID					SS-1	SS-2	SS-3	SS-3	SS-4	SS-SWY01	SS-SWY02	SS-SWY03	SS-SWY06	WES234	WIT265	WIT267
Sample ID					SS-1	SS-2	SS-3	SS-3-DUP	SS-4	SWY01-0000-SS	SWY02-0000-3/24/1995	SWY03-0000-3/24/1995	SS-SWY06	WEST01	WIT07-01	WIT07-02
Sample Date	SMS Criteria				8/18/1993	8/18/1993	8/18/1993	8/18/1993	8/18/1993	3/24/1995	3/24/1995	3/24/1995	4/19/1995	9/24/1997	10/16/1997	10/16/1997
Depth Interval	SQS	CSL	LAET	2LAET	0-5 cm	0-5 cm	0-5 cm	0-5 cm	0-5 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm	0-10 cm
Conventionals																
Total solids (%)	--	--	--	--	**47.3**	**60.3**	**47.5**	**49**	**49.7**	--	--	--	--	--	--	--
Total organic carbon (%)	--	--	--	--	**1.9**	**2.74**	**2.35**	**1.96**	**1.54**	**2.2**	**3.3**	--	**8.3**	**1.9**	**0.31**	**0.67**
Metals (mg/kg)																
Aluminum	--	--	--	--	--	--	--	--	--	**110000**	**110000**	**9800**	**20000**	--	--	--
Antimony	--	--	--	--	**3.1 J**	**120 J**	**5 J**	**4.1 J**	**29**	31 UJ	**59 J**	28 UJ	**110 J-**	--	--	--
Arsenic	57	93	57	93	**41**	**1130 * #**	**75 ***	**57**	**140 * #**	31 U	**57**	28 U	**30**	--	--	--
Barium	--	--	--	--	--	--	--	--	--	**3500**	**1800**	**210**	**580**	--	--	--
Beryllium	--	--	--	--	**0.4**	**0.7**	**0.4**	**0.5**	**0.7**	0.6 U	0.7 U	0.6 U	0.3 U	--	--	--
Cadmium	5.1	6.7	5.1	6.7	**0.7**	**3.5**	**0.6**	**0.8**	**1.5**	**120 * #**	**55 * #**	**16 * #**	**54 * #**	--	--	--
Calcium	--	--	--	--	--	--	--	--	--	**9100**	**7700**	**12000**	**5000 J+**	--	--	--
Chromium	260	270	260	270	**44**	**145**	**51**	**48**	**53**	**750 J * #**	**590 J * #**	**270 J ***	**1100 J+ * #**	--	--	--
Cobalt	--	--	--	--	--	--	--	--	--	**31**	**33**	**24**	**37 J**	--	--	--
Copper	390	390	390	390	**361 J**	**1970 J * #**	**507 J * #**	**519 J * #**	**372**	**12000 J * #**	**12000 J * #**	**310 J**	**2300 J+ * #**	--	--	--
Iron	--	--	--	--	--	--	--	--	--	**68000**	**120000**	**110000**	**160000**	--	--	--
Lead	450	530	450	530	**109 J**	**854 J * #**	**144 J**	**103 J**	**134**	**4100 * #**	**23000 * #**	**560 * #**	**3000 J+ * #**	--	--	--
Magnesium	--	--	--	--	--	--	--	--	--	**6100**	**5000**	**3600**	**5100 J+**	--	--	--
Manganese	--	--	--	--	--	--	--	--	--	**2600**	**3300**	**770**	**1700**	--	--	--
Mercury	0.41	0.59	0.41	0.59	**0.27**	**0.35**	**0.3**	**0.54 ***	**0.26**	**0.23**	**2 * #**	**0.68 * #**	**0.54 ***	--	--	--
Nickel	--	--	--	--	**31**	**59**	**32**	**32**	**37**	**460**	**370**	**180**	**910**	--	--	--
Potassium	--	--	--	--	--	--	--	--	--	**1000**	**1100**	**730**	**800**	--	--	--
Selenium	--	--	--	--	0.2 U	**0.9**	0.2 U	0.2 U	**0.2**	31 U	34 U	28 U	**20**	--	--	--
Silver	6.1	6.1	6.1	6.1	0.6 U	1 U	0.6 U	0.6 U	0.6 U	**97 * #**	**270 * #**	**8 * #**	**8 * #**	--	--	--
Sodium	--	--	--	--	--	--	--	--	--	**2000**	**2900**	**580**	**2100**	--	--	--
Thallium	--	--	--	--	1 U	0.8 U	1 U	1 U	1 U	31 U	34 U	**29**	**30**	--	--	--
Vanadium	--	--	--	--	--	--	--	--	--	**58**	**50**	**46**	**69**	--	--	--
Zinc	410	960	410	960	**335 J**	**4400 J * #**	**418 J ***	**416 J ***	**750 ***	**9700 * #**	**6400 * #**	**1100 * #**	**2800 J+ * #**	--	--	--
PCBs (µg/kg)																
Total PCBs	--	--	130	1000	--	--	--	--	--	**330 ***	**3500 * #**	--	**1600 * #**	--	--	--
Total PCBs (field)	--	--	130	1000	--	--	--	--	--	--	--	--	--	--	--	--
PCBs (mg/kg-OC)																
Total PCBs	12	65	--	--	--	--	--	--	--	**15**	**106 * #**	--	**19.27 ***	**72.49 * #**	**603 * #**	**66.86 * #**
Total PCBs (field)	12	65	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID					WST318	WST319	WST320	WST323
Sample ID					WST08-01	WST08-02	WST08-03	WST09-02
Sample Date	SMS Criteria				10/2/1997	10/2/1997	10/2/1997	10/21/1997
Depth Interval	SQS	CSL	LAET	2LAET	0-10 cm	0-10 cm	0-10 cm	0-10 cm
Conventionals								
Total solids (%)	--	--	--	--	--	--	--	--
Total organic carbon (%)	--	--	--	--	**1.51**	**1.6**	**2.08**	**1.93**
Metals (mg/kg)								
Aluminum	--	--	--	--	--	--	--	--
Antimony	--	--	--	--	--	--	--	--
Arsenic	57	93	57	93	--	--	--	--
Barium	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--
Cadmium	5.1	6.7	5.1	6.7	--	--	--	--
Calcium	--	--	--	--	--	--	--	--
Chromium	260	270	260	270	--	--	--	--
Cobalt	--	--	--	--	--	--	--	--
Copper	390	390	390	390	--	--	--	--
Iron	--	--	--	--	--	--	--	--
Lead	450	530	450	530	--	--	--	--
Magnesium	--	--	--	--	--	--	--	--
Manganese	--	--	--	--	--	--	--	--
Mercury	0.41	0.59	0.41	0.59	--	--	--	--
Nickel	--	--	--	--	--	--	--	--
Potassium	--	--	--	--	--	--	--	--
Selenium	--	--	--	--	--	--	--	--
Silver	6.1	6.1	6.1	6.1	--	--	--	--
Sodium	--	--	--	--	--	--	--	--
Thallium	--	--	--	--	--	--	--	--
Vanadium	--	--	--	--	--	--	--	--
Zinc	410	960	410	960	--	--	--	--
PCBs (µg/kg)								
Total PCBs	--	--	130	1000	--	--	--	--
Total PCBs (field)	--	--	130	1000	--	--	--	--
PCBs (mg/kg-OC)								
Total PCBs	12	65	--	--	**1.46**	**1.93**	**2.32**	**316 * #**
Total PCBs (field)	12	65	--	--	--	--	--	--

Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID	SMS		AJF-01	AJF-02	AJF-03	AJF-04	AJF-05	AJF-06	AJF-07	AJF-08	AJF-09	AJF-09	AJF-10	AJF-11
Sample ID			AJF-01SD	AJF-02SD	AJF-03SD	AJF-04SD	AJF-05SD	AJF-06SD	AJF-07SD	AJF-08SD	AJF-09SD	AJF-59SDa	AJF-10SD	AJF-11SD
Sample Date			5/2/2005	5/2/2005	5/2/2005	5/2/2005	5/2/2005	5/2/2005	5/2/2005	5/2/2005	5/2/2005	5/2/2005	5/2/2005	5/2/2005
Depth Interval	SQS	CSL	0-7 cm	0-3 cm	0-7 cm	0-2 cm	0-2 cm	0-5 cm	0-12 cm	0-5 cm	0-10 cm	0-10 cm	0-9 cm	0-11 cm
Conventionals														
Total solids (%)	--	--	**76.1**	**88.5**	**75.3**	**74.5**	**71.8**	**72**	**53.7**	**78.1**	**65.3**	**63.9**	**78.3**	**53.4**
Total organic carbon (%)	--	--	**2.23**	**1.47**	**2.62**	**1.71**	**2.11**	**1.82**	**1.3**	**1.41**	**2.4**	**2.44**	**1.24**	**1.16**
Grain Size (%)														
Gravel	--	--	**64.1**	**73**	**39.9**	**53.6**	**44.5**	**43.5**	0 U	**43.9**	**35.8**	**54.2**	**59.7**	**0.60**
Sand, Coarse	--	--	**8.40**	**9.30**	**11.4**	**10.1**	**10.4**	**18.3**	**0.40**	**17.5**	**8.1**	**4.10**	**10.7**	**0.50**
Sand, Medium	--	--	**9.90**	**7**	**14.5**	**11.7**	**12.2**	**15.6**	**2.40**	**19.8**	**9.60**	**6.2**	**11**	**7.10**
Sand, Fine	--	--	**10.1**	**6.4**	**22.2**	**14.4**	**18**	**12**	**20.2**	**13.6**	**20.8**	**14.3**	**12**	**35.1**
Silt	--	--	**3.80**	**2**	**5**	**3.50**	**7.80**	**4.80**	**60.8**	**2.80**	**16.7**	**13.6**	**3.90**	**41.2**
Clay	--	--	**3.80**	**2.20**	**7**	**6.60**	**7.10**	**5.80**	**16.2**	**2.40**	**9.10**	**7.50**	**2.70**	**15.4**
Geochemistry (std units)														
Liquid Limit	--	--	--	--	--	--	--	--	**47**	--	--	--	--	**42**
Plasticity Index	--	--	--	--	--	--	--	--	**6**	--	--	--	--	0 U
Plastic Limit	--	--	--	--	--	--	--	--	**41**	--	--	--	--	0 U
Metals (mg/kg)														
Arsenic	57	93	**9.83**	**22**	**24.40**	**21.20**	**16.80**	**19.20**	**15.80**	**32.50**	**27.10**	**23.70**	**9.10**	**13.10**
Cadmium	5.1	6.7	**0.296**	**28.40 * #**	**1.02**	**1.03**	**0.403**	**3.54**	**0.0569 J**	**1.62**	**0.928**	**1.37**	**0.661**	**0.096 J**
Chromium	260	270	**23.6**	**119**	**96.4**	**250**	**100**	**10600 * #**	**96.7**	**1060 * #**	**133**	**144 J**	**362 * #**	**118**
Copper	390	390	**54.7**	**113**	**232**	**97.4**	**111**	**111**	**43.9**	**2820 * #**	**155**	**161**	**182**	**83.6**
Lead	450	530	**116**	**6830 * #**	**999 * #**	**310**	**245**	**64900 * #**	**334**	**1410 * #**	**244**	**313**	**203**	**99**
Mercury	0.41	0.59	**0.0253**	**0.0452**	**0.0261**	**0.0304**	**0.0391**	**0.0537**	**0.104**	**0.054**	**0.0779**	**0.0924**	**0.0655**	**0.0458**
Nickel	--	--	**26.60**	**34.40**	**105**	**71.60**	**86**	**72.10**	**31.10**	**496**	**162**	**175 J**	**171**	**57.50**
Silver	6.1	6.1	**0.301**	**1.03**	**0.359**	**0.372**	**0.214 J**	**0.61**	**0.252 J**	**1.38**	**1.91**	**2.47**	**0.576**	**1.03**
Zinc	410	960	**693 ***	**148000 * #**	**2210 * #**	**698 ***	**336**	**17500 * #**	**171**	**1300 * #**	**361**	**500 ***	**437 ***	**117**
PCBs (µg/kg)														
Aroclor 1016	--	--	121 U	1080 U	12.80 U	13.30 U	13.60 U	647 U	18.60 U	123 U	152 U	156 U	12.10 U	18.50 U
Aroclor 1221	--	--	121 U	1080 U	12.80 U	13.30 U	13.60 U	647 U	18.60 U	123 U	152 U	156 U	12.10 U	18.50 U
Aroclor 1232	--	--	121 U	1080 U	12.80 U	13.30 U	13.60 U	647 U	18.60 U	123 U	152 U	156 U	12.10 U	18.50 U
Aroclor 1242	--	--	121 U	1080 U	12.80 U	13.30 U	13.60 U	647 U	18.60 U	123 U	152 U	156 U	12.10 U	18.50 U
Aroclor 1248	--	--	121 U	1080 U	12.80 U	13.30 U	13.60 U	647 U	18.60 U	123 U	152 U	156 U	12.10 U	18.50 U
Aroclor 1254	--	--	**2110 J**	**18400 J**	**504**	**320**	**517**	**8710 J**	**201**	**2590 J**	**4250 J**	**4980 J**	**145**	**148**
Aroclor 1260	--	--	121 U	1080 U	**401**	**198**	**417**	647 U	**122**	123 U	152 U	156 U	**142**	**119**
Total PCBs (PSDDA)	--	--	**2110 J**	**18400 J**	**905**	**518**	**934**	**8710 J**	**323**	**2590 J**	**4250 J**	**4980 J**	**287**	**267**
PCBs (mg/kg-OC)														
Total PCBs (PSDDA)	12	65	**94.6 J* #**	**1252 J* #**	**34.5 ***	**30.3 ***	**44.3 ***	**479 J* #**	**24.8 ***	**184 J* #**	**177 J* #**	**204 J* #**	**23.1 ***	**23.0 ***

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID	SMS		AJF-07	AJF-07	AJF-07	AJF-07	AJF-07	AJF-07	AJF-07	AJF-11	AJF-11	AJF-11	AJF-11	AJF-11	AJF-11	AJF-11
Sample ID			AJF-07SD-A	AJF-07SD-B	AJF-07SD-C	AJF-07SD-D	AJF-07SD-E	AJF-07SD-F	AJF-07SD-G	AJF-11SD-A	AJF-11SD-B	AJF-11SD-C	AJF-61SD-Ca	AJF-11SD-D	AJF-11SD-E	AJF-11SD-F
Sample Date			5/5/2005	5/5/2005	5/5/2005	5/5/2005	5/5/2005	5/5/2005	5/5/2005	5/5/2005	5/5/2005	5/5/2005	5/5/2005	5/5/2005	5/5/2005	5/5/2005
Depth Interval	SQS	CSL	0-1 ft	1-2 ft	2-3 ft	3-4 ft	4-5 ft	5-6 ft	6-6.65 ft	0-1 ft	1-2 ft	2-3 ft	2-3 ft	3-4 ft	4-5 ft	5-5.7 ft
Conventionals																
Total solids (%)	--	--	56.9	61.3	57.5	52.6	63.7	69.2	60.4	58.4	72.7	79.7	79.1	82.9	81.8	79.8
Total organic carbon (%)	--	--	1.31	1.31	1.87	2.44	1.89	0.818	1.92	0.797	0.905	0.0612	0.0606	0.0529	0.0398	0.123
Grain Size (%)																
Gravel	--	--	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0.80	0 U	0 U	--	0 U	0 U	0 U
Sand, Coarse	--	--	0 U	0 U	0 U	0 U	0 U	0 U	0 U	0.40	0 U	0 U	--	0.10	0 U	0 U
Sand, Medium	--	--	0.70	0.80	0.70	0.60	0.40	0 U	0.30	3.50	12.5	27.1	--	45.5	47.4	49.2
Sand, Fine	--	--	14.4	20.1	11.2	8.1	20.6	10.2	21.6	51.9	47.3	69.4	--	50.5	49.7	45.2
Silt	--	--	74.7	72.4	80.2	82.8	71.1	81.8	69.1	33.1	28.1	1.60	--	2.60	1.50	4
Clay	--	--	10.2	6.70	7.90	8.40	7.80	7.90	9	10.3	12.1	1.90	--	1.40	1.30	1.50
Geochemistry (std units)																
Liquid Limit	--	--	44	40	--	54	--	32	--	30	23	--	--	--	--	--
Plasticity Index	--	--	0 U	0 U	--	0 U	--	0 U	--	0 U	0 U	--	--	--	--	--
Plastic Limit	--	--	0 U	0 U	--	0 U	--	0 U	--	0 U	0 U	--	--	--	--	--
Metals (mg/kg)																
Arsenic	57	93	15	17.20	21.40	61.40 *	11.10	7.16	61.80 *	11.80	5.43	0.755	0.688	0.724	1.79	4.11
Cadmium	5.1	6.7	0.576	0.566	1.20	4.09	0.178 J	0.0235 J	1.01	0.27 J	0.312 U	0.255 U	0.255 U	0.292 U	0.0285 J	0.288 U
Chromium	260	270	28.9	22	28.7	55	18.5	16.1	47.6	47.4	13.9	8.96	8.59	7.91	6.74	7.18
Copper	390	390	45.4	32.1	41.8	59.4	31.9	25.9	53.1	77.9	18.8	7.07	6.96	11.8	14.4	13.1
Lead	450	530	41.1	18.5	33.4	46.7	10.8	7.82	33.3	120	11.2	1.19	1.05	1.21	1.03	1.22
Nickel	--	--	18.40	18	18.80	21.20	14.30	12.70	17.70	32.70	11.60	4.90	4.90	5.71	7.55	11.40
Silver	6.1	6.1	0.431 J	0.218 J	0.409	1.03	0.174 J	0.135 J	0.778	1.67	0.142 J	0.0454 J	0.0373 J	0.0735 J	0.0397 J	0.0335 J
Zinc	410	960	154	104	129	124	46.70	37.70	87.10	112	32.50	15.40	14.80	19.10	16.10	17.20
Mercury	0.41	0.59	0.0976	0.0119 J	0.0445	0.0706	0.0246 U	0.0214 J	0.0822	0.0129 J	0.00693 J	0.0227 U	0.0230 U	0.0213 U	0.0224 U	0.0233 U
PCBs (µg/kg)																
Aroclor 1016	--	--	13.80 U	13.50 U	16.70 U	16.4 U	14.8 U	10.9 U	149 U	14.7 U	9.46 U	10.0 U	2.77 U	8.17 U	10.7 U	9.31 U
Aroclor 1221	--	--	13.80 U	13.50 U	16.70 U	16.4 U	14.8 U	10.9 U	149 U	14.7 U	9.46 U	10.0 U	2.77 U	8.17 U	10.7 U	9.31 U
Aroclor 1232	--	--	13.80 U	13.50 U	16.70 U	16.4 U	14.8 U	10.9 U	149 U	14.7 U	9.46 U	10.0 U	2.77 U	8.17 U	10.7 U	9.31 U
Aroclor 1242	--	--	13.80 U	13.50 U	16.70 U	16.4 U	14.8 U	10.9 U	149 U	14.7 U	9.46 U	10.0 U	2.77 U	8.17 U	10.7 U	9.31 U
Aroclor 1248	--	--	13.80 U	13.50 U	16.70 U	16.4 U	14.8 U	10.9 U	149 U	14.7 U	9.46 U	10.0 U	2.77 U	8.17 U	10.7 U	9.31 U
Aroclor 1254	--	--	179	37.80	109	166	14.8 U	10.9 U	149 U	140	9.46 U	10.0 U	2.77 U	8.17 U	10.7 U	9.31 U
Aroclor 1260	--	--	178	49.70	163	429	17.1	24.3	1049 J	119	9.46 U	10.0 U	2.77 U	8.17 U	10.7 U	9.31 U
Total PCBs (PSDDA)	130	1000	357	87.5	272	595	17.1	24.3	1049 J	259	9.46 U	10 U	2.77 U	8.17 U	10.7 U	9.31 U
PCBs (mg/kg-OC)																
Total PCBs (PSDDA)	12	65	27.3 *	6.68	14.5 *	24.4 *	0.90	2.97	54.6 J*	32.5 *	1.05 U	NA	NA	NA	NA	NA

