



DEPARTMENT OF
ECOLOGY
State of Washington

Lower Duwamish Waterway Source Control Status Report 2018

June 2020

Publication No. 20-09-172

Printed on recycled paper



This report is available on the Department of Ecology home page on the World Wide Web at:
<https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Cleanup-sites/Toxic-cleanup-sites/Lower-Duwamish-Waterway/Source-control>

For a printed copy of this report, contact:

Department of Ecology
Toxics Cleanup Program
Phone: 360-407-7170

Refer to Publication No. 20-09-172

If you need this publication in an alternate format, please call the Toxics Cleanup Program at 360-407-7170. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.



DEPARTMENT OF
ECOLOGY
State of Washington

Lower Duwamish Waterway Source Control Status Report 2018

Produced by

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

and

Leidos
18939 129th Avenue NE, Suite 112
Bothell, Washington 98011

With Assistance from:

City of Seattle
King County
Port of Seattle
U.S. Environmental Protection Agency

June 2020

Waterbody No. WA-09-1010
Publication No. 20-09-172

This page intentionally left blank.

Table of Contents

| | <u>Page</u> |
|---|-------------|
| Executive Summary | vi |
| 1.0 Introduction..... | 1-1 |
| 1.1 Lower Duwamish Waterway Site | 1-1 |
| 1.2 Memoranda of Understanding and Agreement..... | 1-5 |
| 1.3 Lower Duwamish Waterway Source Control Strategy..... | 1-5 |
| 1.4 Source Control Process | 1-6 |
| 2.0 Basin-wide Source Control Activities | 2-1 |
| 2.1 Action Item Status..... | 2-1 |
| 2.2 Business Inspections and Spill Investigations | 2-3 |
| 2.3 Source Tracing and Sampling..... | 2-8 |
| 2.4 Other Source Control Activities..... | 2-15 |
| 2.5 Site Assessment and Cleanup | 2-17 |
| 2.6 Additional Studies Relevant to Source Control | 2-21 |
| 2.7 Source Control Area-Specific Activities | 2-23 |
| 3.0 Upper Reach Source Control Areas..... | 3-1 |
| 3.1 RM 4.9 East (EAA-7: Norfolk CSO/SD) | 3-1 |
| 3.2 RM 4.3-4.9 East (Boeing Developmental Center)..... | 3-7 |
| 3.3 RM 3.9-4.3 East (Slip 6)..... | 3-9 |
| 3.4 RM 3.7-3.9 East (EAA-6: Boeing Isaacson / Central KCIA)..... | 3-12 |
| 3.5 RM 2.8-3.7 East (EAA-4: Boeing Plant 2 to Jorgensen Forge)..... | 3-13 |
| 3.6 RM 4.2-5.8 West (Restoration Areas) | 3-15 |
| 3.7 RM 3.8-4.2 West (Sea King Industrial Park)..... | 3-16 |
| 3.8 RM 3.4-3.8 West (EAA-5: Terminal 117)..... | 3-18 |
| 4.0 Middle Reach Source Control Areas..... | 4-1 |
| 4.1 RM 2.8 East (EAA-3: Slip 4)..... | 4-1 |
| 4.2 RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | 4-6 |
| 4.3 RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) | 4-11 |
| 4.4 RM 1.7-2.0 East (Slip 2 to Slip 3) | 4-12 |
| 4.5 RM 2.2-3.4 West (Riverside Drive)..... | 4-17 |
| 4.6 RM 2.1-2.2 West (EAA-2: Trotsky Inlet)..... | 4-19 |
| 4.7 RM 2.1 West (1 st Avenue S Storm Drain) | 4-20 |
| 4.8 RM 1.6-2.1 West (Terminal 115) | 4-22 |
| 5.0 Lower Reach Source Control Areas | 5-24 |
| 5.1 RM 1.2-1.7 East (Saint Gobain to Glacier Northwest)..... | 5-1 |
| 5.2 RM 1.0-1.2 East (King County Lease Parcels)..... | 5-2 |
| 5.3 RM 0.9-1.0 East (Slip 1)..... | 5-7 |
| 5.4 RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way)..... | 5-8 |
| 5.5 RM 0.0-0.1 East (Spokane Street to Ash Grove Cement) | 5-12 |
| 5.6 RM 1.3-1.6 West (Glacier Bay)..... | 5-13 |
| 5.7 RM 1.0-1.3 West (Kellogg Island to Lafarge Cement) | 5-14 |