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID			AJF-12	AJF-12	AJF-12	AJF-12	AJF-12	AJF-12	AJF-13	AJF-13	AJF-13	AJF-13	AJF-13	AJF-13	AJF-14	AJF-14
Sample ID			AJF-12SD-A	AJF-12SD-B	AJF-12SD-C	AJF-12SD-D	AJF-12SD-E	AJF-12SD-F	AJF-13SD-A	AJF-13SD-B	AJF-13SD-C	AJF-13SD-D	AJF-13SD-E	AJF-13SD-F	AJF-14SD-A	AJF-14SD-B
Sample Date	SMS		5/6/2005	5/6/2005	5/6/2005	5/6/2005	5/6/2005	5/6/2005	5/6/2005	5/6/2005	5/6/2005	5/6/2005	5/6/2005	5/6/2005	5/5/2005	5/5/2005
Depth Interval	SQS	CSL	0-1 ft	1-2 ft	2-3 ft	3-4 ft	4-5 ft	5-5.6 ft	0-1 ft	1-2 ft	2-3 ft	3-4 ft	4-5 ft	5-5.85 ft	0-1 ft	1-2 ft
Conventionals																
Total solids (%)	--	--	**49.1**	**52.3**	**72.5**	**77.3**	**72.1**	**64.1**	**66.3**	**64.0**	**68.1**	**77.8**	**76.0**	**77.9**	**53.9**	**75.5**
Total organic carbon (%)	--	--	**2.42**	**1.7**	**1.32**	**0.831**	**1.06**	**1.51**	**1.08**	**1.48**	**1.19**	**0.461 J**	**0.165**	**0.266**	**2.42**	**1.28**
Grain Size (%)																
Gravel	--	--	0 U	0 U	**0.50**	**5.20**	**8.70**	0 U	0.40	0 U	0 U	0 U	**2.20**	**0.30**	0 U	**15.3**
Sand, Coarse	--	--	**0.20**	**0.30**	**1.50**	**9.10**	**6.4**	**1.50**	**0.30**	0 U	0 U	0.70	**2.50**	**3.90**	**1.60**	**5.60**
Sand, Medium	--	--	**0.90**	**4.10**	**26.1**	**40**	**25.7**	**14.6**	**4.10**	**2.30**	**1.10**	**30.1**	**48.2**	**49.2**	**10**	**31.5**
Sand, Fine	--	--	**8.1**	**7.90**	**38.2**	**22.4**	**33.6**	**25.5**	**39.7**	**31.1**	**12.5**	**42.1**	**41.3**	**40**	**43.7**	**37.8**
Silt	--	--	**84.5**	**81.9**	**30.6**	**20.8**	**22.6**	**50.9**	**50.6**	**61.4**	**65.7**	**18.7**	**3.10**	**4.30**	**39.9**	**7.20**
Clay	--	--	**6.3**	**5.80**	**3.10**	**2.50**	**3.10**	**7.60**	**4.90**	**5.20**	**20.7**	**8.60**	**2.70**	**2.30**	**4.80**	**2.60**
Geochemistry (std units)																
Liquid Limit	--	--	**53**	**50**	--	--	--	**38**	0 U	**37**	**34**	--	--	--	**38**	0 U
Plasticity Index	--	--	0 U	0 U	--	--	--	0 U	0 U	0 U	0 U	--	--	--	0 U	0 U
Plastic Limit	--	--	0 U	0 U	--	--	--	0 U	0 U	0 U	0 U	--	--	--	0 U	0 U
Metals (mg/kg)																
Arsenic	57	93	**19.3**	**17.8**	**28.8**	**14.1**	**12.5**	**9.58**	**42.9**	**16.7**	**5.34**	**1.75**	**0.612**	**1.89**	**7.96**	**8.62**
Cadmium	5.1	6.7	**1.65**	**0.83**	**0.68**	**0.26 J**	0.299 U	0.333 U	**0.259 J**	0.338 U	0.31 U	0.286 U	0.281 U	0.262 U	**0.237 J**	**0.279**
Chromium	260	270	**78**	**40.5**	**48.4**	**19.6**	**15.4**	**18.1**	**22.6**	**16.8**	**17.2**	**10.5**	**7.24**	**6.98**	**50.4**	**86.6**
Copper	390	390	**96.2**	**71.6**	**82.7**	**34**	**21.5**	**30**	**31.8**	**25.8**	**26.8**	**12.4**	**6.61**	**9.84**	**49.4**	**60.2**
Lead	450	530	**274**	**219**	**411**	**90.6**	**13**	**14**	**17.6**	**12.7**	**6.49**	**3.16**	**1.19**	**1.26**	**281**	**352**
Nickel	--	--	**61.1**	**34.9**	**30.9**	**14.4**	**12.6**	**14.3**	**11.7**	**12.2**	**13.5**	**7.87**	**5.45**	**7.24**	**36.40**	**33.30**
Silver	6.1	6.1	**2.44**	**0.864**	**0.795**	**0.449**	**0.11 J**	**0.131 J**	**0.289 J**	**0.106 J**	**0.0732 J**	**0.0378 J**	**0.0236 J**	**0.0283 J**	**0.308 J**	**0.211 J**
Zinc	410	960	**262**	**209**	**411 ***	**113**	**38.5**	**48.4**	**55**	**41.2**	**38.1**	**22.2**	**15.1**	**17.8**	**162**	**240**
Mercury	0.41	0.59	**0.138**	**0.224**	**0.0898**	**0.0618**	**0.0676**	**0.031**	**0.0615**	**0.0202 J**	**0.0381**	**0.007 J**	0.0215 U	0.0233 U	**0.0628**	**0.0287**
PCBs (µg/kg)																
Aroclor 1016	--	--	292 U	76.1 U	107 U	10.7 U	9.98 U	12.1 U	12.8 U	11.7 UJ	12.7 U	9.83 U	9.96 U	10.7 U	17.9 U	54.4 U
Aroclor 1221	--	--	292 U	76.1 U	107 U	10.7 U	9.98 U	12.1 U	12.8 U	11.7 UJ	12.7 U	9.83 U	9.96 U	10.7 U	17.9 U	54.4 U
Aroclor 1232	--	--	292 U	76.1 U	107 U	10.7 U	9.98 U	12.1 U	12.8 U	11.7 UJ	12.7 U	9.83 U	9.96 U	10.7 U	17.9 U	54.4 U
Aroclor 1242	--	--	292 U	76.1 U	107 U	10.7 U	9.98 U	12.1 U	12.8 U	11.7 UJ	12.7 U	9.83 U	9.96 U	10.7 U	17.9 U	54.4 U
Aroclor 1248	--	--	292 U	76.1 U	107 U	10.7 U	9.98 U	12.1 U	12.8 U	11.7 UJ	12.7 U	9.83 U	9.96 U	10.7 U	17.9 U	54.4 U
Aroclor 1254	--	--	**10000 J**	**1670 J**	**1800 J**	**413**	**16**	12.1 U	12.8 U	11.7 UJ	12.7 U	**8.28 J**	9.96 U	10.7 U	**385**	**854**
Aroclor 1260	--	--	292 U	76.1 U	107 U	10.7 U	9.98 U	12.1 U	**250**	11.7 UJ	12.7 U	9.83 U	9.96 U	10.7 U	**155**	**236**
Total PCBs (PSDDA)	130	1000	**10000 J**	**1670 J**	**1800 J**	**413**	**16**	12.1 U	**250**	11.7 UJ	12.7 U	**8.28 J**	9.96 U	10.7 U	**540**	**1090**
PCBs (mg/kg-OC)																
Total PCBs (PSDDA)	12	65	**408 J* #**	**98.2 J* #**	**127 J* #**	**49.7 ***	**1.51**	0.80 U	**23.1 ***	0.79 U	1.07 U	**NA**	**NA**	**NA**	**22.3 ***	**85.2 * #**

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID			AJF-14	AJF-14	AJF-14	AJF-14	AJF-15	AJF-15	AJF-15	AJF-15	AJF-15	AJF-15	AJF-15	AJF-16	AJF-16	AJF-16
Sample ID			AJF-14SD-C	AJF-14SD-D	AJF-64SD-Da	AJF-14SD-E	AJF-15SD-A	AJF-15SD-B	AJF-15SD-C	AJF-15SD-D	AJF-15SD-E	AJF-65SD-Ea	AJF-15SD-F	AJF-16SD-A	AJF-16SD-B	AJF-16SD-C
Sample Date	SMS		5/5/2005	5/5/2005	5/5/2005	5/5/2005	5/6/2005	5/6/2005	5/6/2005	5/6/2005	5/6/2005	5/6/2005	5/6/2005	5/6/2005	5/6/2005	5/6/2005
Depth Interval	SQS	CSL	2-3 ft	3-4 ft	3-4 ft	4-4.8 ft	0-1 ft	1-2 ft	2-3 ft	3-4 ft	4-5 ft	4-5 ft	5-5.5 ft	0-1 ft	1-2 ft	2-3 ft
Conventionals																
Total solids (%)	--	--	**75.6**	**81.5**	**80.8**	**82**	**50.8**	**62.9**	**65.3**	**72.4**	**49.6**	**51.5**	**57.6**	**49.4**	**63.8**	**76.6**
Total organic carbon (%)	--	--	**1.1**	**0.687 J**	**0.105**	**0.0711**	**2.37**	**1.92**	**1.25**	**1.57**	**3.31 J**	**2.11 J**	**3.6**	**2.21**	**0.653**	**1.72**
Grain Size (%)																
Gravel	--	--	0 U	0 U	--	0 U	0 U	0 U	0 U	0 U	0 U	--	0 U	0 U	**0.20**	0 U
Sand, Coarse	--	--	**0.80**	0 U	--	0 U	0 U	0 U	**0.20**	0 U	**1.10**	--	**0.20**	0 U	**0.30**	**1.50**
Sand, Medium	--	--	**9**	**4.70**	--	**9.30**	**2**	**3.60**	**0.80**	**6.70**	**4.30**	--	**7.50**	**3.20**	**17**	**23.7**
Sand, Fine	--	--	**65.1**	**90.8**	--	**87.8**	**8.60**	**27.7**	**13.4**	**55.9**	**44.8**	--	**67.4**	**11.8**	**42.3**	**61**
Silt	--	--	**21.6**	**2.30**	--	**1.70**	**73.8**	**60.5**	**77.8**	**33.9**	**40.3**	--	**19.5**	**77.7**	**36.3**	**9**
Clay	--	--	**3.40**	**2.10**	--	**1.30**	**15.6**	**8.1**	**7.80**	**3.60**	**9.60**	--	**5.30**	**7.40**	**3.80**	**4.80**
Geochemistry (std units)																
Liquid Limit	--	--	--	--	--	--	**52**	**42**	**40**	--	--	--	--	**58**	0 U	--
Plasticity Index	--	--	--	--	--	--	0 U	0 U	0 U	--	--	--	--	0 U	0 U	--
Plastic Limit	--	--	--	--	--	--	0 U	0 U	0 U	--	--	--	--	0 U	0 U	--
Metals (mg/kg)																
Arsenic	57	93	**4.65**	**1.74**	**1.72**	**1.20**	**17.5**	**18.9**	**14.9**	**3.96**	**8.38**	**9.85**	**5.11**	**10.2**	**5.03**	**4.37**
Cadmium	5.1	6.7	0.273 U	0.282 U	0.282 U	0.244 U	**0.451**	**0.622**	**0.862**	0.325 U	0.482 U	0.413 U	0.411 U	**0.126 J**	**0.0207 J**	0.263 U
Chromium	260	270	**15.7**	**8.25**	**7.08**	**7.26**	**40.1**	**28.2**	**30.5**	**10.1**	**15.4**	**15.4**	**12.8**	**37.8**	**27.2**	**28.7**
Copper	390	390	**22.1**	**9.25**	**7.58**	**7.22**	**57.9**	**35.7**	**35.8**	**16.4**	**33.5**	**26.6**	**17.4**	**58.1**	**33.1**	**32.2**
Lead	450	530	**37.1**	**2.8**	**1.48**	**1.5**	**71.9**	**24**	**35.9**	**3.84**	**6.14**	**6.92**	**4.27**	**55.1**	**47.5**	**72.3**
Nickel	--	--	**12.40**	**7**	**5.94**	**6.24**	**21.8**	**18.7**	**17.5**	**8.39**	**12.1**	**12.3**	**10.7**	**30.6**	**21**	**29.4**
Silver	6.1	6.1	**0.107 J**	**0.0327 J**	**0.0327 J**	**0.0409 J**	**0.648**	**0.764**	**0.276 J**	**0.0591 J**	**0.127 J**	**0.114 J**	**0.0879 J**	**0.31 J**	**0.261 J**	**0.278**
Zinc	410	960	**53.30**	**17.50**	**14.90**	**14.80**	**203**	**116**	**131**	**23.7**	**32.1**	**35.1**	**27.6**	**125**	**97.3**	**105**
Mercury	0.41	0.59	**0.00833 J**	0.0241 U	0.0214 U	0.0213 U	**0.124**	**0.0497**	**0.0279 J**	**0.00919 J**	**0.0329 J**	**0.0255 J**	**0.013 J**	**0.045**	**0.0253 J**	**0.0232**
PCBs (µg/kg)																
Aroclor 1016	--	--	106 U	11.5 U	10.9 U	11.6 U	17.8 U	14.6 U	14.2 U	12.4 U	18 U	17 U	14.2 U	18.6 U	14.1 U	100 U
Aroclor 1221	--	--	106 U	11.5 U	10.9 U	11.6 U	17.8 U	14.6 U	14.2 U	12.4 U	18 U	17 U	14.2 U	18.6 U	14.1 U	100 U
Aroclor 1232	--	--	106 U	11.5 U	10.9 U	11.6 U	17.8 U	14.6 U	14.2 U	12.4 U	18 U	17 U	14.2 U	18.6 U	14.1 U	100 U
Aroclor 1242	--	--	106 U	11.5 U	10.9 U	11.6 U	17.8 U	14.6 U	14.2 U	12.4 U	18 U	17 U	14.2 U	18.6 U	14.1 U	100 U
Aroclor 1248	--	--	106 U	11.5 U	10.9 U	11.6 U	17.8 U	14.6 U	14.2 U	12.4 U	18 U	17 U	14.2 U	18.6 U	14.1 U	100 U
Aroclor 1254	--	--	**1380 J**	11.5 U	10.9 U	11.6 U	**415**	14.6 U	14.2 U	12.4 U	18 U	17 U	14.2 U	18.6 U	14.1 U	**1240 J**
Aroclor 1260	--	--	**888 J**	11.5 U	10.9 U	11.6 U	17.8 U	**206**	**158**	**4.97 J**	**7.03 J**	**8.35 J**	**6.99 J**	**7.91 J**	**251**	100 U
Total PCBs (PSDDA)	130	1000	**2268 J**	11.5 U	10.9 U	11.6 U	**415**	**206**	**158**	**4.97 J**	**7.03 J**	**8.35 J**	**6.99 J**	**7.91 J**	**251**	**1240 J**
PCBs (mg/kg-OC)																
Total PCBs (PSDDA)	12	65	**206 J* #**	1.67 U	**NA**	**NA**	**17.5 ***	**10.7**	**12.6 ***	**0.32**	**0.21**	**0.40**	**0.19**	**0.36**	**38.4 ***	**72.1 J* #**

Appendix B
Existing Lower Duwamish Waterway Surface and Subsurface Sediment Results

Location ID			AJF-16	AJF-16	AJF-16
Sample ID			AJF-16SD-D	AJF-16SD-E	AJF-16SD-F
Sample Date	SMS		5/6/2005	5/6/2005	5/6/2005
Depth Interval	SQS	CSL	3-4 ft	4-5 ft	5-5.4 ft
Conventionals					
Total solids (%)	--	--	**83.5**	**82.0**	**81.8**
Total organic carbon (%)	--	--	**0.397**	**0.0854**	**0.156**
Grain Size (%)					
Gravel	--	--	**2.50**	**0.30**	0 U
Sand, Coarse	--	--	**1**	**0.20**	0 U
Sand, Medium	--	--	**20.2**	**15.9**	**16.5**
Sand, Fine	--	--	**72**	**80.5**	**77.8**
Silt	--	--	**2.90**	**2**	**3.80**
Clay	--	--	**1.30**	**1.10**	**1.90**
Geochemistry (std units)					
Liquid Limit	--	--	--	--	--
Plasticity Index	--	--	--	--	--
Plastic Limit	--	--	--	--	--
Metals (mg/kg)					
Arsenic	57	93	**1.26**	**1.07**	**1.33**
Cadmium	5.1	6.7	**0.0203 J**	0.276 U	0.293 U
Chromium	260	270	**22.7**	**11.8**	**7.9**
Copper	390	390	**18.8**	**11.1**	**8.88**
Lead	450	530	**89.9**	**31.9**	**2.22**
Nickel	--	--	**11.5**	**10.6**	**7.12**
Silver	6.1	6.1	**0.0478 J**	**0.0298 J**	**0.037 J**
Zinc	410	960	**53.4**	**25.5**	**19.1**
Mercury	0.41	0.59	**0.00861 J**	**0.0373**	0.0224 U
PCBs (µg/kg)					
Aroclor 1016	--	--	8.86 U	9.12 U	10.2 U
Aroclor 1221	--	--	8.86 U	9.12 U	10.2 U
Aroclor 1232	--	--	8.86 U	9.12 U	10.2 U
Aroclor 1242	--	--	8.86 U	9.12 U	10.2 U
Aroclor 1248	--	--	8.86 U	9.12 U	10.2 U
Aroclor 1254	--	--	8.86 U	9.12 U	10.2 U
Aroclor 1260	--	--	**39.2**	**2.59**	10.2 U
Total PCBs (PSDDA)	130	1000	**39.2**	**2.59**	10.2 U
PCBs (mg/kg-OC)					
Total PCBs (PSDDA)	12	65	**NA**	**NA**	**NA**

Notes:

Per the SMS regulations, TOC normalization of Total PCBs concentrations is not conducted if the TOC results are less than 0.5%. In cases where the TOC< 0.5%, the dry weight Total PCB concentrations were compared to the LAET Marine 1988 (130 mg/kg) and 2LAET Marine 1988 (1,000 mg/kg) criteria.

a	Sample was collected as a field duplicate
*	Result exceeds SMS SQS criteria
#	Result exceeds SMS CSL criteria
Bold	detected results
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample
J+	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample but is anticipated to be biased high
J-	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample but is anticipated to be biased low
U	The analyte was analyzed for, but not detected above the sample reporting limit.
UJ	The analyte was not detected above the sample reporting limit. However, the sample reporting limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The result was rejected due to poor recoveries in the laboratory control sample
mg/kg	milligrams per kilogram
µg/kg	mircograms per kilogram
OC	organic carbon-normalized
SMS	Sediment Management Standards
SQS	Sediment Quality Standards
CSL	Cleanup Screening Levels
LAET	Lowest Apparent Effects Theshold
2LAET	Second Lowest Apparent Effects Theshold
NA	Not applicable

APPENDIX C
SPILL CONTROL PLAN

SPILL CONTROL PLAN

Jorgensen Forge Corporation
8531 East Marginal Way South
Seattle, Washington 98108-4018

Updated February 2006

S P I L L   C O N T R O L   P L A N

TABLE OF CONTENTS

PREFACE	1
INTRODUCTION	2
LAND USE	2
CURRENT OPERATIONS	2
PLANT DESCRIPTION	3
PETROLEUM/WAST STORAGE AREAS	3
CHEMICALS AND PETROLEUM PRODUCTS USED	6
WHEN A SPILL HAPPENS	7
PRECENTION	9

ATTACHMENTS

SPILL KIT	A
WASTE DISPOSAL PROCEDURE	B
SPILL TRAINING	C
SPILL DOCUMENTATION	D
CHEMICAL INVENTORY	E

PREFACE

The following Spill Control Plan was prepared in this form for Jorgensen Forge Corporation NPDES Permit S-8 Schedule of Compliance.

Jorgensen realizes that errors in judgement will be made and spills will happen. It is our policy to minimize exposure by eliminating the use of dangerous and hazardous products, maintaining a safe and orderly work place, monitoring and maintenance of buildings and equipment and through education and training of our employees.

WHAT IS A REPORTABLE SPILL

Report any spill immediately which:

1. Enters storm sewers.

2. Effects soil.
   -Only if spill and effected soil can not be removed within 30 minutes.

Report spill to:

TUKWILA FIRE DEPARTMENT	911
DEPARTMENT OF ECOLOGY	649-7000 or 800/258-5990

For clean up Assistance:

OLYMPUS ENVIRONMENTAL, INC.	(253) 735-6625

SPILL CONTROL PLAN
NPDES S8 SCHEDULE COMPLIANCE

INTRODUCTION

The Jorgensen Forge Facility site, located at 8531 East Marginal Way South, Washington, occupies approximately 20 acres between Slip 4 and Slip 6 on the east bank of the Duwamish Waterway and is situated approximately 4.7 miles south of Elliot bay. The site is located in Section 42 (formerly Section 31), Township 24 North, Range 4 East, Williamette Baseline and Meridian, King County, Washington. The site is bordered on the west by the Duwamish Waterway, on the north by The Boeing Company's (Boeing) Plant #2, on the East Marginal Way and Boeing Field/King County Airport, and on the south by a presently vacant Boeing lot. A 36-inch diameter METRO combined sewer outfall runs along the northern property boundary to its discharge point into the Duwamish Waterway. The facility is actually within the Tukwila city limits, but utilizes a Seattle mailing address.

The Forge Facility consists of one large building which contains the melting, forging, and machining operations, and several other structures which house support processes.

Most of the area outside the building is paved with concrete or asphalt. Unpaved areas are located in the western portion of the site along the Duwamish Waterway in the northwest and southwest portions of the site. Much of the pavement in the north central portion of the site is a remnant of the former Bethlehem Steel Co., which occupied that portion of the site.

LAND USE

The Jorgensen Site is currently zoned for heavy industrial use (M2), the highest intensity use classification by the City of Tukwila Planning Department. The City of Tukwila employs a "cascading" zoning policy which permits future development of land uses rated at or below the current zone (use intensity) destination. This type of zoning policy does not specifically restrict the development of properties zoned as heavy industrial from being developed for residential or other qualifying uses in the future. However, based on the history of industrial use at the site and adjacent properties, the current industrial land use, and the likely continued use of the site for industrial purposes, the future land use at the site is reasonably expected to remain heavily industrial.

CURRENT OPERATIONS

The Jorgensen Forge Corporation is small business owned by a group of employees. The processes and products of this facility has not changed substantially over the past 40 to 50 years. Except for the shifting of forging stock melted entirely in-house to the current status where only 50% of the total material forged is melted on site.

Jorgensen Forge is a custom forge job shop processing ferrous and nonferrous materials as well as aluminum. The major operation of the facility is the forging of purchased ingots and billets into custom shaped forgings. Other operations include heat-treating and machine forgings to our customer's drawings and specifications.

PLANT DESCRIPTIONS

The main facility is one large building. Within the building there are no drains to sewers or outfalls other than restrooms, sinks, toilets and showers. If a spill were to occur within one of our buildings, there is no access to storm lines or metro. All oil storage areas and major oil use areas are bermed or in a concrete pit to contain any spillage.

PETROLEUM/WASTE STORAGE AREAS

OIL HOUSE

Location: A separate structure in the east side of the main building between the machine shop lunchroom and auto/carpenter shop.

The building is bermed any spills are contained within.

Use: Storage of drummed petroleum products. Small quantities are taken from this building and used in equipment throughout the facility.

USED OIL STORAGE/SOLUBLE OIL TANK

Location: Immediately south at the north bank of fuel oil tanks. North of aluminum heat treat. Covered bermed holding tanks.

Use: Used machine shop soluble oil is transferred to a poly tank for recycling.

Used machine oil is deposited in the used oil tank for collection for disposal.

PROPANE STORAGE TANK

Locations: In the southeast corner, south of front parking lot. Pressured above ground tanks.

Use: Backup fuel for aluminum heat treat and fuel for mobile equipment.

OFFICE OIL USE

Location: Approximate 600-gallon tank underground at west end of main office building.

Use: Diesel fuel for office boiler (heat).

This tank has a tank monitor installed. A site gauge visually monitors the tank. Changes in tank levels during periods of non-use indicate leakage.

HOLLOWBORE CUTTING OIL HOLDING TANK

Located: Outside north wall of main plant under the driveway.

Steel tank in a concrete vault with a concrete lid.

Use: Oil from the Hollowbore will be pumped into the tank. This tank is a reservoir for the Hollowbore system.

WASTE OIL STORAGE/DIESEL STORAGE

Location: Northwest portion of the plant in a bermed building.

Use:
(1) Diesel storage for mobile equipment
(2) Waste oil collection point for identification/consolidation of petroleum waste stream.

FORMER ACID HOUSE/ACID PIT

Location: West portion of the plant south of the bag house.

Use: Storage of used hydraulic oil contained in sealed, mobile totes.

MAJOR PETROLEUM CONTAINING EQUPMENT

Presses – 550 TON/1250 TON / 2500 TON / 5000 TON

Location: Southeast portion of the main facility.

Each of these presses are electric hydraulic operated. The pump rooms are bermed or in a concrete pit and the presses are all mounted in concrete pits.

Any spilled oil will be contained in the pit or pump rooms.

HOLLOW BORE LATHES

Location: North end of main facility.

Each of these machines has a concrete pit containing pumps and oil handling equipment.

Any major spill will be contained within the pit.

OTHER EQUIPMENT

All equipment, mobile and stationary contains some petroleum products.

Spills will be appropriately contained and picked up as they occur.

LIST OF CHEMICALS AND PETROLEUM PRODUCTS

- A complete list of chemical and petroleum products used or stored in our facility is listed in Appendix G.

- Each piece of stationary equipment and storage tank has a copy of the MSDS or a list of the only approved products to be added to the unit.

- All MSDS are posted in three locations within our plant.

    1. Personnel

    2. Machine shop office

    3. Melt shop office

WHEN A SPILL HAPPENS

1. IDENTIFY

2. NOTIFY

3. CONTAIN

4. SALVAGE FREE LIQUID/PRODUCT

5. PICKUP

6. STORE

7. DISPOSE

INDENTIFY
Make certain you know what is spilled.

If you are unfamiliar with material, check the MSDS.

NOTIFY
Notify your supervisor.

If the spill is reportable call:

(1) 911 - Tukwila Fire Department
(2) 649-7000 - Department of Ecology

Supervision to notify:

(1) Vice President Adminstration (or)
(2) Manager Operations (or)
(3) Manager Maintenance and Engineering

Supervision will:

- Inspect spill area
- Make certain cleanup/containment has started.
- Make certain reportable spills have been reported.
- Start recording information for spill documentation (see appendix B).

If professional cleanup is required, one of above managers will contact
Olympus Environmental, Inc. – (253) 735-6625

CONTAIN
Most important – make sure spilled material does not reach storm sewers, Duwamish river or unpaved soil.

Use absorbent “kitty litter,” cloth recovery logs, oil absorbent sheets, or if you need to dirt.

Absorbent available in bay of warehouse.

Mix absorbent to assure there is no free liquid.

SALVAGE FREE LIQUID/PRODUCT

PICKUP
Pick up all contaminated material and all absorbent.

Place in approved containers (drums are available at oil storage and waste oil storage).

See Appendix B – Waste Disposal Procedure.

STORE
Return lid to container

Mark content, date and your clock number on container. (See Appendix B – Waste Disposal Procedure).

DISPOSE
Management will disposal of material in approved manner.

PREVENTION

Spills will happen. The cleanup of a spill is the utmost importance and must be handled immediately. However, prevention is far more important in the long run. The best spill is no spill.

The following are measures taken by Jorgensen Forge to assure that no substances are released.

- All oil storage areas are diked/bermed to contain spills.
- Petroleum products and other supplies are stored in central warehouses / locations. They are released from these controlled locations as needed. This decrease bulk inventory placed throughout the facility.
- Handling of containers is kept to a minimum.
- Storage areas are kept clean as well as regular sweeping of all open areas. Particularly areas directly around storm drains.
- Catch basins and drains are monitored and cleaned to remove solids and debris.
- Buildings and equipment is monitored and maintained.
- Container, tanks, valves and piping are monitored for leaks.

DRAINAGE MAP – (see Appendix E)

- The majority of 003 drainage area is not serviced by storm drains. Water will evaporate or be absorbed into the ground. During our Fall and Winter seasons, water will continually stand in paved areas.
- Equipment is washed only on pit with oil/water separator.

Paved areas are monitored to repair cracks and holes.

ATTACHMENT A

<u>SPILL KIT</u>

Container with lid painted (color) with 'SPILL CLEANUP KIT' labeled on the outside. Each kit is to include as a minimum:

- Taped to the lid of the spill kit will be the location of the MSDS, and the spill cleanup basis instructions. Also shown will be the emergency response numbers.
- 8 to 12 foot of absorbent log. Used to contain free liquid spills.
- Absorbent pads.
- Coveralls.
- Respirators.
- Map

<u>OPTIONAL ITEMS</u>

- Air pump and hose to pickup free liquids.

ATTACHMENT B

Every employee must be informed that the proper disposal of liquid wastes is extremely important both for compliance with State and Federal laws, and to meet the requirements of disposal contractors that recycle and process our wastes. Liquid wastes include petroleum motor oils, acids, caustics, hydraulic oils, synthetic oils, soluble oils, thinners, solvents, etc. These procedures are established to insure that liquid wastes are correctly contained to guard against spillage and contamination of surface water, properly labeled so that we and the disposal companies know exactly what the liquid is, and most importantly that dissimilar liquid wastes are never put in the same waste drums or tanks. When the identification of a liquid waste is unknown because we have failed to label it, the waste must always be sampled and tested before disposal, which takes additional time and can cost up to five hundred dollars ($500) per test. When a waste is improperly disposed of in the same tanks with dissimilar item, the disposal charges change from free or a nominal forty cents (4.40) per gallon to two dollars twenty five cents ($2.25) per gallon if we allow water to get into the dissimilar waste mix, the disposal charge is three dollars twenty five cents ($3.25) per gallon!

To ensure legal compliance and quick, economical disposal the following procedures are established:

1) The waste oil tank at the front of the plant next to the powerhouse is for disposal of petroleum based oils ONLY, which includes motor oils and petroleum hydraulic oils. Under no circumstances should soluble oil, thinner, or synthetic oil (such as quintlubric or phosphate ester) be placed in this tank. This waste tank will be kept locked so that wrong waste products cannot be mistakenly put in. The key will be kept in the maintenance office (only) with a logbook of substances put in this tank. Personnel from other departments will request their supervisor to contact maintenance supervision to dispose of petroleum oils in this tank.
2) Other liquid wastes will be taken to the covered drum containment area at the back of the plant behind the bag house. Any individual who has waste products (oils, solvent, etc.) must first identify what exactly the product is. If he/she is not sure of the identity, then that product must be placed in a specified, designated area for identification. The designated area for unidentified waste products will be in one section of the confinement area and will be clearly marked with an appropriate sign. The maintenance department has labels to place on all containers to mark the type of product, the date, signature of the person who placed it there, and where the product came from. He/she should contact their immediate supervisor for assistance in identification and labeling. If the supervisor needs assistance in identification, he should contact the maintenance department. The maintenance department will maintain a record of all petroleum-based products purchased.

3) Single buckets of used oil or solvent that are collected by an employee during a shift must be correctly identified and placed in the appropriate storage facility at the end of the shift. Do not leave unlabeled buckets of oil or solvent in work areas.
4) After proper identification has been made, if the product is not a petroleum based product, it will be poured into a drum in the waste product storage area that is clearly marked for that particular product and sealed properly.
5) All machine oil reservoirs, hydraulic tanks, etc. should be clearly marked as to what the proper product used is, so as to aid in the proper identification and to prevent the wrong product being added.
6) Drums of waste product should only be filled to within 6”-8” from the top to avoid swelling and spilling of the product.
7) If any waste product is inadvertently spills, it must be cleaned up immediately by the person who spilled it. Oil spills should be cleaned up with sufficient amount of oil dry so as to achieve no free liquid status, at lease a 3:1 ratio, and placed in the trash compactor. In the event of a major oil spill, the excess oil should be pumped into containers and the balance be absorbed with oil dry.
8) Waste oil product should not be stored in drums that originally had a different product in them. As drums are emptied, they should be clearly marked and placed in the waste product storage area for future use of the <u>same</u> product. This may require the purchase of some additional clean drums to mark for certain products that are presently being purchased in containers other than drums. All oils, solvents, etc. should be purchased in drums, if possible, so that eventually we will have a sufficient amount of drums of each product to establish an efficient rotation of drums as they are emptied and refilled with appropriate waste.
9) This policy requires the cooperation and involvement of every employee to control and police disposal. Don’t wait for other person; the other person is you. Each superintendent and all assistant superintendents will be responsible for proper disposal within their departments.

ATTACHMENT C

SPILL TRAINING

All plant training is coordinated through Jorgensen's Manager of Industrial Relations. Records are kept in Human Relations of all training.

Training occurs when an employee is newly hired and in conjunction with quarterly Safety / Tailgate meetings.

Jorgensen uses as a basis for its employee training videotapes and prepared material from Environmental Education Associations and vendor furnished videos, literature an in-house training. Every employee is instructed in the basis. The Supervisors and key personnel have more extensive classroom training.

<u>TOPICS</u>

1) Safety – current loss time / accident
2) Film on MSDS & hazardous material safety
3) Marking & disposing of waste
4) Manifesting of waste / cost of disposal
5) Spill clean up & notification

ATTACHMENT D

SPILL DOCUMENTATION

____

THIS FORMAT IS TO BE USED TO RECORD INFORMATION FOR EACH SPILL OCCURRENCE.

DATE _____________ TIME _____________

LOCATION OF SPILL____

____

HOW WAS THE SPILL CONTAINED? ____

____

____

____

____

____

DID THE SPILL REACH THE STORM DRAINS? UNPAVED GROUND? NOTIFY ECOLOGY? ____

____

____

CLEAN UP PERSONNEL ____

CHECKED BY – SIGN & DATE ____

____

HOW WAS THE SPILL WASTE MATERIAL DISPOSED? ______________________________

____

____

MANAGEMENT REVIEW ____

____

ATTACHMENT E

CHEMICAL INVENTORY

Chemicals are listed alphabetically by trade name in the following subject categories:

Adhesives / Sealants	Page 1
Oils / Solvents / Lubricants	Page 2
Paints / Coatings	Page 4
Lab Chemicals	Page 6
General	Page 7
Steel / Aluminum	Page 10
Refractories / Insulation	Page 11
Carbides / Abrasives	Page 13
Gases	Page 13
Melt Furnace / Mold Items	Page 14

Departments:

MC = Machine Shop
FG = Forge Shop
MN = Maintenance
ME = Melt Shop
L = Lab
0 = Office

ADHESIVES/SEALANTS

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	Mc	Fg	Mn	Me	L	O
A-178-B	Methyl Ethyl Ketone	BF Goodrich						x
Adhesive Sealant 242	Dymethacrylates	Loctite						x
Adhesive 520	Petroleum Naptha	Armstrong Industries						x
Aqua Seal	Polybutene	Kearney National Co						x
Aviation Form A Gasket #3	Modified Natural Resins	Permatex						x
Chico A Sealing Compound	Gypsum	Crouse-Hinds						x
Clear Silicone Sealant	Dimethylsiloxanes	Permatex						x
Dow 748 Noncorrosive Sealant	Polysiloxane	Dow Corning						x
Epoweld 16640 Part A	Silicon Dioxide	Hardman						x
Epoweld 16309 Part B	Silicon Dioxide	Hardman						x
Fast Cure Epoxy 45	Epoxy Resin	Loctite						x
Form A Gasket #1	Kaolin	Permatex						x
Form A Gasket #1 (A)	Kaolin	Permatex						x
Form A Gasket #1 (F)	Kaolin	Permatex						x
Form A Gasket #2	Clay	Permatex						x
FP Tray Polymer #64 Blue	Acrylic Polymers	Flexbar Machine Corp						x
Gasket Eliminator #515	Polyurethane	Loctite						x
Handy Gasket	Polyurethane Methacrylate	Permatex						x
Heavy Duty Adhesive	Aliphatic Petroleum Distallate	Crown Industrial						x
High Tack Adhesive	Acetone	Permatex						x
High Tack Spray-A-Gasket	Acetone	Permatex						x
High Tack Super Adhesive	Acetone	Permatex						x
Hilti Firestop Sealant	Dimethyl Formamide	Hilti						x
Indian Head Gasket Shellac	Modified Natural Resins	Permatex						x
Locks Nuts Adhesive	Polyglycol Dymethacrylates	Permatex						x
Locks Studs Adhesive	Polyglycol Dymethacrylates	Permatex						x
M-Bond 200 Adhesive	Hydroquinone	Measurements Group						x
M-Bond 200 Catalyst B	2-Propanol	Measurements Group						x
Motac 104F	Petroleum Oil	Motac Co						x
Phillyclad #1775	Epoxy Resin	Philadelphia Resin Co						x
Phillyclad #620	Polyamino Amide	Philadelphia Resin Co						x
Phillyseal Hardener	Epoxy Resin	Philadelphia Resin Co						x
Phillyseal Resin	Epoxy Resin	Philadelphia Resin Co						x
Pipe Joint Compound	Kaolin	Permatex						x
Plastic Steel	Epoxy Resin	Devon						x
Prism 454	Cyanoacrylate	Loctite						x
PST Hi-Temp Pipe Sealant	Bisphenol A Fumarate Resin	Loctite						
Quick Set Adhesive	Cyanoacrylate	Loctite						x
R1V157 Sealant	Silicone	G E						x
Removable Threadlocker 242	Dimethacrylates	Loctite						x
Retaining Compound #609	Dimethacrylates	Loctite						x
Safety-Walk Edge Sealer	Thermoplastic Synthetic Resin	3M						
Safety-Walk Primer	Toluene	3M						
Safety-Walk Sealant	Butyl Methacrylate	3M						x
Sealant 1372 Hi-Temp	Isopropyl Alcohol	Permatex						x
Seals Porosities Seal	Dimethacrylates	Loctite						x

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	Mc	Fg	Mn	Me	L	O
Silicone Form A Gasket Blue	Dimethylsiloxane	Permatex						x
Superflex Ultra-Blue Silicone	Dimethylsiloxane	Loctite						
Super Glue	Ethyl Cyanoacrylate	Permatex						x
Super Weatherstrip	Isopropyl Alcohol	Permatex						x
Torque Seal F-900	Methanol	Organic Products						x
Valve Lub & Sealant	Silica, Amorphous	Dow Corning						x
Yellow 77	Mineral Oil	Ideal Industries						x
Zep Fast Gasket Blue	Methyltriacetoxysilane	Zep Manufacturing						x
Zep Fast Gasket Red	Crystalline Silica-Quartz	Zep Manufacturing						x

OILS/SOLVENTS/LUBRICANTS

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	DEPARTMENTS					
			Mc	Fg	Mn	Me	L	O
91 Sprayon Cleaners	Propane	91 Sprayon Products						
A-9 Alum Cut Fluid	Mineral Oil	Relton Corp	x	x				
Acetone, Synthetic	Acetone	Dow Chemical	x				x	
Activator (Aerosol)	Trichloroethane	Permatex Ind		x	x			
Accu-Lube	Lubricant	Lub Systems	x					
Air Compressor Oil ISO 100	Turbine Oil R&O	Whitmore Mfg	x		x			
Anderol 401-D Oil	Ester Oil	Nuodex Oil			x			
Anti-Seize Lubricant	Mineral Oil	Permatex	x		x			
Anti-Seize (Aerosol)	Methylene Chloride	Permatex	x		x			
ATF Dexron	Petroleum Base Oil	Chevron	x					
AW Machine Oil #10	Hydrocarbons	Chevron	x	x	x	x		
AW Hydraulic Oil #32	Hydrocarbons	Chevron	x		x			
AW Hydraulic Oil #46	Hydrocarbons	Chevron	x		x			
AW Hydraulic Oil #68	Hydrocarbons	Chevron	x		x			
AW Machine Oil #220	Hydrocarbons	Chevron	x		x			
Band-ade Cleaner	Hydrodys	American Saw	x	x				
Band-ade	Hydroyds	American Saw	x	x				
Bolt Off Plus Aerosol	Trichloroethane	Certified Labs				x		
Braycote 103	None established	Castrol	x	x	x	x		
Braycote 194	Aliphatic Petroleum Distillate	Castron	x	x	x	x		
Canopus Oil #32	Mineral Oil	Texaco	x		x			
Castrol Forge 71-802E	Solvent Treated Oil	Castrol	x		x			
Castrol Forge 8516	Graphite	Castrol	x		x			
Castrol Forge 8618	Solvent Treated Oil	Castrol	x		x			
Castrol HYSPIN 46	Mineral Oil	Castrol	x		x			
Castrol W452	None established	Castrol	x		x			
CCX-77	Hydrocarbons	Certified Labs			x			
Certi-Draw	Lubricant	Certified Labs	x		x			
Chlorothene SM Solvent	Trichloroethane	Dow Chemical	x		x			
Cosmolubric HF-122	Ester Oil	E F Houghton	x		x			
Cutting Oil	Petro Distillate	Sunnen	x		x			
D-106	Isopropyl Alcohol	Sherwin	x					
Delo #300 Motor Oil	Hydrocarbons	Chevron			x			
Delo #400 Motor Oil	Hydrocarbons	Chevron	x		x			
Diala® Oil AX	Hydrocarbons	Shell	x		x			
Diesel Fuel #1	Paraffins	Chevron			x		x	
Diesel Fuel #2	Paraffins	Chevron		x	x			
Dry Film Lubricant	Trichloroethane	Crown Ind	x		x			
Dry Lube	Heptane	Grainger	x		x			
Dubl-Chek Remover DR60	Petroleum	Sherwin Inc						
Duracool 6449 Liquid	Napthenic Dist	Nalco	x		x			
Duralith Grease EP2	Hydrocarbons	Chevron	x	x	x	x		
DV-Plus (Aerosol)	Trichloroethane	Certified Labs			x			
Dylek 200 (Aerosol)	Trichloroethane	Certified Labs			x			
Echogel	Dipropylene	Echo Ultrasonic	x					
Enerpac HF/HOF Oil	Mineral Oil	Filmite Oil Co	x	x	x	x		
Enerpac HF-100 Oil	Paraffins	Applied Power	x	x	x	x		

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	Mc	Fg	Mn	Me	L	O
Extreme Pressure Lube	Petrol Grease	Chicago Mfg			x			
Fluid 200	Non established	Dow Corning	x		x			
Fyrquel 150	Triphenyl Phos	Stauffer Chem			x	x		
Gas Engine Oil HDAX SAE 30	Hydrocarbons	Chevron			x			
Gas Engine Oil SAE 30	Varied	Chevron	x		x			
Green World-100	Viscous Resins & Salts	Lube USA	x	x				
GST Oil #32	Hydrocarbons	Chevron	x		x			
GST Oil #46	Hydrocarbons	Chevron	x		x			
GST Oil #68	Hydrocarbons	Chevron	x		x			
GST Oil #100	Hydrocarbons	Chevron	x		x			
Handy Oil #15	Paraffins	Chevron	x		x			
HD-600	Polyalkylene Glycol	DoAll	x	x				
Heating Fuel #2	Paraffins	Chevron						x
Heavy Duty Cleaner	Petrol Naptha	Chevron			x			
Heavy Duty Open Gear Grease	Petrol Grease	Crown Ind	x	x	x			
Hilti Spray Lube	Kerosene	Hilti Ind			x	x		
Honing Oil	Petroleum Distillate	Sunnen						
Houghto-Quench K	Mineral Oils	Houghton	x	x	x			
Industrial Grease Medium	Hydrocarbons	Chevron			x			
ISC-108	Liquid Alkali	J Hall Co	x		x			
Isopropyl #99	Isopropanol	Union Chemical			x			
Jet Lube SS-30	Mineral Oil	Jet Lube Inc	x		x			
Kerosene	Paraffins	Chevron	x		x			
Kling-Fast #85 Lube	Petroleum	Brooks Technology	x		x			
Kool-ALL 948	Napthenic Oil	DoALL	x					
Lacquer Thinner 610	Solvents	Farwest Paint			x			
LPS Electro Contact Cleaner	Fluorocarbon	Holt Lloyd Co			x			
LPS #1 Greaseless Lube	Hydrocarbons	Holt Lloyd Co			x			
LPS #2 Gen Purpose Lube	Hydrocarbons	Holt Lloyd Co			x			
LPS #3 Rust Inhibitor	Hydrocarbons	Holt Lloyd Co			x			
LPS Heavy Duty Silicone Lube	Hydrocarbons	Holt Lloyd Co			x			
LPS Instant Super Degreaser	Hydrocarbons	Holt Lloyd Co			x			
Liquid Moly	Hydrocarbons	Holt Lloyd Co	x					
Lubra-Lift	Petrol Lube	Certified Labs	x		x			
Lubriplate 900	Hydrocarbons	Fiske Bros	x		x			
M-Line RSK-1 Rosin Solvent	Isopropyl Alcohol/Toluene	Measurements Group			x			
Mar-Temp 2525	Mineral Oil	E F Houghton		x	x			
Marine Engine Oil	Heavy Paraffinic Distillates	Chevron						
Metal Working Fluid #502	Hydrocarbons	Chevron	x		x			
Metal Working Fluid #503	Hydrocarbons	Chevron	x		x			
Milhone 90	Mineral Oil	Cincinnati Milacron	x					
Mineral Spirits 66	Hydrocarbons	Shultz	x	x	x	x		
Mobil Nyvac FR 200 Fluid	Ethylene Glycol	Mobil Oil Corp	x		x			
Molub-Alloy Chain Oil	Petroleum Hydrocarbons	Tribol	x		x			
Molub-Alloy Grease	Petroleum Distillates	Castrol	x		x			
Molub Oil 10 & 22	Hydrocarbons	Tribol	x		x			
Moly Hi-Temp	Hydrocarbons	Texas Refine		x	x			
Neutral Oil 100R	Mineral Oil	Chevron	x		x			
Neutral Oil 240R	Mineral Oil	Chevron	x		x			
NL Gear Compound #68	Hydrocarbons	Chevron			x			
NL Gear Compound #320	Hydrocarbons	Chevron			x			
Pale Oil #20	Hydrocarbons	Chevron	x		x			