5.8 RM 0.0-1.0 West (Spokane Street to Kellogg Island) 5-15

6.0 References 6-1

Appendices

Appendix A Source Control Area Maps
Appendix B Action Item Status
Appendix C SPU Source Control Inspections (2018)
Appendix D King County Source Control Inspections (2018)
Appendix E Ecology Source Control Inspections (2018)
Appendix F SPU Source Tracing Data (2018)
Appendix G King County Source Tracing Data (2018)

Figures

Figure ES-1. Status of Source Control Action Items
Figure 1-1. Lower Duwamish Waterway Source Area
Figure 1-2. Lower Duwamish Waterway Source Control Areas
Figure 1-3. Lower Duwamish Waterway Reach Boundaries
Figure 2-1. Seattle Storm Drain Basins in the Lower Duwamish Waterway
Figure 2-2. Lower Duwamish Waterway Combined Sewer Overflow Basins
Figure 2-3. Source Tracing Sample Locations in the LDW Basin (2018)

Tables

Table ES-1. High Priority Source Control Action Items to be Completed
Table 1-1. List of Source Control Areas, by Reach
Table 2-1. Number of Action Items by Source Control Area
Table 2-2. Summary of 2018 SPU Inspections by Source Control Area
Table 2-3. Summary of 2018 Ecology Inspections by Source Control Area
Table 2-4. Storm Drain Screening Levels
Table 2-5. City of Seattle Outfalls in the LDW Basin
Table 2-6. Cleanup Sites Under EPA Oversight
Table 2-7. Cleanup Sites Under Ecology Oversight
Table 2-8. Ecology Cleanup Site Status
Table 3-1. RM 4.9 East: Screening Level Exceedances in SPU Source Tracing Samples
Table 3-2. RM 3.9-4.3 East: Screening Level Exceedances in King County Source Tracing Samples
Table 3-3. RM 3.8-4.2 West: Screening Level Exceedances in King County Source Tracing Samples

| | |
|------------|--|
| Table 3-4. | RM 3.4-3.8 West: Screening Level Exceedances in SPU Source Tracing Samples |
| Table 4-1. | RM 2.8 East: PCB Concentrations in Slip 4 Sediment Traps |
| Table 4-2. | RM 2.8 East: Screening Level Exceedances in SPU and King County Source Tracing Samples |
| Table 4-3 | RM 2.3-2.8 East: Screening Level Exceedances in SPU Source Tracing Samples |
| Table 4-4. | RM 2.0-2.3 East: Screening Level Exceedances in SPU Source Tracing Samples |
| Table 4-5. | RM 1.7-2.0 East: Screening Level Exceedances in SPU and King County Source Tracing Samples |
| Table 4-6. | RM 2.2-3.4 West: Screening Level Exceedances in SPU Source Tracing Samples |
| Table 4-7. | RM 2.1 West: Screening Level Exceedances in SPU Source Tracing Samples |
| Table 4-8. | RM 1.6-2.1 West: Screening Level Exceedances in SPU Source Tracing Samples |
| Table 5-1. | RM 0.1-0.9 East: Screening Level Exceedances in SPU Source Tracing Samples |
| Table 5-2. | RM 0.0-1.0 West: Screening Level Exceedances in SPU Source Tracing Samples |