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	Mc	Fg	Mn	Me	L	O
Pale Oil #68	Hydrocarbons	Chevron	x		x			
Penetrating Oil	Hydrocarbons	Permatex	x		x			
Penetrating Oil (Aerosol)	Hydrocarbons	Permatex	x		x			
Premium Vacuum Pump Oil	Hi Purity Paraffinic Mineral Oil	Welch Vacuum Technology	x	x	x	x		
Pyrosafe #150	Tri-Aryl Phosphate	Chemron Corp		x	x			
Pyrosafe #220	Tri-Aryl Phosphate	Chemron Corp		x	x			
Quench-K	Mineral Oil	E F Houghton		x	x			
Rapid Tap	Trichloroethane	Relton Corp	x		x			
Regular Gasoline	Paraffins	Chevron	x	x	x	x		x
Rigid Dark Thread Oil	Mineral Oil	Ridge Tool	x		x			
Rigid Nuclear Thread Oil	Mineral Oil	Ridge Tool	x		x			
Saf-Sol 20/20	Trichloroethane	Certified Labs			x			
Safety Kleen 105 Solvent-MS	Mineral Spirits	Safety Kleen	x	x	x	x		
Safety Kleen Premium Solvent	Petroleum Hydrocarbon	Safety Kleen	x	x	x	x		
Safety Solvent	Trichloroethane	Crown Ind			x			
Safti Flow HD LS Anti-Freeze	Ethelene Glycol	Chemtrec			x			
Seat Cutting Oil	Petroleum Distillates	Sunnen						
Soil-Ster	Naptha	Certified Labs			x			
Soluble Oil	Amine Borate	Buehler	x		x			
Soluble Oil	Triethanolamine	Buehler						
Soluble Oil	Hydrocarbons	Chevron	x		x			
Solvo-Rust Super Oil	Hydrocarbons	Permatex	x		x			
Special Thinner	Xylol	Federal International Chemical			x			
Spr-50	Potassium Hydrox	Certified Labs			x			
Spray Lubricant	Petroleum Distillates	Hilti	x		x			
Staize Clene	Xylene	Federal Int			x			
Steam Distilled Turpentine	Terpenes	Parks Corp			x			
Super Solvent #2	Butoxyethanol	Flagship Ind	x		x			
Taurak Grease 250	Industrial Greases	Texaco			x			
Tectyl 506EH-WD	Petroleum Distillates	Valvoline						
Therma-Lube	Petrol Lube	Certified Labs			x			
Thermo Quench Oil	Mineral Oil	Park Chemical	x					
Thinner #325	Paraffins	Chevron	x	x	x			
Toluene	Toluene	Ashland Chemical Co			x			
Tractor Hydraulic Fluid	Hydrocarbons	Chevron			x			
Transultex A	Petrol Oil	Texaco	x		x			
Transultex D	Mineral Oil	Texaco	x		x			
Transultex E	Mineral Oil	Texaco	x		x			
Trichlorethylene	Trichloroethylene	PPG Ind	x		x			
Tulkut Base	Mineral Oil	Lyondell Co	x					
Ultra Duty Grease #2	Hydrocarbons	Chevron			x			
Unirex EP 2	Petroleum Grease	Imperial Oil			x			
Universal Gear Lube	Hydrocarbons	Chevron			x			
Vari-Purpose Gear Oil	Paraffins	Texas Refinery			x			
Vistac Oil #68X	Hydrocarbons	Chevron	x		x			
Vistac Oil #100X	Hydrocarbons	Chevron	x		x			
Vistac Oil #220X	Hydrocarbons	Chevron	x		x			
WD-40 Bulk Liquid	Petro Distallates	WD-40 Co	x		x			
Withrow 126EDM Fluid	Solvent Treated Oil	Castrol Inc	x		x			
Zep 45	Trichloroethylene	Zep			x			
Zep Battery Care	Ethylene Glycol	Zep			x			
Zep Brake Wash	Hexane Gas	Zep			x			

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	Mc	Fg	Mn	Me	L	O
Zep Dry Moly NC	Isopropyl Alcohol	Zep						x
Zep Ironclad	Petroleum Spirits	Zep						x

PAINTS/COATINGS

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	DEPARTMENTS Mc	Fg	Mn	Me	L	O
Aerosol Red Insula	Acetone	Sherwin Williams					x	
Black Traffic Line Paint	Hydrocarbons	Farwest Paint					x	
Canary Yellow Enamel	Hydrocarbons	Farwest Paint			x	x	x	x
Condursal 0090	Boron Oxides	Erich Nussle				x		
Condursal 710	Silicates	Erich Nussle				x		
Condursal 710 Thinner	Blend	Ashland Chemical Co				x		
Deep Base Quick Set Enamel	Hydrocarbons	Farwest Paint					x	
Delphinium Quick Dry Enamel	Hydrocarbons	Farwest Paint					x	
Dolphon Motor Varnish	Diallyl Phthalate	John Dolph Co					x	
Eco-Vapor Cote Coating	Mineral Spirits Solvent	Mon-Eco Industries						
Fast Dry Epoxy Primer	Cycol 63	Farwest Paint					x	
Flat Black #712	Toluene	Farwest Paint					x	
Floor & Trim Varnish #660	Mineral Spirits	Farwest Paint					x	
Gray Fast-Dri Epoxy Primer A	Aromatic Hydrocarbon	Farwest Paint					x	
Gray Rynolite Primer	Petroleum Solvent	Farwest Paint					x	
Hard Hat Fluorescent Topcoats	Hexane	Rust-Oleum			x	x	x	x
Hi-Heat Silicone Aluminum	Aromatic Hydrocarbon	Farwest Paint			x	x	x	x
Krylon Enamel (Aerosol)	Acetone	Bordon Inc			x	x	x	x
Machinery Gray X4364	Hydrocarbons	Farwest Paint					x	
Mandarin Red Quick Dry	Hydrocarbons	Farwest Paint					x	
MF-30BG Blue-Gray ASA-24	Isobutane	Electrical Insulation Supply					x	
MF-30DG Dark Gray	Isobutane	Electrical Insulation Supply					x	
MF-30B Gloss Black	Isobutane	Electrical Insulation Supply					x	
MF-30G Green	Isobutane	Electrical Insulation Supply					x	
MF-30MG Medium Gray	Isobutane	Electrical Insulation Supply					x	
MF-30R Red	Isobutane	Electrical Insulation Supply					x	
Mystic White #920B	Water	Farwest Paint					x	
Nissen Metal Marker Black	Xylene	John Nissen Co			x	x	x	x
Nissen Metal Marker White	Titanium Dioxide	John Nissen Co			x	x	x	x
Nut Shell	Nut Shells	Hammon Products					x	
Orange Quick Dry #261	Aliphatic Hydrocarbons	Farwest Paint					x	
Paint & Decal Remover	Methylene Chloride	Specialty Division					x	
Paint Thinner 602	Mineral Spirits	Farwest Paint					x	
Red Lead Primer	Mineral Spirits	Farwest Paint			x	x	x	x
Red Rust Resistor	Aliphatic Hydrocarbons	Farwest Paint					x	
Skythane Activator (B)	Xylene	Farwest Paint					x	
Skythane A White Deep Base	Ethyl Ethoxy Propionate	Farwest Paint					x	
Sparvar Bright Silver	Acetone	Borden Inc			x	x	x	x
Sparvar Fluorescent Spray Paint	Hexane	Borden Inc			x	x	x	x
Sparvar High Heat Spray Paint	Acetone	Borden Inc			x	x	x	x
Sparvar Interior/Exterior	Naptha	Borden Inc			x	x	x	x
Sparvar Spray Primer	Acetone	Borden Inc			x	x	x	x
Sparvar S-125 Aluminum	Acetone	Borden Inc			x	x	x	x
Sparvar S-500 Clear Acrylic	Heptane	Borden Inc			x	x	x	x
Sparvar Spray Paint	Acetone	Borden Inc			x	x	x	x
Sparvar Metallic Spray Paint	Acetone	Borden Inc			x	x	x	x
Synthetic Thinner 605	Xylene, Xylol	Farwest Paint					x	
Tectyl 502C	Aliphatic Petroleum	Ashland Petroleum			x			

TRADE NAME	**PRIMARY CHEMICAL**	**MANUFACTURER**	**Mc**	**Fg**	**Mn**	**Me**	**L**	**O**
Tectyl 506EH-WD	Petro Distillates	Valvoline				x		
Tectyl 846	Aliphatic Petroleum	Ashland Chemical				x		
Tung Oil	Tung Oil	Alnor Oil Co						x
Ultra Base Quickset Enamel	Aliphatic Hydrocarbons	Farwest Paint						x
VCI-368	Mineral Spirits	Cortec Corp				x		
Vinyl Strippable Coat	Methyl Ethyl Ketone	Crown Ind						x
White Plastic Primer	Aromatic Hydrocarbons	Farwest Paint						x
White Semi Gloss #920	Acetate	Farwest Paint						x
White Semi Gloss Enamel	Mineral Spirits	Farwest Paint						x
White Skythane (A)	Aromatic Esters	Farwest Paint						x
White Quickset Enamel	Hydrocarbons	Farwest Paint						x
White Traffic Line Paint	Hydrocarbons	Farwest Paint						x
Yellow Traffic Line Paint	Hydrocarbons	Farwest Paint						x
Zinc Chromate Primer #1002	Hydrocarbons	Farwest Paint						x

LAB CHEMICALS

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	DEPARTMENTS Mc	Fg	Mn	Me	L	O
Acetone	Acetone	J T Baker Chemical					x	
Acetone	Acetone	Fisher Scientific					x	
Acetone	Acetone	Great Western Chemical					x	
Acid Etch Wash Primer	Alcohol	Farwest Paint					x	
Activator #1 Solution	Sulfuric Acid	Selectrons Ltd					x	
Activator Acid #2	Hydrochloric Acid	Selectrons Ltd					x	
Activator #3	Unknown	Selectrons Ltd					x	
Alcohol, Anhydros	Ethyl Alcohols	J T Baker Inc					x	
Algon-10	Ethoxylated Alcohols	Certified Labs					x	
Ammonium Hydroxide	Ammonium Hydroxide	J T Baker Inc					x	
Ammonium Nitrate	Ammonium Nitrate	J T Baker Inc					x	
Ammonium Persulfate	Ammonium Persulfate	J T Baker Inc					x	
Ammonium Phosphate, Dibasic	Ammonium Phospate	J T Baker Inc					x	
Ammonium Sulfate	Ammonium Sulfate	J T Baker Inc					x	
Anhydrone Mg Perchlorate	Magnesium Perchloric Acid	Alpha Resources					x	
APA50-1	Isopropanol	CH2O					x	x
APA50-2	Unknown	CH2O					x	
AR 168 AlphaSolve	Sodium Hydroxide	Alpha Resources					x	
ATA10-2	Sulfuric Acid	CH2O					x	
Benzalkonium Chloride	Benzalkonium Chloride	Alrich Chem					x	
Brilliant Green	Brilliant Green	J T Baker Inc					x	
Bruning PD Activator	Ethylene Glycol	AM Bruning					x	
Calcium	Calcium Chloride	Baker Chemical					x	
Calibration Samples	C/N/H/O2/S	Leco					x	
Catalyst 9	Tetraethylene Pentamine	Emerson & Cuming Inc					x	
Chromium Nitrate	Chromium Nitrate	J T Baker Inc					x	
Chromium Oxide	Chromium Oxide	Baker Chemical					x	
Circlesafe 820-A	Iron Oxide	Circle Systems					x	
Circlesafe 850-A	Iron Oxide	Circle Systems					x	
Cupric Sulfate	Cupric Sulfate	J T Baker					x	
Dolph Inhibitor Solution	P-Benzoquinone	John C Dolph Company					x	
Drierite, Anhydrite	Inorganic Salt	E M Science					x	
Dubl-Chek DP40 Dye Penetrant	Hydrocarbon Propellant	Sherwin Inc					x	
Dust-Off	Freon 12	Falcon Safety					x	
Eriochrome Black T	Eriochrome Black T	J T Baker					x	
Ethanedioic Acid	Oxalic Acid	E M Science					x	
Ethanoic Acid	Acetic Acid	E M Science					x	
Ferric Chloride, 6-Hydrate	Ferric Chloride	J T Baker					x	
Ferric Chloride, Hexahydrate	Ferric Chloride, Hexahydrate	Fisher Scientific					x	
Fiber Anti-Splash	Kraft Paper Tubing	Leco Corp					x	
Fluorspar	Calcium Fluoride	Oglebay Norton					x	
Glycerin	Anhydrous Glycerol	J T Baker Inc					x	
HCl Acid, Technical 20 Baume’	HCl Acid, Technical 20 Baume’	Van Waters & Rogers					x	
Hydrofluoric Acid	Hydrogen Fluoride	J T Baker Chemical					x	
Hydrogen Peroxide	Hydrogen Peroxide	Eastman Kodak					x	
Hydrofluoric Acid	Hydrofluoric Acid	J T Baker Inc					x	
Iron (III) Chloride Hexahydrate	Ferric Chloride Hexahydrate	Fisher Scientific					x	

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	Mc	Fg	Mn	Me	L	O
Isopropyl Alcohol	Isopropyl Alcohol	Chemco Water Technology Inc						x
Isopropyl Alcohol	Isopropanol	Shell						x
Mercury Absorbent	Granular Lead	Science Mat'l						x
Mogul Alkalinity E	Sulfuric Acid	Mogul						x
Mogul Hardness I	Butyl Cellosolve	Mogul						x
Mogul Phosphate PB	Sulfamic Acid	Mogul						x
Mogul Sulfite Q	Unknown	Mogul						x
Muriatic Acid	Hydrochloric Acid	EM Science						x
Muriatic Acid	Hydrochloric Acid	Occidental Chemical						x
N-Methylpyrrolidone CG	N-Methylpyrrolidone	Van Waters & Rogers						x
Nashua #322	Unknown	Nashua Corporation						x
Nickel SB Hi Level SPS 5642	Nickel Sulfate	Selectrons Ltd						x
Nitric Acid	Nitric Acid	J T Baker Chemical						x
O-Phosporic Acid Solid	Inorganic Acid	VWR Scientific						x
P-1	Sodium Chloride	CH2O						x
P-2	Hydrochloric Acid	CH2O						x
P10-3	Unknown	CH2O						x
Phenolphthalein	Phenolphthalein	J T Baker Inc						x
Picric Acid	Picric Acid	J T Baker Inc						x
Potassium Chloride	Potassium Chloride	J T Baker Inc						x
Potassium Ferricyanide	Potassium Ferricyanide	J T Baker Inc						x
Potassium Iodide	Potassium Iodide	J T Baker Inc						x
Potassium Nitrate	Potassium Nitrate	J T Baker Inc						x
Potassium Permanganate	Potassium Permanganate	J T Baker Inc						x
Potassium Thiocyanate	Potassium Thiocyanate	J T Baker Inc						x
Rynolite Metal Etch	Phosphoric Acid	Farwest Paint						x
SA-442	Hydrochloric Acid	Fisher Scientific						x
SC-191	Nitric Acid	Fisher Scientific						x
SC-192	Potassium Dichromate	Fisher Scientific						x
SC5-1	Hydrogen Peroxide	CH2O						x
SC5-1	Potassium Chromate	CH2O						x
SC5-3	Unknown	CH2O						x
SI-124	Nitric Acid	Fisher Scientific						x
SS5-1	Sulfamic Acid	CH2O						x
Silver Nitrate	Silver Nitrate	J T Baker Inc						x
SO-M-51; ACC40114	Nitric Acid	Fisher Scientific						x
Sodium Bisulfite	Sodium Bisulfate	J T Baker Inc						x
Sodium Carbonate, Anhydrous	Sodium Carbonate	J T Baker Inc						x
Sodium Hydroxide, Solid	Sodium Hydroxide	EM Science						x
Sodium Nitrite	Sodium Nitrite	Van Waters & Rogers						x
Sulfuric Acid	Sulfuric Acid	Asarco						x
TH10-2	Unknown	CH2O						x
THEM10-1	Ethanol	CH2O						x
Titanium Dioxide	Titanium Dioxide	J T Baker Inc						x
Trichloroethane	Trichlorethane	G W Chemicals						x
Zinc Oxide	Zinc Oxide	J T Baker Inc						x

GENERAL

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	DEPARTMENTS Mc	Fg	Mn	Me	L	O
Aerosol Spray Paint	Methyl Ethyl	Zynolyte Products				x		
AHA50-1	Barium Chloride	CH2O						
AJAX Cleaner	Silica	National Sanitary				x		
All Purpose Sweep Compound	Petroleum Oil	Pace National		x	x	x	x	
Aqua-Sol 20/20	Sodium Metasilicate	Certified Labs				x		
ATA10-2	Sulfuric Acid	CH2O						
Big “D” Liquid Deodorant	Dipropylene Glycol	National Sanitary				x		
Bowl Blox	Paradichlorobenzene	National Sanitary				x		
Carbolon	Silicon Carbide	Exolon-Esk		x		x		
Certanium 34P Paste Solder	Copper/Zinc	Certanium Alloy				x		
CertiFen II	Heavy Aromatic Naptha	Certified Labs				x		
Cerfakleen 3552	Solvent	Cerfa				x		
Citrakleen	Ethanolamine	Penetone Co				x		
Commutator-Mica Molded	Copper	Toledo Comm				x		
Commutator-Shell Mold	Copper	Toledo Comm				x		
Commutator-Steel & Mica	Copper	Toledo Comm				x		
Come Clean	Alkali Metasilicates	Johnson Wax				x		
Copy Machine-Developer	Iron Powder	Ricoh Co		x		x		x
Copy Machine-Drum	Aluminum	Ricoh Co		x		x		x
Copy Machine-Drum Powder	Fluoride Polymer	Ricoh Co		x		x		x
Copy Machine-Ozone	Ozone & Dust	Ricoh Co		x		x		x
Copy Machine-Ricoh Toner	Carbon Black	Ricoh Co		x		x		x
Cosmolubric HF-122	Varied	E F Houghton				x		
CSM-1 Degreaser	Liquid Carbon Dioxide	Rawn Company						
Cutting Tool Products	Ferrous Alloys	Cleveland Drill		x		x		
Cut-Thru	Hexylene Glycol	Certified Labs			x	x		
D100 & D350 Developer	Isopropyl Alcohol	Sherwin Inc		x				
Deo Blox	Paradichlorobenzene	National Sanitary				x		
Depac Metal Free Anti-Seize	Thixotropic Product	Depac						
DP40 Dye Penetrant	Aliphatic Oil	Sherwin Inc		x				
DP50 Dye Penetrant	Aliphatic Hydrocarbon	Sherwin Inc		x				
DR-60 Cleaner/Remover	Paraffins	Sherwin Inc		x				
Dubl-Chek Cleaner/Remover	Liquified Petroleum	Sherwin Inc		x				
Dubl-Chek D-100/D350	Liquified Petroleum	Sherwin Inc		x				
Dubl-Chek Penetrant	Aliphatic Oil	Sherwin Inc		x				
Echogel	Gylcerol	Echo Ultrasound		x				
EG-5010	Sodium Hydroxide	Mogul				x	x	
EG-5011	Sodium Hydroxide	Mogul				x	x	
EG-5308	Sodium Bisulfite	Mogul				x	x	
EG-5424	Sodium Hydroxide	Mogul				x	x	
Electrical/Electronic Products	Trichlorotrifluoromethane	Sprayon Products				x		
Electrical Contact Cleaner	Aerothene	Sprayon Products				x		
Electrocleaning SCM4100	Sodium Hydroxide	Selectrons Ltd				x		
Electroplate Gold Undercoating	Potassium Dicyanoaurate	Selectrons Ltd				x		
Electroplate Silver Solution	Silver Cyanide	Selectrons Ltd				x		
Eliminator Engine Degreaser	Hydrocarbons	Permatex				x	x	
Engine Starting Fluid (Aerosol)	Hydrocarbons	Permatex				x	x	
Exolon Fast Blast	Alpha Alumina	Exolon-Esk		x		x		

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	Mc	Fg	Mn	Me	L	O
Extend Rust Treatment	Acrylic Latex	Permatex			x			
Ferroblast	Metal Silicates	RDM Enterprises	x		x			
Filler Metal	Nickel	Inco	x		x	x		
Fire Extinguisher-CO2	Carbon Dioxide	Amerex Corp	x	x	x	x	x	x
Fire Extinguisher-Dry	Halon	Amerex Corp	x	x	x	x	x	x
Floordry	Diatomaceous Earth	Eagle-Pitche	x	x	x	x		
Flue Dust	Iron Oxide	Jorgensen			x	x		
Flux Cored Solder	Lead	Kester Solder	x		x			
Fresh Gel-Air Freshener	Kerosene	Fresh Products			x			
Fresh Para Blocks & Crystals	Paradichlorobenz	Fresh Products			x			
GCO-10LM w/Visigard	Sodium Molybdate	Diversey Corp			x			
Gordon Thermocouple	Aluminum	Gordon Co		x				
Guide Shoe	Steel/Bronze/Zinc	Sunnen						
Hand Soap	Unknown	GOJO			x			
Haynes Welding Rod	Varied	Haynes Intl	x	x	x	x		
Hi-Temp AntiSeize #C5-A	Copper & Graphite	Fel-Pro Inc			x			
Honing Madrel	Steel/Bronze/Zinc	Sunnen						
Household Bleach	Sodium Hypochlorite	National Sanitary			x			
Incofluz	Nickel	Inco Alloys	x		x	x		
Inhibitor 4430	Magnesium Nitrate	E F Houghton		x				
Jon Cool #801	Alkali/Alkanolamine Borates	Johnson Wax	x		x			
Jon Cool #831	Alkali/Alkanolamine Borates	Johnson Wax	x		x			
Jon Cool #850	Fatty Acid Soaps	Johnson Wax	x		x			
Jon Cool #854	Hydrocarbon Oil	Johnson Wax	x		x			
Jon Draw #722	Chlorinated Paraffin	Johnson Wax	x		x			
Koolmist #77	Complex Mixture	Kool Mist Co	x		x			
Koolmist #78	Complex Mixture	Kool Mist Co	x		x			
Koolmist #88	Chlorinated Hydrocarbons	Kool Mist Co	x		x			
Lenox Band-Ade	Unknown	American Saw	x					
Liquid Malagon	Isopropyl Alcohol	National Sanitary			x			
Liquid Spot Lift	Trichloroethane	National Sanitary			x			
Long Life 20/20	Unknown	Certified Labs			x			
Lysol	Soap	National Labs			x			
M & R All Engine Coolant	Ethylene Glycol	Manley			x			
M-2016	Quinone	John Dolph Co			x			
M-500-3 Friction Material	Chrysotile Asbestos	Raymark Ind			x			
M-Prep Neutralizer 5A	Trisodium Phosphate	Measurements Group			x			
Master Chlor 8%	Chlorine	Master Chemical			x			
Mean Green	Glycol Ether	Chem Pro Inc						
Metadi & Metadi	Propylene Glycol	Buehler	x	x	x			
Metco Flame Spray Tape	Fiberglass	Metco			x			
Metco 405 Wire	Aluminum	Metco			x	x		
MF-11CC Contact Clean	Aerothene II	Electrical Insulation Supply			x			
MI-GLOW 778	Iron Oxide	Circle Systems	x					
Monomer Self Cure (Facsimile)	Methyl Methacrylate	Flexbar Machine					x	
NF-138 Friction Material	Unknown	National Friction Products			x			
NF-203 Friction Material	Chrysotile Asbestos	National Friction Products			x			
NI-ROD	Aluminum	Inco			x			
Nokorode Solder Paste	Hydrocarbons	NW Dunton Co			x			
No Streak Glass Clean	Isopropyl Alcohol	Crown Industrial	x	x	x	x		
Non Slip	Bisphenol A Dislycidyl Resin	Arka Labs			x			
Oil Sorbent	Polypropylene	3M	x	x	x	x		

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	Mc Fg Mn Me L O			
P-1	Sodium Chloride	CH2O				
P1-3	Thorium Nitrate	CH2O				
Parabond	Glycol	Emhart Corp		x	x	
Plastic Cleaner	Petroleum Distillate	Permatex			x	
Product 6262	Tetrasodium EDTA	CH2O	x			x
Product 6267	Sodium Hydroxide	CH2O			x	x
Prussian Blue	Paraffinic Hydrocarbons	Permatex	x		x	
Recorder/Plotter Pen Ink	Unknown	Dia-Nielsen			x	
Red Insula	Propane	Sherwin Williams	x	x	x	x
Safety Boosters	Lead Styphnate	Hilti Inc			x	
SC5-1	Hydrogen Peroxide	CH2O				
SC5-2	Potassium Chromate	CH2O				
SC5-3	Silver Nitrate	CH2O				
SS5-1	Sulfamic Acid	CH2O				
SS5-2	Potassium Iodide	CH2O				
Slix It	Trichloroethane	Crown Ind			x	
Sodium Hydroxide 50%	Sodium Hydroxide	Occidental Chemical			x	x
Sodium Sulfite 6262/6267	Mixture	CH2O Inc		x		
Solder Alloys Containing Lead	Lead	Kester Solder			x	
Sonotrace	Dipropylene	Echo Ultrasonicx				
Sparvar S-706 Belt Dressing	Naptha	Borden Inc			x	
SPR-50	Potassium Hydroxide	Certified Labs			x	
SSS Metal Cleaner & Polish	Petroleum Distillate	Standardized Sanitation			x	
SSS Spot Spray	Mineral Spirits	Standardized Sanitation			x	
SSS Tile Cleaner	Butoxyethanol	Standardized Sanitation			x	
Silver Nitrate	Mixture	CH2O			x	x
Stainless Steel Cleaner	Toulene	National Sanitary			x	
Stay Silver Brazing Flux	Borates	Harris Unibraz	x		x	
Stick Wax	Waxes	Johnson Wax			x	
Stop N Go	Hydrogen Chloride	Hysan Corp			x	
Strips All	Monoethanolamine	Federal International Chemical			x	
Stud Driver Blanks	Trade Secret	Omark Ind			x	x
Super 3000 Mortar	Alumino Silicate	Combustion Engineering		x		
Super Shine Aerosol	Kerosene	National Sanitary			x	
Teledyne Welding Items	Varied	Teledyne McKay	x	x	x	x
The Cleaner	N-Alkyl Dimethyl Benzyl	Spartan Chem			x	
TH5-2	Ethylenediaminetetraacetic Acid	CH2O				
THEM10-1	Ethanol	CH2O				
Thermoid Friction Material	Asbestos	H K Porter Co			x	
Tile Brite Cleaner	Phosphoric Acid	National Sanitary			x	
Toolmaker’s Ink Remover	Trichloroethane	Crown Industrial	x			
Truing Sleeve	Steel	Sunnen				
Ucon Quenchant	Poly Alkylene Glycols	Union Carbide		x		
Ucon Quenchant RL	Poly Alkylene Glycols	Union Carbide		x		
Ultragel II	Dipropylene Glycol	Echo Ultrasonic	x			
UT-3G	None	Sonotech				
Valve Grinding Compound	Silicon Carbide	Permatex			x	
Vantage	Ethylene Glycol	Federal International Chemical			x	
Verticide Bowl Cleaner	Hydrochloric Acid	National Sanitary			x	
Weldron Silica Sand	Silica Sand	Wedron Silica	x			
Welder’s Anti-Spatter	Methylene Chloride	Crown Ind	x	x	x	x
Wick-It	None established	Diversey Corp			x	

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	Mc	Fg	Mn	Me	L	O
Windex, Institutional Formula	Butoxyethanol	Drackett Products						x
Wood Dust	Wood Dust	American Forest & Paper Assn						x
Zep 45	Trichloroethane	Zep Mfg						x
Zep Brake Wash	Hexane	Zep Mfg						x
Zep Drill Chill	Sulfurated Petroleum	Zep Mfg				x		
Zep Lemon Grime-X	Unknown	Zep Mfg						x
Zep MVP	D-Limonene	Zep Mfg				x		x
Zep-O-Kreme	Paraffinic Solvent	Zep Mfg				x		x
Zinc Cold Galvanizing	Zinc Metallic	Crown Industrial Products						x

STEEL/ALUMINUM

TRADE NAME	**PRIMARY CHEMICAL**	**MANUFACTURER**	**DEPARTMENTS** **Mc Fg Mn Me L O**
Al Tech Steel/Specialty Grades	Iron	Al Tech Specialty Steel	
Allegheny Steel Grades	Iron	Allegheny Lud	x x x x
Alloy Steel-HR & CR	Iron	Metal Goods Service Centers	x x x x
Alloy Steel	Iron	Timken	x x x x
Alloy Steel	Iron	Trident	x x x x
Alloy Steel	Iron	Tsubota Ind	x x x x
Alloy Steel	Iron	U S Steel	x x x x
Alloy Steel Ingot	Varied	Ellwood Quality Steels	x x x x
Aluminum	Aluminum	Trident	x x x x
Aluminum Alloys	Aluminum	Alcoa	x x x x
Aluminum Alloys KDS-2	Aluminum	Kaiser Aluminum	x x x x
Aluminum Alloys KDS-2a	Aluminum	Kaiser Aluminum	x x x x
Aluminum Alloys KDS-3	Aluminum	Kaiser Aluminum	x x x x
Aluminum Alloys KDS-3a	Aluminum	Kaiser Aluminum	x x x x
Aluminum Alloys KDS-4	Aluminum	Kaiser Aluminum	x x x x
Aluminum Alloys KDS-4a	Aluminum	Kaiser Aluminum	x x x x
Aluminum Alloys KDS-7	Aluminum	Kaiser Aluminum	x x x x
Aluminum Alloys KDS-7a	Aluminum	Kaiser Aluminum	x x x x
Aluminum Alloy	Aluminum	Marmon/Keystone	x x x x
Aluminum Alloys	Aluminum	Metal Goods Service Centers	x x x x
Aluminum Alloys	Aluminum	Pimalco	x x x x
Aluminum Alloy 7050	Aluminum	Spectrulite Consortium	x x x x
Aluminum Shot	Aluminum	Kaiser Aluminum	x x x x
Alloy HR & CR Steel	Iron	Metal Goods Service Centers	x x x x
Alloy Steel	Iron	Leco	x x x x
Alloy Steel Ingot	Iron	Ellwood Quality Steels	x x x x
American Steel Grades	Iron	American Steel	x x x x
Armco Stainless	Nickel	Armco Steel	x x x x
Beryllium Alloy	Beryllium Copper	Trident	x x x x
Brass	Copper	Metal Goods Service Centers	x x x x
Brass	Copper	Trident	x x x x
Bronze	Copper	Metal Goods Service Centers	x x x x
Bronzes	Copper	Trident	x x x x
Cabot Alloys	Nickel	Cabot Alloys	x x x x
Carbon/Graphite	Carbon	Leco	x x x x
Carbon & Alloy Steel	Iron	American Steel	x x x x
Carbon & Alloy Steel	Iron	British Steel	x x x x
Carbon & Alloy Steel	Iron	FirstMiss Steel	x x x x
Carbon & Alloy Steel	Iron	Kilsby Roberts	x x x x
Carbon & Alloy Steel	Iron	Marmon/Keystone	x x x x
Carbon Steel-HR & CR Leaded	Iron	Metal Goods Service Centers	x x x x
Carbon Steel Ingot	Iron	Ellwood Quality Steels	x x x x
Carbon Steel Products	Iron	Tsubota Ind	x x x x
Carbon Steel Scrap	Iron	David J. Joseph Company	x x x x
Carbon Steel Scrap	Iron	Seattle Iron	x x x x
Carbon Steels	Iron	Trident	x x x x
Carbon Steel	Iron	US Steel	x x x x

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	Mc Fg Mn Me L O			
Carbon,Hydrogen,Sulfur in Steel	Iron	Leco	x	x	x	x
Carbon & Sulfur in Steel	Iron	Leco	x	x	x	x
Cast Iron Alloy Scrap	Iron	David J Joseph Company	x	x	x	x
Cast Iron Scrap	Iron	David J Joseph Company	x	x	x	x
Chrome Plated Carbon Steel	Iron	Marmon/Keystone	x	x	x	x
Chromium Alloys	Iron	Trident	x	x	x	x
Copper	Copper	Metal Goods Service Centers	x	x	x	x
Copper	Copper	Trident	x	x	x	x
Copper Alloys	Copper	Colonial	x	x	x	x
Copper Alloys	Copper	Lakeside Industries	x	x	x	x
Copper Alloys	Copper	Western Iron Alloys	x	x	x	x
Cupronickel	Nickel	Sandusky	x			
Ferrochromium	Iron	Shieldalloy	x	x	x	x
Ferrocolumbium	Iron	Shieldalloy	x	x	x	x
Ferromanganese	Iron	Shieldalloy	x	x	x	x
Ferrotungsten	Iron	Shieldalloy	x	x	x	x
Ferrous Allloy Castings	Iron	Carondelet Corp	x	x	x	x
Galvanized Steel	Iron	Reynolds	x	x	x	x
Gray Iron Castings	Iron	MacKenzie Spec	x	x	x	x
Green River All Grades	Iron	Green River Steel Corp	x	x	x	x
Hi Strength Low Alloy Steel	Iron	US Steel	x	x	x	x
Hot Rolled Alloy Steel	Iron	US Steel	x	x	x	x
Hot Rolled Carbon Steel	Iron	US Steel	x	x	x	x
Hot Rolled HSLA Steel	Iron	US Steel	x	x	x	x
Inco Alloys	Mixture	Inco Alloys	x	x	x	x
Iron-based Alloys	Iron	Coulter Steel & Forge	x	x	x	x
Jessop Steel Grades	Iron	Jessop Steel	x	x	x	x
Jorgensen Steel Grades	Iron/Aluminum	E M J	x	x	x	x
LTV Steel Grades	Iron	LTV	x	x	x	x
Lanark (S5)	Iron	Latrobe Steel Company				x
Low Alloy Casting	Iron	GTE Valeron	x	x	x	x
Marmon/Keystone Stainless	Iron	Marmon/Keystone	x	x	x	x
Molybendum Alloys	Iron	Trident	x	x	x	x
Nickel	Iron	Trident	x	x	x	x
Nickel Alloy	Iron	Marmon/Keystone	x	x	x	x
Nickel Alloy	Iron	Metal Goods Service Centers	x	x	x	x
Nickel Alloy	Iron	Trident	x	x	x	x
Nickel Pellets	Nickel	Inco	x	x	x	x
Nonferrous Cupronickel	Copper	Sandusky Foundry	x	x	x	x
Reynolds Cladding	Aluminum	Reynolds Aluminum				x
Select-B (A2)	Iron	Latrobe Steel	x	x	x	x
Shenango Alloys	Copper Nickel Alloy	Shenango Co	x			
Specialty Steel Scrap	Iron	David J Joseph	x	x	x	x
Stainless Steel	Iron	FirstMiss Steel Inc	x	x	x	x
Stainless Steel/Tool Steel	Iron	FirstMiss Steel Inc	x	x	x	x
Stainless Steel	Iron	Leco	x	x	x	x
Stainless Steel	Iron	Metal Goods Service Centers	x	x	x	x
Stainless Steel	Iron	Trident	x	x	x	x
Stainless Steel Alloys	Iron	Arcos	x	x	x	x
Stainless Steel Alloys	Iron	Marmon/Keystone	x	x	x	x
Stainless Steel Ingot	Iron	Ellwood Quality Steels	x	x	x	x
Steel-Nickel Based	Iron	Metal Goods Service Centers	x	x	x	x

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	Mc Fg Mn Me L O
Steel Alloys-All Grades	Iron	Slater Steels	x x x x
Talley Stainless Grades	Iron	Talley Metals	x x x x
Tansco Stainless Grades	Iron	Tansco Corp	x x x x
Techni Cast Alloys	Iron	Techni Cast	x x x x
Texas Stainless	Nickel	Texas Stainless	x x x x
Titanium	Titanium	Metal Goods Service Centers	x x x x
Titanium	Titanium	Oregon Metallurgical Corp	x x x x
Titanium	Titanium	Trident	x x x x
Tool Steel	Iron	FirstMiss Steel Inc	x x x x
Turret Carbon/Low Alloy Steels	Iron	Turret Steel Corp	x x x x
Vincent Metal Good Alloys	Varied	Vincent Metal Goods	x x x x
Wisconsin Centrifugal Steels	Iron	Wisconsin Centrifugal	x x x x
Wrought Aluminum	Aluminum	Alcoa	x x x x

REFRACTORIES/INSULATION

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	DEPARTMENTS Mc	Fg	Mn	Me	L	O
5-AOC	Calcined Alumina	Colorado Refractories	x		x			
7-AOC Brick	Calcined Alumina	Colorado Refractories	x		x			
Air-Set	Crystalline Silica	Thermal Ceramics	x		x			
Alchrome 80	Alumina Silica	North American Refractories			x			
Alchrome 80P	Alumina	North American Refractories			x			
Aluminum Backup	Alumina Silicate	North American Refractories			x			
Ankerharth-NN25	Magnesia	Veitsch-Radex			x			
AP Armaflex/Armaflex II	Sulfur	Armstrong			x			
APGI Inswool Hardware	Iron	Refractory Anchors Inc	x					
Babcock & Wilcox Products	Varied	Babcock & Wilcox			x			
Blu-Ram H S Plastic	Phosphoric Acid	Combustion Engineering	x		x			
Brazing Adaptors 923	Zinc	Gordon	x		x			
Brick Mix 1002	Crystobalite	AP Green	x		x			
Castable Insulation	Refractory Cement	AP Green						
CBM-70 Mastic	Calcined Alumina	Colorado Refractories	x		x			
Cerablanket	Alumina Silica	Manville	x		x			
Ceraboard	Alumina Silica	Manville	x		x			
Cerachem Blanket	Alum/Silica/Zirc	Manville	x		x			
Cerachrome Fiber	Refractory Ceramic Fiber	Manville	x		x			
Cerafelt	Alumina Silica	Manville	x		x			
Cerafelt	Aluminosilicate	Thermal Ceramics	x					
Ceramic Tile Anchors	Crystalline Silica	Plibrico	x		x			
Champion SM	Cristobalite	AP Green	x		x			
CJ's	Alumina Silica	North American Refractories			x			
Coldpatch	Crystalline Silica	North American Refractories	x					
Cortec VCI-100,132,137	Polyurethane	Sealed Air Corp		x				
Coarse Cast 24	Calcined Fireclay	Colorado Refractories	x		x			
Daubing Mortar-J	Crystalline Silica	North American Refractories			x			
Dipermal 80S	Magnesia	Didier			x			
Dola B	Dolomite	Baker Dolomite			x			
Dolomite Fines	Dolomite	Baker Dolomite	x		x			
Doloram	Dolomite	Baker Dolomite			x			
Doloram II	Dolomite	Baker Dolomite			x			
DRI VIBE 60A	Aluminum Silicate	Allied Mineral Products	x					
Dry and Wet Mortar	Mesh Silica	Babcock/Wilcox	x		x			
DV	Cristobalite	AP Green	x					
Empire S	Crystalline Silica	AP Green	x					
Ferrodolime	Burnt Dolomitic Lime	Redland Ohio Inc			x			
Ferrux 770F	Aluminum	Foseco			x			
Fiberfrax Woven	Aluminosilicate	Unifrax	x		x			
Fiberfrax #550	Aluminosilicate	Sohio	x		x			
Fiberfrax Durablanket	Aluminosilicate	Sohio	x		x			
Fiberfrax Duraboard 3000	Aluminosilicate	Carborundum	x					
Fiberfrax Duraboard 3000	Aluminosilicate	Unifrax	x					
Fiberfrax Rope	Aluminosilicate	Sohio			x			
Fireclay Bats	Crystalline Silica	North American Refractories	x		x			

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	Mc Fg Mn Me L O		
G-20 LI	Cristobalite	AP Green	x		x
G-23	Cristobalite	AP Green	x		x
G-26 LI	Cristobalite	AP Green	x		x
GM 70D	Alumina Silicate	North American Refractories	x		x
GM 70DE	Crystalline Silica	North American Refractories		x	x
Greenal-80	Cristobalite	AP Green	x		
Greencast	Crystobalite	AP Green			x
Greenkleen-60	Cristobalite	AP Green	x		
Greenkon-26 Plus	Cristobalite	AP Green	x		
Greenlite-23	Cristobalite	AP Green	x		
Greenlite-28	Cristobalite	AP Green	x		
Greenpak-85-P	Cristobalite	AP Green	x		
Greenpatch-421	Cristobalite	AP Green	x		
Grefcon 45	Cristobalite	AP Green	x		
GSS-1	Alumina	Didier		x	
Half Cookies	Alumino-Silicate	North American	x		
Hi-Temp Cement Pilcast	Alumino-Silicate	Pilbrico			x
Hyrdra Max 70A	Silica	BMI Refractories	x		x
Hydra Plus C-60	Calcined Fireclay	Colorado Refractories	x		
Insblok 19	Mineral Fiber	AP Green	x		x
Insboard	Refractory Fiber	AP Green	x		x
Insboard 2300	Refractory Fiber	AP Green	x		x
Inscast 22	Calcium Aluminate	Colorado Refractories	x		
Insform	Refractory Fiber	AP Green	x		x
Inswool	Refractory Fiber	AP Green	x		x
Inswool Blanket	Refractory Fiber	AP Green	x		x
Inswool-HP Module CM	Refractory Fiber	AP Green	x		x
Inswool Moldable	Refractory Fiber	AP Green	x		x
Inswool Papers	Refractory Fiber	AP Green	x		x
Ins-Tuff	Silica	AP Green	x		x
Jade Set	Tabular alumina	AP Green	x		x
Jebco Ram	Dead Burned Dolomite	Baker Dolomite			
Jebco Seal	Dead Burned Dolomite	Baker Dolomite			
JM-23 Firebrick	Ceramic Matrix	Manville	x		
K-29 Ramming Mix	Chromite-type Spinel	Corhart Refractories			
Kaotex	Aluminosilicate	Babcock/Wilcox	x		
Kao-Tex 2000	Aluminosilicate	Thermal Ceramics	x		
Kaowool	Aluminosilicate	Thermal Ceramics	x		
Kaowool Blanket Products	Alumino Silicate	Babcock/Wilcox	x		x
Kaowool Saffil Products	Alumino Silicate	Babcock & Wilcox			
Kasto-Lite 25	Cristobalite	AP Green	x		x
Kasto-Lite 30	Cristobalite	AP Green	x		x
Kriline 65 BD-408	Trivalent Chromium	National Refractories			x
Kruzite-70	Cristobalite	AP Green			x
KS-4V	Cristobalite	AP Green	x		x
Lava Graphite 605	Graphite	Lava Refractory Co			x
Lytherm Fiber Paper	Ceramic Fiber	Lydall Inc	x		
Microcloth	Formaldehyde	Buehler	x		x
Micro-Lok	Fibrous Glass	Manville	x		x
Mill Mortar	Sodium Silicate	National Refractories			x