Acronyms and Abbreviations

| | |
|---------|---|
| 2LAET | Second Lowest Apparent Effects Threshold |
| BDC | Boeing Developmental Center |
| BEHP | bis(2-ethylhexyl)phthalate |
| BMP | best management practice |
| BTEX | benzene, toluene, ethylbenzene, and xylenes |
| CAP | Cleanup Action Plan |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| COC | chemical of concern |
| cPAH | carcinogenic polycyclic aromatic hydrocarbon |
| cDCE | cis-1,2-dichloroethene |
| CSL | cleanup screening level |
| CSO | combined sewer overflow |
| DCE | dichloroethene |
| DW | dry weight |
| EAA | early action area |
| Ecology | Washington State Department of Ecology |
| EMF | Electronics Manufacturing Facility |
| EOF | emergency overflow |
| EPA | U.S. Environmental Protection Agency |
| FS | feasibility study |
| GIS | geographic information systems |
| GSC | Grand Street Commons |
| GTSP | Georgetown Steam Plant |
| HPAH | high molecular weight polycyclic aromatic hydrocarbon |
| HWTR | Hazardous Waste & Toxics Reduction |
| IAA | Insurance Auto Auctions |
| ICS | Industrial Container Services |
| IDDE | illicit discharge detection and elimination |
| ISCO | in-situ chemical oxidation |
| ISGP | Industrial Stormwater General Permit |
| KCIA | King County International Airport |
| KCIW | King County Industrial Waste |
| LAET | Lowest Apparent Effects Threshold |
| LDW | Lower Duwamish Waterway |
| LDWG | Lower Duwamish Waterway Group |
| LPAH | low molecular weight polycyclic aromatic hydrocarbon |
| MBHA | Mount Baker Housing Association |
| MFC | Military Flight Center |
| µg/L | micrograms per liter |
| mg/kg | milligrams per kilogram |
| MOA | Memorandum of Agreement |
| MOU | Memorandum of Understanding |
| MS4 | municipal separate storm sewer system |
| MTCA | Model Toxics Control Act |

Acronyms and Abbreviations (Continued)

| | |
|-------|---|
| NBF | North Boeing Field |
| ng/kg | nanograms per kilogram |
| NPDES | National Pollutant Discharge Elimination System |
| ND | not detected |
| OC | organic carbon |
| PAH | polycyclic aromatic hydrocarbon |
| PCB | polychlorinated biphenyl |
| PCE | tetrachloroethene |
| PLA | Pollutant Loading Assessment |
| PLP | potentially liable person |
| QAPP | Quality Assurance Project Plan |
| RAL | remedial action level |
| RCRA | Resource Conservation and Recovery Act |
| RI | remedial investigation |
| RM | river mile |
| ROD | Record of Decision |
| SCAP | Source Control Action Plan |
| SCIP | Source Control Implementation Plan |
| SCL | Seattle City Light |
| SCO | sediment cleanup objective |
| SD | storm drain |
| SIM | Seattle Iron and Metals |
| SIU | significant industrial user |
| SMS | Washington State Sediment Management Standards |
| SPU | Seattle Public Utilities |
| SVOC | semivolatile organic compound |
| SWPPP | Stormwater Pollution Prevention Plan |
| TAC | Technical Advisory Committee |
| TCE | trichloroethylene |
| TCP | Toxics Cleanup Program |
| TEQ | toxic equivalent |
| TOC | total organic carbon |
| TPH | total petroleum hydrocarbons |
| TSCA | Toxic Substances Control Act |
| TSS | total suspended solids |
| USGS | U.S. Geological Survey |
| UST | underground storage tank |
| VC | vinyl chloride |
| VCP | Voluntary Cleanup Program |
| VOC | volatile organic compound |
| WQ | Water Quality |
| WSDOT | Washington State Department of Transportation |

Executive Summary

This report summarizes source control activities conducted by the Lower Duwamish Waterway (LDW) Source Control Work Group between January 1 and December 31, 2018. Previous status reports provided an overview of the LDW site and a summary of source control activities conducted between 2003 and December 2017. This report contains updated information related to LDW source control, including:

- The status of source control action items, business inspections, and source tracing activities;
- The status of site assessments and cleanups;
- Other source control activities conducted during 2018 at each of the 24 identified source control areas.

Source Control Action Items

Ecology grouped the 24 source control areas that drain to the LDW Superfund site into three larger sub-areas: upper reach, middle reach, and lower reach. Ecology developed Source Control Action Plans (SCAPs) for each of the 24 source control areas between February 2003 and September 2013. The SCAP for each source control area includes a list of action items needed to identify and control contaminant sources.

A total of 710 source control action items have been identified; 507 of these action items have been completed or were no longer necessary (71 percent).

- 140 of 186 high priority action items (75 percent) have been completed;
- 217 of 331 medium priority action items (66 percent) have been completed;
- 150 of 193 low priority action items (78 percent) have been completed.