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	Mc	Fg	Mn	Me	L	O
Minro-Sil Ram 1001	Silica Dioxide	Allied Mineral	x					
Monocast BR 704/BR 704C	Magnesiowustite	Savioe Refractaires			x			
Mizzou Castable	Alumina	AP Green	x		x			
Narcal 70D	Alumina Silicate	North American Refractories	x		x			
Narmag FG	Magnesia	North American Refractories			x			
Narmag 60DB	Magnesia	North American Refractories			x			
Narmag 80DB	Magnesia	North American Refractories			x			
Narmag 80DBC	Magnesia	North American Refractories			x			
Narmag 142	Magnesia	North American Refractories	x		x			
Narphos 85P Plastic	Crystalline Silica	North American Refractories			x			
Narphos 85S (Wet)	Alumina Silicate	North American Refractories	x		x			
Narphos 90 (Wet)	Alumina	North American Refractories	x		x			
Nobestos Millboard CF-8700	Crystalline Silica	Lydall Inc	x		x			
No. 36 Refractory Cement	Alumina Silica	AP Green	x		x			
PG-22	Alumina Silica	Pryor Giggey	x					
Plibrico Anchors-Alloys	Chromium	Plibrico			x			
Plibrico Anchors-Steel	Iron	Plibrico						
Plibrico 68-S	Alumino Silicate	Plibrico		x				
Plicast	Alumino Silicate	Plibrico	x		x			
Pyro-Bloc Plus XT	Aluminosilicate	Thermal Ceramics	x		x			
Q-Cote 6656	Alumina	Quigley		x				
Quartz Refractory Shape	Quartz	Leco	x		x			
R-7012	Cristobalite	AP Green			x			
RFG Mortar	Magnesiowustite	Cohart Refractories			x			
RGS Fire Brick	Alumina Silicate	Colorado Refractories	x		x			
Refracrete 20	Alumina Silicate	North American Refractories	x		x			
Refractory Bricks	Cristobalite	AP Green	x		x			
Refractory Ceramic Fiber	Ceramic Fibers	Thermal Ceramics						
Royal Gorge	Alumina Silicate	Colorado Refractories			x			
Sairmix-7	Cristobalite	AP Green	x		x			
Sairset	Cristobalite	AP Green	x					
Seneca Chief 60	Crystalline Silica	North American Refractories	x		x			
Seneca 80	Alumina Silicate	North American Refractories	x		x			
Seneca 80XD	Alumina Silicate	North American Refractories	x		x			
Serv\10 Brick	Alumina	North American Refractories	x		x			
Shamrock 390-TR Ceme	Alumina	North American Refractories	x		x			
Shamrock 881 Plastic	Alumina	North American Refractories	x	x	x			
Silica Sand	Silicon Dioxide	Monterey Sand	x		x			
Sodium Silicate	Sodium Silicate	Van Waters	x					
Sodium Silicate Glass	Sodium Silicate	Du Pont	x					
Super Air Bond	Alumino Silicate	Plibrico	x		x			
Super G Plus	Alumina Silicate	AP Green	x		x			
Super Hybond	Cristobalite	AP Green	x		x			
Super Narmag 142	Magnesia	North American Refractories	x		x			
Super Narmag 608	Magnesai	North American Refractories	x		x			
Super Pyramid AS	Crystalline Silica	North American Refractories	x		x			
Super Tenax	Crystalline Silica	North American Refractories	x		x			
Superchief Mortar 44	Alumina Silicate	North American Refractories	x		x			
Superchief Wet	Hydrous Alumina Silicate	North American Refractories	x		x			
Tab Cast 9	Alumina Oxide	Coastal Refractories			x			
Tenax Mortar	Hydrous Alumina Silicate	North American Refractories	x		x			
Thermalite LW Shroud	Refractory Ceramic Fiber	Thermatex Corp	x		x			

TRADE NAME	**PRIMARY CHEMICAL**	**MANUFACTURER**	**Mc Fg Mn Me L O**
Thermocouples	Cellulose Fibers	Electro-Nite Company	x x x
Ultra-Express 45	Cristobalite	AP Green	x x
Unikote M & S	Aluminosilicate	Babcock/Wilcox	x
Vitreous Silica	Amorphous Silica	C S Gordon	x
Wool Filtering Fiber	Fibrous Glass	Leco	x x
York Fired 65-D	Dead Burned Dolomite	J. E. Baker Co	x x
York Fired 65-DC	Dead Burned Dolomite	J. E. Baker Co	x x
York Fired D	Dead Burned Dolomite	J. E. Baker Co	x x

CARBIDES/ABRASIVES

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	Mc	Fg	Mn	Me	L	O
Abrasive Wheel, Resin Bond	Alpha-Alumina	Buehler						
ASKOMET Carbide	Tungsten Carbide	Asko	x					
ASKO Products	Tungsten Carbide	Asko	x					
Besly Cutting Tools	Varied	Besly Products	x		x			
Diamond/Cubic Boron Wheel	Aluminum Oxide	Norton Company	x	x				
Dresser Diamond Wheel	Diamond	Bay State	x	x	x	x		
Dresser Resin Bond Wheel	Aluminum	Bay State	x	x	x	x		
Dresser Resin Bond Wheel	Silicon	Bay State	x	x	x	x		
Dresser Rubber Bond Wheel	Aluminum Oxide	Bay State	x	x	x	x		
Dresser Rubber Bond Wheel	Silicon	Bay State	x	x	x	x		
Dresser Vitreous Bond Wheel	Alumina	Bay State	x	x	x	x		
Dresser Vitreous Bond Wheel	Silicon	Bay State	x		x			
Epoxy Bonded Abrasives	Aluminum Oxide	Norton Company	x	x				
Ferrous Cutting Tool Products	Ferrous Alloys	Cleveland Twist Drill Co	x					
Firthite Tungsten Carbide Grade	Tungsten Carbide	Teledyne		x			x	
Garnet Abrasive	Almandite Garnet	Emerald Creek Milling		x				
Honing Stones	Varied	Sunnen Products	x		x			
Ingersoll Carbide	Tungsten Carbide	Ingersoll	x		x			
Kennametal Carbide Grades	Tungsten Carbide	Kennametal	x		x			
Pac Epoxy Bonded Wheel	Aluminum Oxide	Pacific Grind	x	x	x	x		
Pac Organic Bonded Wheel	Aluminum Oxide	Pacific Grind	x	x	x	x		
Pac Rubber Bonded Wheel	Aluminum Oxide	Pacific Grind	x	x	x	x		
Pac Vitrified Bonded Wheel	Aluminum Oxide	Pacific Grind	x	x	x	x		
Resin Bonded Abrasives	Aluminum Oxide	Norton Company	x	x	x	x		
Resinoid Grinding Wheel	Alumina	Norton Company	x	x	x	x		
Rubber Bonded Abrasives	Aluminum Oxide	Norton Company	x	x	x	x		
Shellac Bonded Abrasives	Aluminum Oxide	Norton Company	x	x	x	x		
Steel Powders	Iron	Peerless Metal Powder	x					
Valcast Alloy Tooling	Tungsten	GTE Valeron	x		x			
Valenite Cemented Carbide	Tungsten Carbide	GTE Valeron	x		x			
Vitrified Bonded Abrasives	Aluminum Oxide	Norton Company	x	x	x	x		

GASES

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	DEPARTMENTS Mc	Fg	Mn	Me	L	O
Acetylene	Acetylene	Air Products	x	x	x	x		
Argon, Refrigerated Liquid	Argon	Airco		x	x	x		
Argon, Refrigerated Liquid	Argon	Air Products			x	x		
Argon, Refrigerated Liquid	Argon	Praxair						
Argon Gas	Argon	Praxair						
Argon Gas	Argon	Union Carbide	x	x	x	x		
Carbon Dioxide, Liquid	Carbon Dioxide	Airco						
Carbon Dioxide, Solid	Carbon Dioxide	Airco						
Carbon Monoxide	Carbon Monoxide	Union Carbide				x		
Helium, Compressed	Helium	Air Products						
Helium, Compressed	Helium	Cascade Airgas			x			
Helium, Liquid	Helium	Air Products					x	
Helium, Refrigerated Liquid	Helium	Airco						
Hydrogen, Compressed	Hydrogen	Air Products						
Hydrogen, Liquid	Hydrogen	Air Products						
Hydrogen, Refrigerated Gas	Hydrogen	Airco						
Hydrogen	Hydrogen	Air Products					x	
Linde/Union Carbide Gas	Varied	Union Carbide		x	x	x	x	
Nitrogen	Nitrogen	Praxair						
Nitrogen	Nitrogen	Union Carbide	x	x	x	x	x	
Nitrogen, Compressed	Nitrogen	Air Products						
Nitrogen, Compressed	Nitrogen	Praxair						
Nitrogen, Cryogenic Liquid	Nitrogen	Air Products						
Nitrogen, Cryogenic Liquid	Nitrogen	Praxair						
Nitrogen, Cryogenic Liquid	Nitrogen	Union Carbide	x	x	x	x		
Nitrogen, Refrigerated Liquid	Nitrogen	Airco						
Nitrogen, Refrigerated Liquid	Nitrogen	Air Products						
Nitrogen, Refrigerated Liquid	Nitrogen	Praxair						
Nitrous Oxide, Liquid	Nitrogen	Airco						
Oxygen	Oxygen	Praxair						
Oxygen, Compressed	Oxygen	Air Products						
Oxygen, Cryogenic Liquid	Oxygen	Praxair						
Oxygen, Cryogenic Liquid	Oxygen	Union Carbide						
Oxygen, Liquid	Oxygen	Air Products						
Oxygen, Refrigerated Liquid	Oxygen	Airco						
Oxygen, Refrigerated Liquid	Oxygen	Air Products						
Oxygen, Refrigerated Liquid	Oxygen	Praxair						
Oxygen, Gas	Oxygen	Oxygen Systems		x	x	x	x	x
Oxygen, Liquid	Oxygen	Praxair						
Oxygen, Gas	Oxygen	Praxair						
Oxygen, Liquid	Oxygen	Union Carbide	x	x	x	x	x	
Oxygen, Gas	Oxygen	Union Carbide	x	x	x	x	x	
Propane	Propane	BernzOmatic						

MELT FURNACE/MOLD ITEMS

TRADE NAME	**PRIMARY CHEMICAL**	**MANUFACTURER**	**DEPARTMENTS** Mc	Fg	Mn	Me	L	O
Aluminum Alloys	Aluminum	Alcoa						x
Ancor Iron Powder	Iron	Hoeganaes						x
Aton Arc Electrodes	Iron	Alloy Rods Corp						x
Calcined Alumina	Aluminum Oxide	Alcoa						x
Carbon/Graphite	Carbon	Leco					x	x
Carbon Raiser	Hydrocarbons	Asbury Graphite						x
Carbon Steel Scrap	Iron	Skagit Steel						x
Cast Iron Scrap	Iron	Skagit Steel						x
Cast Iron Alloy Scrap	Iron	Skagit Steel						x
Cermex Rope & Sleeving	Alumina Silica	Mid-Mountain Materials						x
Chromium Metal & Alloys	Chromium	Elkem Metals						x
Chromium Metal & Alloys	Chromium	Metallurg						x
Chromium Metal & Alloys	Chromium	Tophet						x
Copper	Copper	Seattle Iron & Metals						x
Copper Alloy	Copper	American Crucible Products						x
Copper Alloy	Copper	Western Reserve Manufacturing						x
Copper Briquettes	Copper	Seattle Iron & Metals						x
Copper Metal Accelerator	Copper	Leco						x
Dygral Z	Zirconia Graphite	Corhart Refractories						x
Electrolytic Manganese	Manganese	ATI Alloys						x
Electrolytic Manganese	Manganese	Tophet						x
Ferroboron	Iron	Shieldalloy						x
Ferrochrome, High Carbon	Chrome	ELG Haniel Trading Corp						x
Ferrochrome	Chromium	Hickman Williams & Co						x
Ferrochrome	Chromium	Union Carbide						x
Ferromanganese	Manganese	Pickands Mather						x
Ferromanganese Silicon	Manganese	Metallurg						x
Ferromolybdenum	Molybdenum	Amax Minerals						x
Ferronickel	Nickel	Hanna Nickel Smelting Co						x
Ferrosilicon	Silicon	Hickman, Williams & Co						x
Ferrosilicon	Silicon	Keokuk Ferro-Sil Inc						x
Ferrosilicon	Silicon	M A Hanna Co						x
Ferrosilicon Alloys	Silicon	Elkem						x
Ferrovan 42	Iron	Shieldalloy						x
Ferrux 770	Aluminum	Foseco						x
Ferrux 770F	Aluminum	Foseco						x
Fluorspar	Calcium Fluoride	Foote Mineral						x
Fluorspar	Calcium Fluoride	Oglebay						x
Fluorspar	Calcium Fluoride	Van Waters & Rogers						x
Graphite Electrodes	Graphite	Great Lakes Carbon						x
Graphite Pins	Graphite	UCAR						x
Green Lightning	Silica	Applied Industrial Metals						x
High Heat Firebrick	Aluminum Oxide	Alsey Refractories						x
Imperial Limestone	Calcium Carbonate	J A Jack Inc						x
Incocal Alloy 10	Nickel	Inco						x
Iron	Iron	Seattle Iron						x
Lane Mountain #20/30	Silica	Lane Mountain Silica Co						x
Litefax 109	Silica	Foseco						x

TRADE NAME	PRIMARY CHEMICAL	MANUFACTURER	Mc Fg Mn Me L O
Magnaflux	Iron Oxide	MagnaFlux	x
Magnaglo Powder	Iron Oxide	Magnaflux	x
Magnagrain	Alkaline Earth	Marblehead Lime	x
Manganese Metal & Alloys	Manganese	Elkem Metals	x
MMC Flake Manganese	Manganese	Manganese Metal Corp	x
Mold Release (Aerosol)	Trichloroethane	A. W. Chesterton	x
Mold Release (Bulk)	Trichloroethane	A. W. Chesterton	x
Molybdenum Trioxide	Molybdenum Triox	Gulf Chemical Co	x
Nickel Briquettes	Nickel	Sherritt	x
Nickel & Nickel Alloys	Nickel	G O Carlson	x
Nickel Pellets	Nickel	Inco	x
Nickel Shot Inco-F	Nickel	Inco	x
Nickel Shot Utility	Nickel	Inco	x
Profax CP8499	Alumino Silica	Foseco	x
Proflex 113	Crystalline Silica	Foseco	x
Q-Cote 6656S	Aluminum Oxide	Quigley Company	x
Quicklime	Calcium Oxide	Continental Lime	x
Rare Earth Silicide	Lanthanide Silicide	Molycorp	x
Safety Boosters	Brass	Hilti	x
Sand Gasket 342 AF	Magnesium Silicate	R A Barnes	x
Select-B (A2)	Iron	Latrobe Steel	x
Silica Sand	Silicone Dioxide	Badger Mining	x
Silicomanganese Alloy	Manganese	Elkem Metals	x
Silver Nitrate	Silver Nitrate	CH2O Inc	x
Specialty Steel Scrap	Iron	Skagit Steel	x
Stelotol CP8463	Cement	Foseco	x
Synthetic Graphite Electrodes	Synthetic Graphite	UCAR	x
Tech Molybdic Oxide	Molybdenum Trioxide	Amax Inc	x
Tin Capsules,Flux,Plugs,Accel	Tin	Leco	x
Titanium Carbide w/Nickel	Titanium Carbide	Kennametal	x
Tungsten Carbide w/Cobalt	Tungsten Carbide	Kennametal	x
Valle-Mite	Dolomite	Resco Products	x
Vanadium Trioxide	Vanadium Trioxide	Strategic Minerals	x
Vulcan Ingot Molds	Iron	Vulcan Mold	x
Wisco Therm X-253	N/A	Western Indust	x

APPENDIX D
BY-PRODUCT LABORATORY ANALYTICAL RESULTS

Certificate of Analysis

Client: Jorgensen Forge
8531 E Marginal Way South
Seattle, WA 98108

ATTN: Ron Altier

Work ID: **TRI Report QA**

Taken By: **CLIENT**

Transported By: **HAND DELIVERED**

SDG Number: **JFOR070501**

Date Received: **05/15/2007**

Date Reported: **05/31/2007**

Sample Identification:

Lab Sample ID	Sample Description	Collection Date	/Time	Type
JFOR070501-001	Kogi Baghouse Dust	05/15/2007	09:00	Soil
JFOR070501-002	Aod Slag	05/15/2007	09:00	Soil
JFOR070501-003	Eaf Slag	05/15/2007	09:00	Soil

Flagging:

J = The value reported is below the routine reporting limit and should be considered an estimate

U = The analyte of interest was not detected, to the limit of detection indicated

Unless otherwise instructed all samples with the exception of samples which are consumed during the analysis, such as microbiological samples, will be disposed of on or after 7/13/07

Respectfully submitted,

Laucks Testing Laboratories, Inc.

J.M. Owens

Final Results for SDG JFOR070501

Sample Number: Kogi Baghouse Dust

Lab Sample ID: JFOR070501-001 **Collected On:** 05/15/2007 09:00

Method	Analyte	Final result	Units of result
E150.1	pH	12.1	pH Units
SM2540B	Solids, Total	99.70	%, as received
SW6010B	Aluminum	802	mg/Kg, dry basis
	Iron	109000	mg/Kg, dry basis
	Lead	1460	mg/Kg, dry basis
	Magnesium	20900	mg/Kg, dry basis
	Nickel	2290	mg/Kg, dry basis
	Potassium	5480	mg/Kg, dry basis
	Silver	27.4	mg/Kg, dry basis
	Sodium	7400	mg/Kg, dry basis
	Thallium	4.7	mg/Kg, dry basis
	Antimony	22.8	mg/Kg, dry basis
	Arsenic	39.9	mg/Kg, dry basis
	Barium	22.8	mg/Kg, dry basis
	Beryllium	0.36 U	mg/Kg, dry basis
	Cadmium	21.3	mg/Kg, dry basis
	Cobalt	53.4	mg/Kg, dry basis
	Copper	1260	mg/Kg, dry basis
	Vanadium	2260	mg/Kg, dry basis
	Zinc	4690	mg/Kg, dry basis
	Calcium	32000	mg/Kg, dry basis
	Selenium	224	mg/Kg, dry basis
	Manganese	406000	mg/Kg, dry basis
	Chromium	85000	mg/Kg, dry basis

Final Results for SDG JFOR070501

Sample Number: Aod Slag

Lab Sample ID: JFOR070501-002 **Collected On:** 05/15/2007 09:00

Method	Analyte	Final result	Units of result
E150.1	pH	10.5	pH Units
SM2540B	Solids, Total	99.80	%, as received
SW6010B	Aluminum	2050	mg/Kg, dry basis
	Iron	7780	mg/Kg, dry basis
	Lead	0.81 U	mg/Kg, dry basis
	Magnesium	37000	mg/Kg, dry basis
	Nickel	167	mg/Kg, dry basis
	Potassium	404 U	mg/Kg, dry basis
	Silver	0.81 U	mg/Kg, dry basis
	Sodium	404 U	mg/Kg, dry basis
	Thallium	1.6 U	mg/Kg, dry basis
	Antimony	4.8 U	mg/Kg, dry basis
	Arsenic	21.7	mg/Kg, dry basis
	Barium	335	mg/Kg, dry basis
	Beryllium	0.40 U	mg/Kg, dry basis
	Cadmium	4.4	mg/Kg, dry basis
	Chromium	3310	mg/Kg, dry basis
	Cobalt	4.0 U	mg/Kg, dry basis
	Copper	12.5	mg/Kg, dry basis
	Vanadium	107	mg/Kg, dry basis
	Zinc	3.4	mg/Kg, dry basis
	Calcium	340000	mg/Kg, dry basis
	Selenium	428	mg/Kg, dry basis
	Manganese	61700	mg/Kg, dry basis

Final Results for SDG JFOR070501

Sample Number: Eaf Slag

Lab Sample ID: JFOR070501-003 **Collected On:** 05/15/2007 09:00

Method	Analyte	Final result	Units of result
E150.1	pH	10.6	pH Units
SM2540B	Solids, Total	98.9	%, as received
SW6010B	Aluminum	25700	mg/Kg, dry basis
	Iron	146000	mg/Kg, dry basis
	Lead	0.78	mg/Kg, dry basis
	Magnesium	56400	mg/Kg, dry basis
	Nickel	3670	mg/Kg, dry basis
	Potassium	366 U	mg/Kg, dry basis
	Silver	2.0	mg/Kg, dry basis
	Sodium	404	mg/Kg, dry basis
	Thallium	1.5 U	mg/Kg, dry basis
	Antimony	4.4 U	mg/Kg, dry basis
	Arsenic	13.9	mg/Kg, dry basis
	Barium	105	mg/Kg, dry basis
	Beryllium	0.37 U	mg/Kg, dry basis
	Cadmium	12.4	mg/Kg, dry basis
	Chromium	31300	mg/Kg, dry basis
	Cobalt	66.7	mg/Kg, dry basis
	Copper	228	mg/Kg, dry basis
	Vanadium	725	mg/Kg, dry basis
	Zinc	8.5	mg/Kg, dry basis
	Calcium	167000	mg/Kg, dry basis
	Selenium	4.9	mg/Kg, dry basis
	Manganese	61800	mg/Kg, dry basis

APPENDIX E

BOEING-ISAACSON SUPPORTING INFORMATION

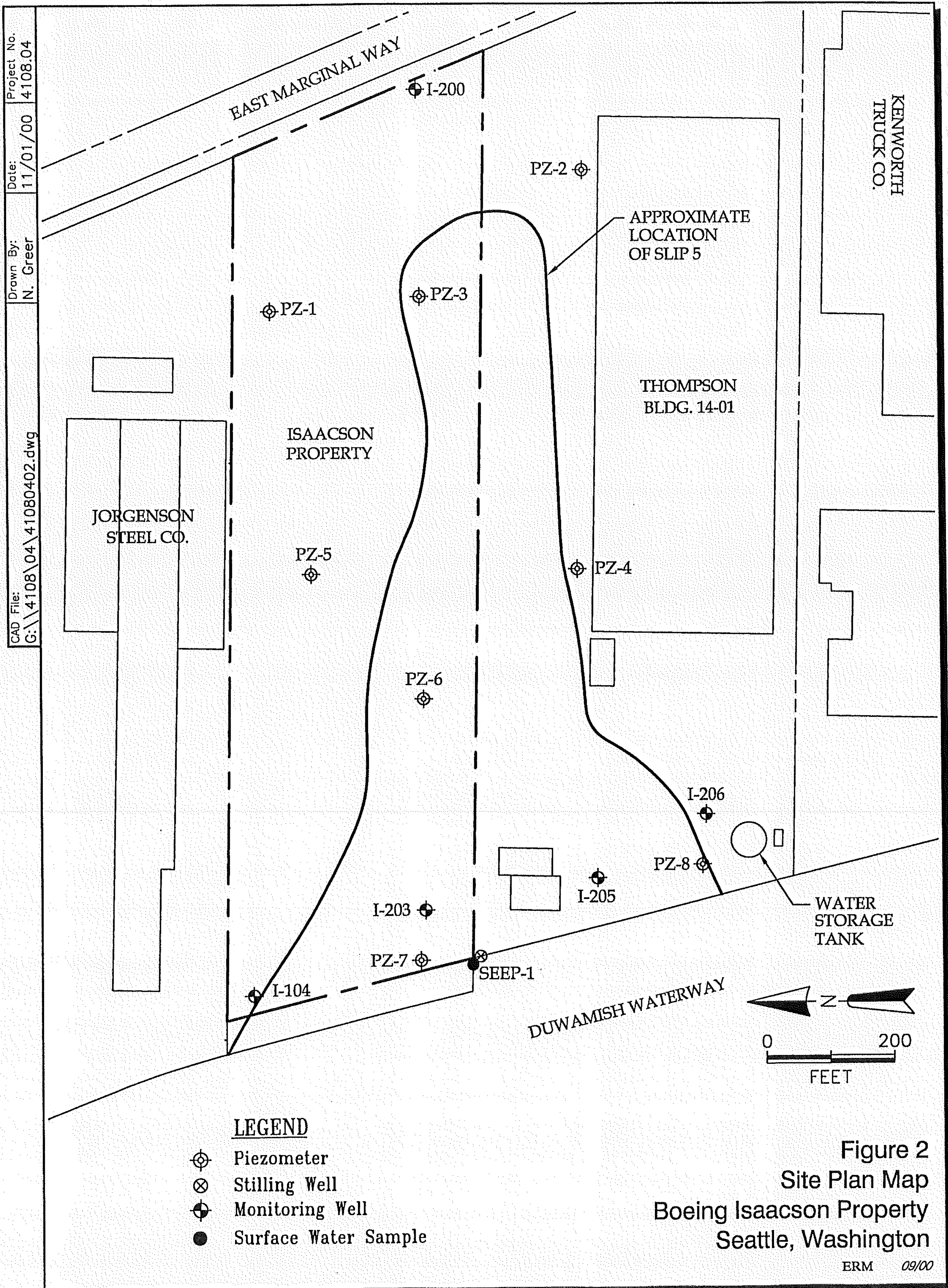
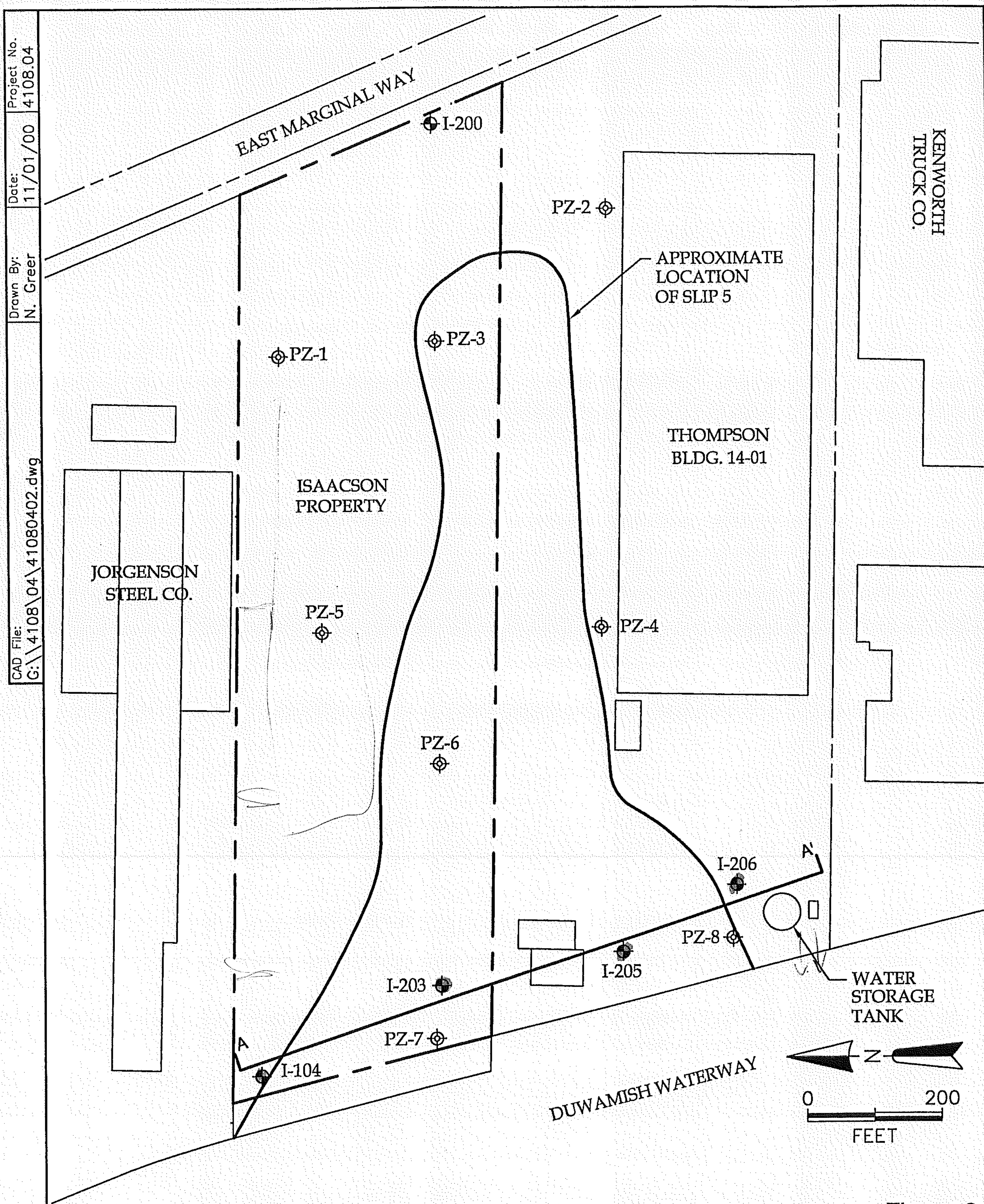


Figure 2
Site Plan Map
Boeing Isaacson Property
Seattle, Washington

ERM 09/00

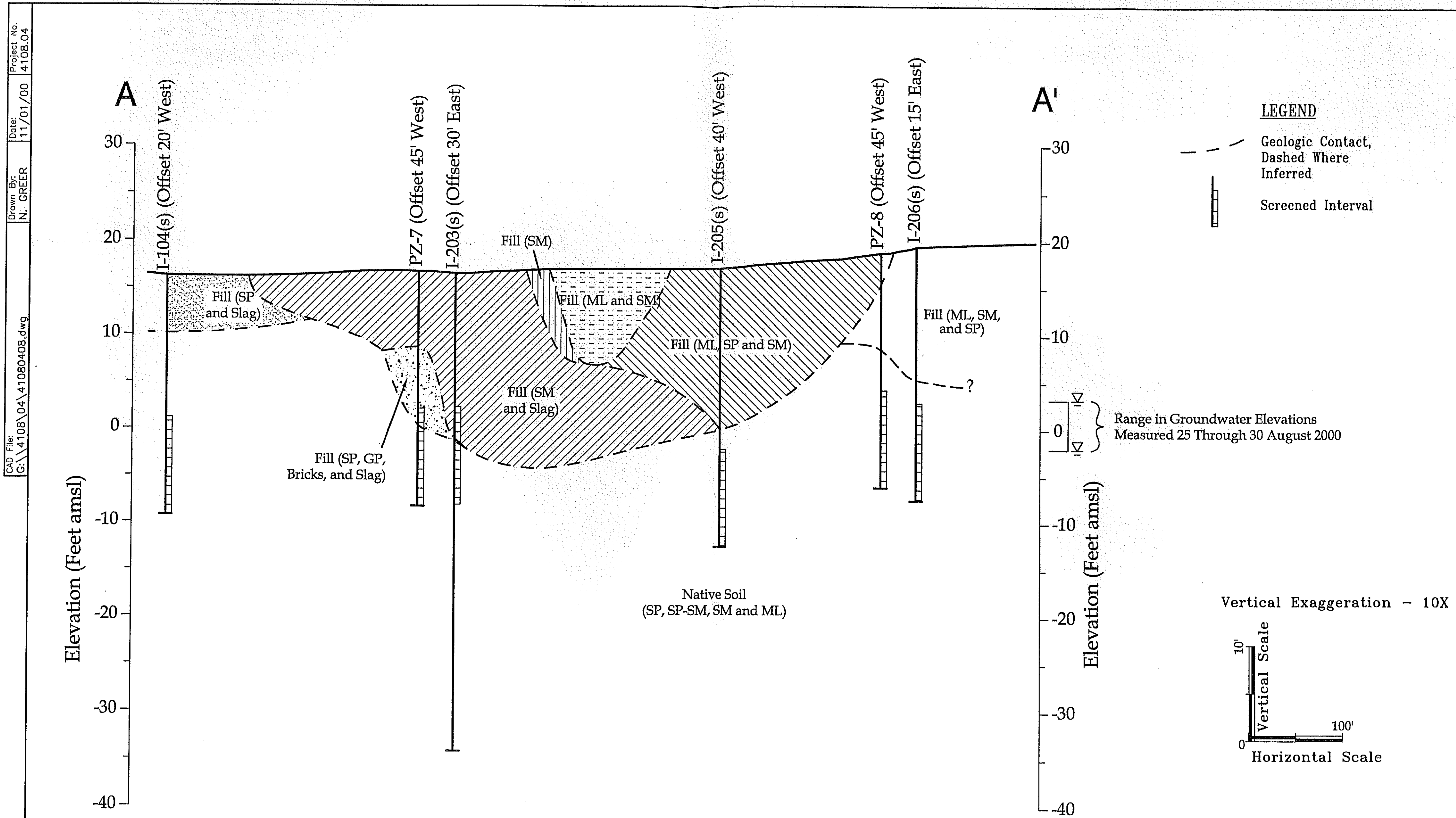


LEGEND

- Piezometer
- Monitoring Well

Figure 3
Location of Hydrogeologic Cross Section A-A'
Boeing Isaacson Property
Seattle, Washington

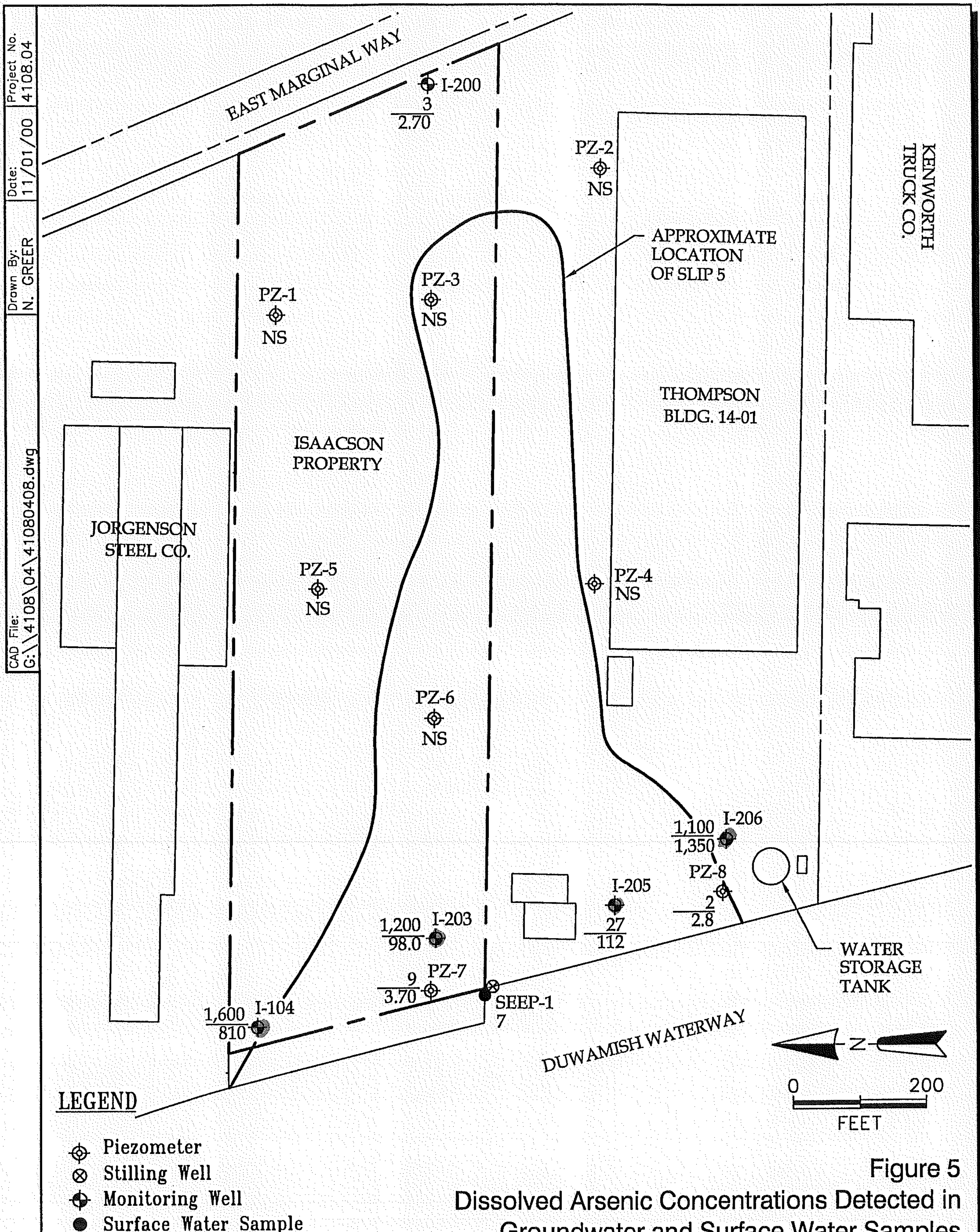
ERM 09/00



Modified from GeoEngineers (1997).

Figure 4
Geologic Cross Section A-A'
Boeing Isaacson Property
Seattle, Washington

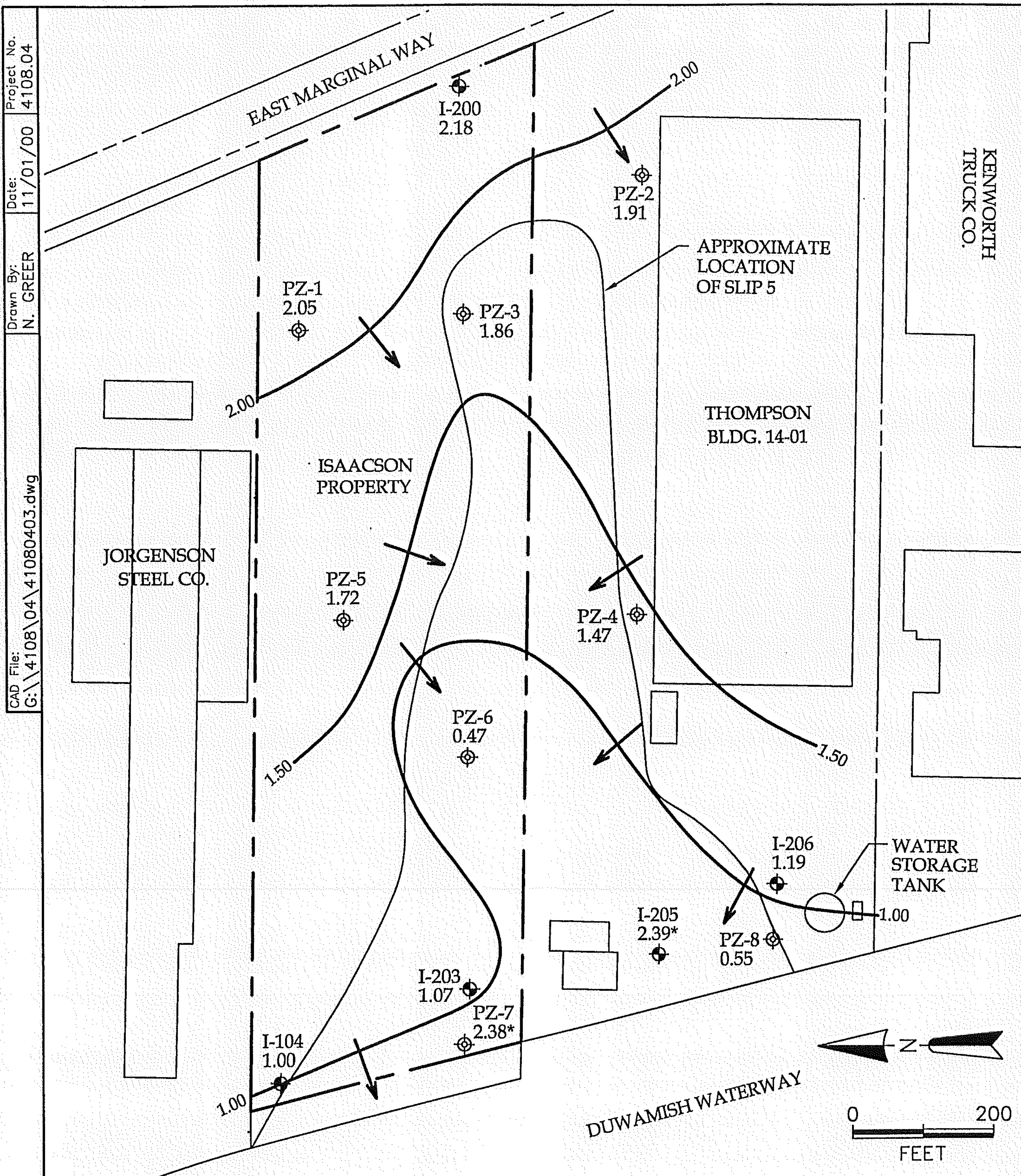
ERM 09/00



Dissolved Arsenic Concentration in Micrograms Per Liter (µg/l) Detected in Groundwater Samples Collected on the Dates Indicated and in a Suface Water Sample Collected 25 August 2000

Figure 5
Dissolved Arsenic Concentrations Detected in Groundwater and Surface Water Samples
Boeing Isaacson Property
Seattle, Washington

ERM 09/00



LEGEND

- Piezometer
- Monitoring Well
- 0.47 Mean Groundwater Elevation in Feet Above Mean Sea Level
- 1.00 Potentiometric Surface Contour in Feet Above Mean Sea Level
- * Anomalous Value, Not Used for Contouring
- Inferred Mean Groundwater Flow Direction

Mean Groundwater Elevations Calculated From Water Level Data Collected From 25 to 29 August 2000.

Figure 7
Mean Groundwater Elevations
Boeing Isaacson Property
Seattle, Washington

ERM 09/00

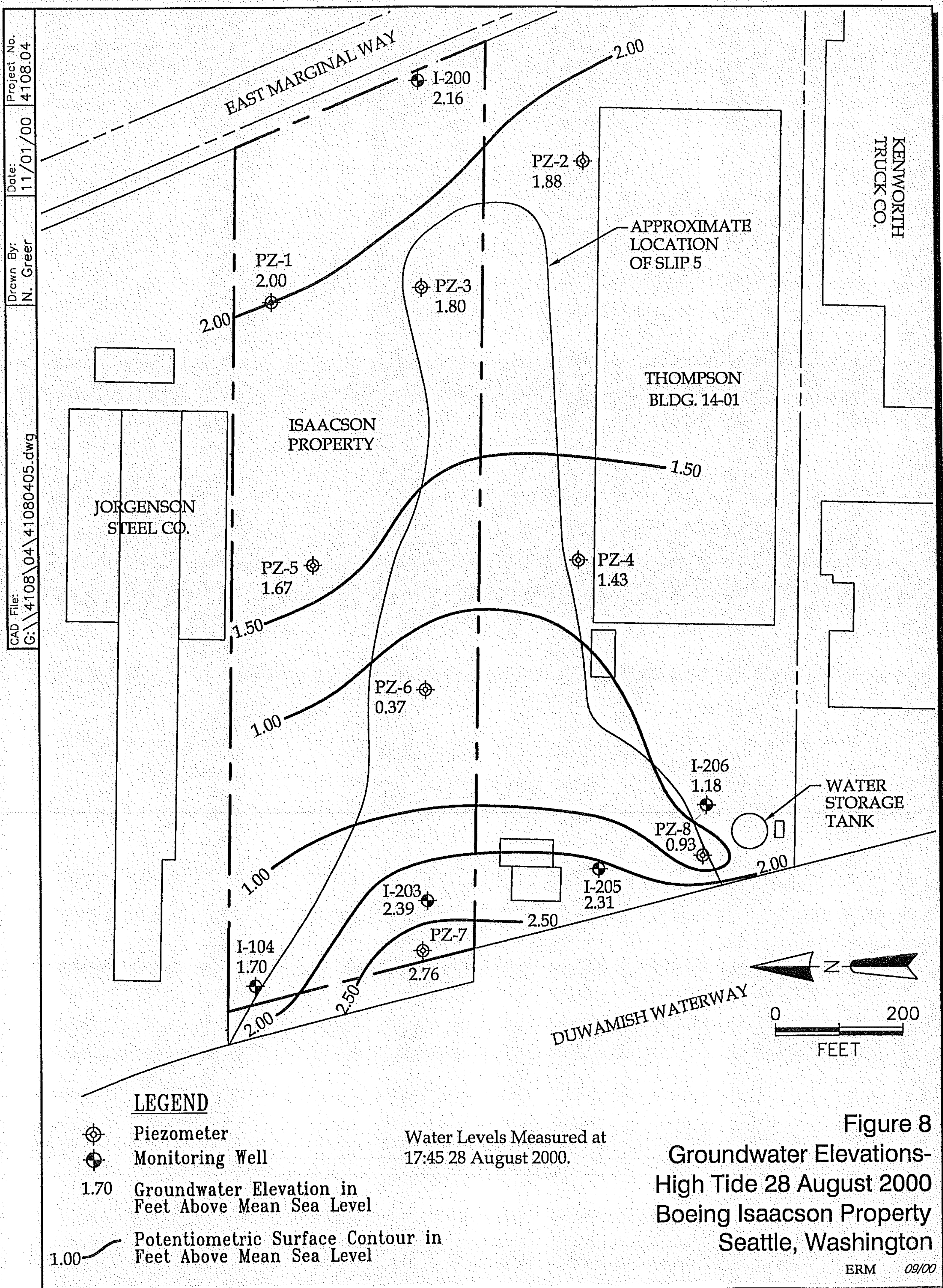
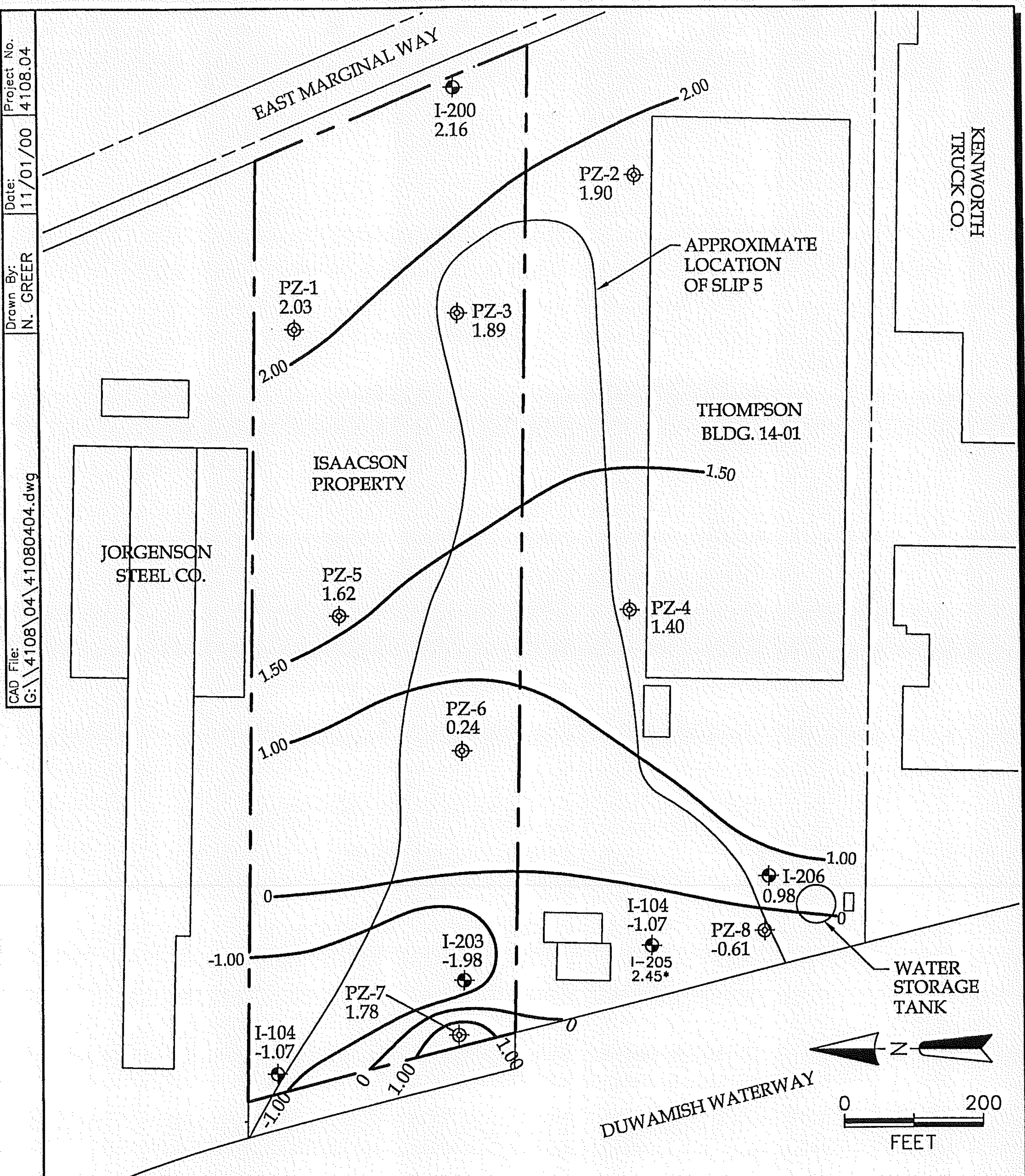