The status of 18 action items was updated to completed or canceled during the current reporting period; these are listed in Appendix B, Table B-1. The current status of action items is shown in Figure ES-1.

A total of 46 high priority action items remain to be completed (Appendix B, Table B-2); of these, 17 action items are in the upper reach, 18 are in the middle reach, and 11 are in the lower reach. High priority action items that are not yet complete are listed in Table ES-1 at the end of this section.

Source Control Implementation

Business inspections and source tracing efforts continue. During the current reporting period, Ecology's Water Quality (WQ) and Hazardous Waste & Toxics Reduction (HWTR) inspectors and Ecology Toxics Cleanup Program (TCP) staff continued to coordinate facility inspections and priorities with Seattle Public Utilities (SPU) and King County inspectors to avoid overlap in the field. SPU conducted 222 inspections/site visits at 139 facilities (Appendix C). King County Industrial Waste inspects significant industrial users operating under a waste discharge permit once per year, and other industrial users at least every five years; a total of 43 inspections were conducted at 35 facilities in 2018 (Appendix D, Table D-1). King County Stormwater Services

conducted 29 source control inspections at 12 facilities in unincorporated areas of the LDW basin in 2018 (Appendix D, Table D-2). Ecology conducted 85 inspections at 81 facilities during 2018 (Appendix E, Tables E-1, E-2 and E-3).

Source tracing activities also continued during the current reporting period. SPU and King County collected in-line storm drain sediment trap and grab samples and storm drain catch basin grab samples. King County collected solids samples in combined sewers and at King County International Airport (KCIA).

Site characterization or cleanup is in progress at several facilities that are known or suspected threats to LDW sediments. The U.S. Environmental Protection Agency (EPA) is managing sites under the Resource Conservation and Recovery Act (RCRA); Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); and/or the Toxic Substances Control Act (TSCA). EPA is managing the Rainier Commons, Slip 4, Boeing Former Electronics Manufacturing Facility (EMF), Boeing Plant 2, Jorgensen Forge outfall site (completed in 2018) and sediment site, Former Rhone-Poulenc, and Terminal 117 sites (See Table 2-6).

Ecology's TCP is managing the following sites under the Model Toxics Control Act (MTCA): 8801 Site, Boeing Field Chevron, Boeing Isaacson Thompson, Crowley Marine (8th Avenue Terminals), Douglas Management Dock, Duwamish Marine Center, Duwamish Shipyard, Emerald Gateway, Fox Avenue Building, Glacier Northwest/Reichhold Chemical, Industrial Container Services (ICS), Jorgensen Forge (upland of the EPA-managed area), North Boeing Field/Georgetown Steam Plant (NBF-GTSP), North Terminal 115, Snopac Property, South Park Landfill, South Park Marina, and the Whitehead Tye Site. Ecology's HWTR Program is managing the following cleanup sites: Burlington Environmental/East of 4th Site, West of 4th Site, and General Electric-Dawson Street Plant (See Table 2-7).

Other source control activities in progress or completed during this period include the following:

- Ecology and EPA continued work on the Pollutant Loading Assessment for the Green-Duwamish watershed.
- SPU cleaned storm drain lines.
- SPU continued testing new sediment trap designs to provide more effective collection of storm drain solids in small diameter pipes.
- SPU tested two treatment technologies for use at the planned South Park Water Quality Facility to treat stormwater runoff from the 7th Avenue S drainage system.
- King County continued to implement combined sewer overflow (CSO) control projects in the LDW: West Duwamish Wet Weather Storage, Georgetown Wet Weather Treatment Station, and Rainier Valley Wet Weather Storage and conveyance improvements.
- Ecology and King County worked on and published several studies related to contaminants and potential chemical loads associated with upstream Green River sediments and surface water.

Major source control activities completed during this reporting period are summarized below by source control area. Additional information is provided in Sections 3 through 5.