Figure 8
Groundwater Elevations-
High Tide 28 August 2000
Boeing Isaacson Property
Seattle, Washington

ERM 09/00



LEGEND

- Piezometer
- Monitoring Well
- 0.24 Groundwater Elevation in Feet Above Mean Sea Level
- 1.00 Potentiometric Surface Contour in Feet Above Mean Sea Level
- * Anomalous Value, Not Used for Contouring

Water Levels Measured at 11:00 28 August 2000.

Figure 9
Groundwater Elevations-Low Tide 28 August 2000
Boeing Isaacson Property
Seattle, Washington

ERM 09/00

TABLE 3

Summary of Water Quality Data

Boeing Isaacson Property

Seattle, Washington

Sampling Point	Date Sampled	Dissolved Arsenic[1] (µg/l)	Temperature[2] (degrees Celsius)	pH[2]	Conductivity[2] (microSiemens)	Dissolved Oxygen[2] (mg/l)	Reduction/Oxidation Potential[2] (millivolts)	Turbidity[2] (NTU)	Total Organic Carbon[3] (mg/l)	Total Iron[4] (mg/l)	Ferrous Iron[5] (mg/l)
PZ-4	8/24/00	--	17.9	6.31	809	0.79	-59	98.4	12	--	31
PZ-5	8/24/00	--	17.3	6.28	817	0.24	-46	150	27	--	44
PZ-7	8/24/00	9	16.5	9.06	12,400	0.54	-94	37.5	3.0	<0.02	3.1
	10/25/00	3.70	16.0	8.80	1,520	--	--	20.0	--		--
PZ-8	8/24/00	2	16.8	6.56	1,660	1.89	-95	38.2	7.0	12.1	12
	10/25/00	2.80	15.9	5.90	220	--	--	26.7	--	--	--
I-104	8/24/00	1,600	19.3	6.71	811	0.77	-113	20.2	--	11.3	--
	10/25/00	810	15.5	6.65	59,400	--	--	40.2	--	--	--
I-200	8/24/00	3	17.4	6.13	89.3	0.73	4	5.1	<1.5	6.32	6.7
	10/25/00	2.70	15.6	6.50	12.9	--	--	77.2	--	--	--
I-203	8/24/00	1,200	17.8	--	--	0.48	--	14.8	--	7.73	--
	10/25/00	98.0	13.9	6.79	465	--	--	5.4	--	--	--
I-205	8/24/00	27	20.8	6.13	992	0.72	-60	17.2	--	22.2	--
	10/25/00	112	18.9	6.53	115	--	--	3.7	--	--	--
I-206	8/24/00	1,100	19.3	6.66	839	0.89	-147	59.2	--	24.1	--
	10/25/00	1,350	16.13	6.34	87,300	--	--	31.2	--	--	--
SEEP-1	8/24/00	7	--	--	--	--	--	--	--	--	--

Notes:

[1]By USEPA Method 7060.

[2]Measured in the field using a Minisonde Water Quality Multiprobe.

[3]By USEPA Method 415.1.

[4]By USEPA Method 6010.

[5]By USEPA Method SM4500 FeD.

mg/l = Milligrams per liter

µg/l = Micrograms per liter

NTU = Nephelometric turbidity units

-- = not tested

TABLE 4

Summary of Calculated Tidal Efficiencies and Tidal Influence Lag Times

Boeing Isaacson Property
Seattle, Washington

Well/Piezometer Number	Average Tidal Efficiency (Percent)	Average High Tide Lag Time (Hours:Minutes)	Average Low Tide Lag Time (Hours:Minutes)
PZ-1	0.57	3:28	5:48
PZ-2	0.26	3:20	5:52
PZ-3	0.73	3:55	7:48
PZ-4	3.09	2:05	3:29
PZ-5	3.14	2:09	2:48
PZ-6	6.24	1:50	2:58
PZ-7	11.33	1:11	1:01
PZ-8	17.33	0:37	1:58
I-104	32.35	0:41	1:51
I-200	NC	NC	NC
I-203	37.84	0:26	0:45
I-205	0.93	2:18	5:46
I-206	3.20	1:01	2:28

Notes:

Average tidal efficiency and lag time values calculated from water level data collected 25 to 29 August 2000.

NC = Not calculatable

APPENDIX F

SEATTLE PUBLIC UTLITIES STORMWATER POLLUTION PREVENTION INSPECTION LETTER

WASHINGTON STATE DEPARTMENT OF ECOLOGY

State of Washington Department of Ecology
Northwest Regional Office

STORMWATER COMPLIANCE INSPECTION REPORT

WADOE Stormwater Compliance Inspection Form Last updated (08/04)

Section A: General Data

Inspection Date	NPDES Permit #	County	Receiving Waters	Inspector(s)	Fac Type
01/13/06	**S0300**32231	King	Duwamish Waterway	Greg Stegman	**Industrial**

Weather at time of inspection: Raining

Discharges to: Surface Water ☒ Ground Water ☐ Discharge and monitoring location: N47 31.544'; W122 18.508' (WGS84)

Section B: Facility Data

Name and Location of Facility Inspected	Entry Time	Permit Effective Date
Jorgensen Forge Corporation 8531 E Marginal Way S Seattle, WA 98108-4018	9:50 am	09/20/02
	Exit Time: 11:50 am	Permit Expiration Date: 09/20/07

Name(s) of On-Site Representative(s)/Title(s)/Phone and Fax Number(s)

Ron Altier

206-676-9249

Additional Participants:
Savina Uzunow, SPU; John Keeling, Ecology; Rayan Barth, Anchor Environmental; Jim Birch, Jorgensen Forge

Mailing Address of Responsible Official/Title/Phone and Fax Number.

Ron Altier
Jorgensen Forge Corporation
8531 E Marginal Way S
Seattle, WA 98108-4018
Phone number (206) 676-9249 Fax: ( ) - Contacted?
☒ Yes ☐ No

	Yes	No
Samples Taken?	☐	☒
Photos Taken?	☒	☐

Section C: Areas Evaluated During inspection (Check those that apply)

☒ Permit	☒ Wet & Dry Season Inspection	☒ Operations and Maintenance	☒ Effluent/ Receiving Waters
☒ SWPPP	☐ Vehicle/Equipment Wash Area	☐ Oil/Water Separator	☐ Pretreatment
☒ DMR Submittals	☐ Vehicle/Equipment Storage	☒ Catch Basins	☐
☒ Outdoor Storage	☐ Fueling Operations	☐ Wheel Wash	☐

Section D: Summary of Findings/Comments

CONCERNS AND RECOMMENDATIONS

For 2005, the second quarter total zinc value exceeded the action level stated in Stormwater General Permit (Permit) condition S4.C and the fourth quarter total zinc value exceeded the benchmark level stated in Permit condition S4.D.2. Therefore review Permit condition S4.C and take the appropriate actions.

BACKGROUND

This facility manufactures precision machined forgings from a variety of steel and other metal alloys. Stationary fueling, raw product storage and vehicle maintenance are conducted at the facility. Washing is performed, but wash water is discharged to a sanitary sewer. The facility's roof is galvanized.

There are four outfalls which discharge stormwater into the Duwamish Waterway. Outfall 003 is the stormwater sampling location. Five additional outfalls are inactive and have been plugged.

The facility's storm water catch basins contain inserts and are cleaned as needed. Outdoor areas are swept weekly. Oil/water separators are inspected monthly.

This facility is covered under the industrial stormwater general permit and has been inspected previously by the Department of Ecology in 1999. The purpose of this inspection is to conduct a compliance inspection per the requirement of the Revised Code of Washington (RCW) 90.48.560 and to provide technical assistance as appropriate.

INSPECTION

I arrived at the facility and met Ron Altier representing the facility and explained the purpose of the inspection. I reviewed the facility's Stormwater Pollution Prevention Plan (SWPPP) and I discussed the facility's discharge monitoring reports (DMRs) with Mr. Altier. I then inspected the stormwater catch basins, raw materials storage areas and stormwater discharge site.

For questions concerning this inspection report please contact Greg Stegman at (425)-649-7019, gste461@ecy.wa.gov or at the address below.

cc: Greg Stegman, Ecology

Signatures	
[signature] 062006 Gregory P. Stegman Date Stormwater Inspector Water Quality Program	Reviewed and approved by: [signature] 06/21/06 Donald Seeberger Date Unit Supervisor Water Quality Program

Washington State Department of Ecology – NWRO
3190 – 160th Avenue SE
Bellevue, WA 98008-5452
Phone: (425) 649-7000
Fax: (425) 649-7098

ANNOUNCED Inspection

City of Seattle
Gregory J. Nickels, Mayor

Seattle Public Utilities
Chuck Clarke, Director

February 7, 2006

Jorgensen Forge
Attn: Ron Altier
8531 East Marginal Way South
Seattle, WA 98108

Subject**:** Results from January 13, 2006 stormwater pollution prevention inspection: **Corrective action required.**

Dear Ron Altier:

Thank you for your cooperation during the inspection that was conducted at your facility at 8531 East Marginal Way South. Inspections of commercial and industrial properties are being conducted as part of a King County and Seattle Public Utilities (SPU) joint program to assist businesses in reducing the amount of pollutants discharged to the Duwamish Waterway via storm drains and combined sewer overflows.

During the inspection several items were identified that must be addressed. The following is the list of required corrective actions we discussed during the inspection:

1. **During the inspection Spill Cleanup Plan and procedures were posted at two locations at the facility. Please post a copy of the Plan at all chemical and fuel storage areas, at all repair shops, and near the steam cleaning rack. Your employees and visitors should be able to easily refer to the posted Spill Cleanup Plan in case of an emergency.**
2. **Please provide additional spill cleanup materials at the used oil storage and at the vehicle maintenance shop.**
3. **Please do not store totes and other containers with waste liquids on and near the steam cleaning rack. This type of materials should be stored away from vehicular traffic under cover and over secondary containment.**

During the inspection the following hazardous materials and waste management practices were identified that should be addressed.

1. **Please provide secondary containment and cover for all liquid storage on site. The containment should be able to hold 10 percent of the capacity of all stored containers or 110 percent of the capacity of the largest container, whichever is greatest.**

2. **During the inspection in the vehicle maintenance shop I found several containers which weren't labeled. All containers need labels that, at a minimum, identify their contents. I also recommend including information about health risks, flammability, reactivity, and required personal protection. If the material is hazardous waste it should have a hazardous waste label. Apply labels and position containers so labels are clearly visible. I have enclosed labels for your use.**

If you have any questions or concerns regarding the above identified pollution prevention corrections, please contact Savina Uzunow at 206-386-9787 or savina.uzunow@seattle.gov. You will receive a separate letter from the Department of Ecology regarding your NPDES permit.
I will return to re-inspect your property within 30 days to ensure that the necessary corrections have been completed.

SPU is working to reduce pollution in our drainage system and local surface waters. Implementing best management practices at your property is the most effective way to prevent pollutants from entering your storm drains, which ultimately discharge into the Duwamish Waterway. With your help we can improve the stormwater quality in Seattle.

Sincerely,

Savina Uzunow
Surface Water Quality Inspector

City of Seattle
Gregory J. Nickels, Mayor

Seattle Public Utilities
Chuck Clarke, Director

April 6, 2006

Jorgensen Forge
Attn: Ron Altier
8531 East Marginal Way South
Seattle, WA 98108

Subject: Results from the pollution prevention re-inspection: **In Compliance.**

Dear Mr. Altier:

Thank you for your cooperation during the re-inspection that was conducted at your facility at 8531 East Marginal Way South. Inspections of commercial and industrial properties are being conducted as part of a King County and Seattle Public Utilities (SPU) joint program to assist businesses in reducing the amount of pollutants discharged to the Duwamish waterway via storm drains and combined sewer overflows. SPU is also inspecting businesses to ensure that they are in compliance with the City's Stormwater, Grading, and Drainage Code (SMC 22.800).

During the re-inspection I did not observe any environmental compliance problems at your facility. Areas of environmental compliance inspected included verification of spill plan posting, secondary containment installation, labeling and proper storage of chemicals.

SPU and King County appreciate your efforts to reduce pollution in our city waterways. Implementing best management practices at your property is the most efficient and cost effective way to prevent pollutants from entering your storm drains, which ultimately discharge into the Duwamish Waterway. An inspector may return to your business in the future to review your pollution prevention practices and relay current and relevant technical information.

More information about the SPU surface water quality program can be found on the SPU web site at http://www.cityofseattle.net/util/surfacewater/default.htm. Information about the King County Industrial Waste Program can be found at http://dnr.metrokc.gov/wlr/indwaste/index.htm. Information concerning the King County Local Hazardous Waste Management Program can be found at http://www.govlink.org/hazwaste.

If you have any questions or concerns regarding this letter, please contact Ellen Stewart at (206) 615-0023 or Ellen.Stewart @seattle.gov.

Sincerely,

S. P. [signature]

Savina Uzunow
Surface Water Quality Inspector

Cc: Greg Stegman – Department of Ecology

APPENDIX G

1955 STORMWATER EASEMENT – BOEING 15-INCH CONNECTION TO 24-INCH PROPERTY LINE OUTFALL

4582029

E A S E M E N T

BETHLEHEM PACIFIC COAST STEEL CORPORATION, a Delaware corporation, for and in consideration of the sum of One Dollar ($ 1.00) in hand paid, hereby conveys and grants to BOEING AIRPLANE COMPANY, a Delaware corporation, and its successors and assigns, a perpetual easement for the construction, connection, operation, maintenance, repair, alteration, improvement and reconstruction of a sewer over, under, upon and across a parcel of land situated in King County, Washington, lying within the John Buckley Donation Claim No. 42, in Section 33, Township 24 North, Range 4 East, Willamette Meridian, described as follows:

> Commencing at a monument marking the intersection of the westerly margin of East Marginal Way with a line 825 feet south of and parallel to the north line of said John Buckley Donation Claim No. 42; thence S89°41'31" W along said parallel line 507.59 feet to the TRUE POINT OF BEGINNING of said easement; thence continuing S 89°41'31" W 16.00 feet; thence S 0°18'29" E 11.00 feet; thence N 89°41'31" E 16.00 feet; thence N 0°18'29" W 11.00 feet to the TRUE POINT OF BEGINNING, this easement containing an area of 176 square feet.

DATED this 3rd day of June, 1955.

BETHLEHEM PACIFIC COAST STEEL CORPORATION

By [signature]
President

By [signature]
Secretary

STATE OF CALIFORNIA
CITY AND
COUNTY OF SAN FRANCISCO } ss

On this 3rd day of June, 1955, before me, the undersigned, a Notary Public in and for the State of California, duly commissioned and sworn, personally appeared H. H. Fuller and S. L. Crary to me known to be the President and Secretary respectively, of Bethlehem Pacific Coast Steel Corporation, the corporation that executed the foregoing instrument, and acknowledged the said instrument to be the free and voluntary act and deed of said corporation, for the uses and purposes therein mentioned, and on oath stated that they were authorized to execute the said instrument and that the seal affixed is the corporate seal of said corporation.

Witness my hand and official seal hereto affixed the day and year first above written.

Irving P. Sicotte
Notary Public in and for the State of California, residing at San Francisco, California

IRVING P. SICOTTE
NOTARY PUBLIC IN AND FOR THE CITY AND COUNTY OF SAN FRANCISCO, STATE OF CALIFORNIA
My Commission Expires 30 September, 1956

Filed for Record June 9 1955 11 54 A.M.
Request of W. H. Judd
ROBERT A. MORRIS, County Auditor

APPENDIX H

LDW RI RISK-BASED THRESHOLD CONCENTRATIONS

Table 11-3. Comparison of sediment RBTCs and background concentrations for selected risk driver chemicals

Risk Driver Chemical	Unit	Risk Level	Sediment RBTC	Natural and Urban Background Sediment Concentration	
				Natural Background[a]	Urban Background[b]
Arsenic	mg/kg dw	1×10^{-6}	1.3 – 3.7[c]	12	**Upstream suspended solids:** 37 **Upstream sediment:** 6 – 9 **Urban bays:** 11
		1×10^{-5}	13 – 37[c]		
		1×10^{-4}	130 – 370[c]		
		HQ = 1	na		
		SQS	57		
		CSL	93		
cPAHs	µg/kg dw	1×10^{-6}	90 – 380[c]	77	**Upstream suspended solids:** nd **Upstream sediment:** 101 – 106 **Urban bays:** na
		1×10^{-5}	900 – 3,800[c]		
		1×10^{-4}	9,000 – 38,000[c]		
		HQ = 1	na		
Dioxin and furan TEQ	ng/kg dw	1×10^{-6}	13 – 37[c]	0.52	**Upstream suspended solids:** na **Upstream sediment:** 2.41 **Urban bays:** 14.9[d]
		1×10^{-5}	130 – 370[c]		
		1×10^{-4}	1,300 – 3,700[c]		
		HQ = 1	na		
Total PCBs	µg/kg dw	1×10^{-6}	500 – 1,700[c]	31	**Upstream suspended solids:** 60 **Upstream sediment:** 21 – 61 **Urban areas:** 135
		1×10^{-5}	5,000 – 17,000[c]		
		1×10^{-4}	50,000 – 170,000[c] 19 – 320[e]		
		HQ = 1	218 – 250[f]		
		SQS	130[g]		
		CSL	1,000[h]		

a The derivation of these preliminary natural background values is presented in Section 7.1. Final values, if any, needed for the FS will be developed in consultation with EPA and Ecology.

b The derivation of these urban background values is presented in Section 7.2. This table presents the range of mean concentrations (where more than one mean is available) from the studies examined in Section 7.2. The upstream suspended solids concentrations were based on particulate concentrations in water normalized to TSS. The upstream sediment values include upstream surface sediment samples and Upper Turning Basin area sediment core samples, as described in Section 7.2.

c RBTCs developed from the human health direct sediment contact RME scenarios.

d Mean dioxin and furan TEQ concentrations from five locations (Elliott Bay [Terminal 91], Lake Union [I-5 bridge], Lake Washington [Bothell], Lake Washington [Bellevue], and Lake Washington [Renton]) sampled for the RI in 2005 (see Appendix B, Section B.5.5.2.1).

e RBTCs developed from the human health seafood consumption RME scenarios.

f RBTCs developed from the otter prey ingestion scenario, estimated through the FWM.

g Reported value is lowest AET, which is functionally equivalent to the SQS, but in dry weight units.

h Report value is second lowest AET, which is functionally equivalent to the CSL, but in dry weight units.

AET – apparent effects threshold
cPAH – carcinogenic polycyclic aromatic hydrocarbon
CSL – cleanup screening level
FWM – food web model
na – not available
nd – not detected
PAH – polycyclic aromatic hydrocarbon
PCB – polychlorinated biphenyl
RBTC – risk-based threshold concentration
RME – reasonable maximum exposure
SQS – sediment quality standard
TEQ – toxicity equivalent quotient
TSS – total suspended solids