Upper Reach – East Side

River Mile (RM) 4.9 East (EAA-7: Norfolk CSO/SD)

- Ecology conducted a stormwater compliance inspection at the Boeing Military Flight Center (MFC) on April 4, 2018 (Ecology 2018p [11508]). Ecology concluded that the Boeing MFC was out of compliance. In May 2018, Ecology sent Boeing a warning letter (Ecology 2018u [11506]). The letter indicated that The Boeing Company (Boeing) must comply with corrective actions, including the requirement to submit an engineering report that meets the requirements specified in Administrative Order 13932.
- Boeing submitted a second revised engineering report for the MFC to Ecology on August 14, 2018.
- Ecology sent Boeing MFC a warning letter in November 2018. In the warning letter, Ecology noted that exceedance of total suspended solids (TSS) limits has been a problem for this facility. Ecology required that Boeing MFC address the root source of this problem to prevent future exceedances (Ecology 2018ao [11507]).
- MFC discharge monitoring in the second quarter of 2018 indicated exceedances of the copper and zinc benchmarks, which triggered a corrective action. Ecology continues to work with Boeing to establish a clear path forward to meet Industrial Stormwater General Permit (ISGP) requirements at this facility.
- Ecology conducted a site hazard assessment at Unified Grocers in January 2018. Ecology determined that this site was contaminated with gasoline-range hydrocarbons, benzene, toluene, ethylbenzene, and total xylenes (BTEX). Ecology assigned the site a hazard ranking of five (Ecology 2018i [11512], 2018j [11511]).
- In September 2018, Supervalu announced that the company was closing operations at the Unified Grocers location (3301 Norfolk Street). They submitted a notice of termination form to Ecology for their ISGP (Supervalu 2018 [11454]). On September 28, 2018 Ecology terminated their coverage under the permit (Ecology 2018ar [11510]).
- Ecology approved an extension for the Remedial Investigation schedule of deliverables for the Boeing Field Chevron Site in June 2018. According to the revised schedule, field activities must be completed by January 31, 2019 and data validation must be completed by March 31, 2019 (Ecology 2018w [11288]).

RM 4.3-4.8 East (Boeing Developmental Center)

- Ecology WQ and Boeing negotiated and signed Agreed Order DE-15600 for the Boeing Developmental Center (BDC) Site in January 2018 (Ecology 2018a [11246]). Under the Agreed Order, Boeing will conduct further evaluation of stormwater at BDC.
- Ecology required Boeing to monitor for ISGP benchmark pollutants, TSS, total petroleum hydrocarbons (TPH), and polychlorinated biphenyls (PCBs), starting in January 2018. In addition, Ecology required accelerated consideration of advanced stormwater treatment if future benchmark exceedances meet the trigger conditions specified in the Order.

- In the first and second quarters of 2018, BDC was out of compliance with their effluent limits. As a result, Ecology WQ sent a warning letter to Boeing in November 2018. Ecology required that Boeing address the root source of the TSS limit problem and propose a solution designed to prevent future exceedances (Ecology 2018aq [11494]).
- BDC exceeded the TSS effluent limit in the first quarter of 2018 at DC 11. As a result, the facility triggered the requirement to implement Phase 2 advanced treatment, which was a condition detailed in the Agreed Order.
- Boeing continued cleanup activities under RCRA at the BDC property.
- Ecology HWTR identified Boeing as a potentially liable person (PLP) under MTCA for the release of hazardous substances at the BDC Site in March 2018 (Ecology 2018l [11281]).

RM 3.9-4.3 East (Slip 6)

- The PLPs for the 8801 Site submitted a revised draft of the Feasibility Study and a revised draft of the Interim Action Work Plan to Ecology in March 2018. Ecology provided review comments to both documents in November 2018.
- In 2018, Insurance Auto Auctions (IAA) submitted discharge monitoring reports to Ecology for the 8801 Site which indicated that the facility was out of compliance with effluent limits in the 4th quarter of 2017. Ecology WQ sent IAA a warning letter in November 2018 requiring IAA to comply with the National Pollutant Discharge Elimination System (NPDES) permit requirements (Ecology 2018ap [11503]).

RM 3.7-3.9 East (EAA-6: Boeing Isaacson / Central KCIA)

- Boeing submitted a draft Feasibility Study for the Boeing Isaacson/Thompson Site to Ecology in July 2018.

RM 2.8-3.7 East (EAA-4: Boeing Plant 2 to Jorgensen Forge)

- Jorgensen Forge submitted a Modification of Coverage Form to Ecology, requesting a Level 2 Waiver for the corrective action related to copper exceedances on May 17, 2018. Ecology granted the waiver on August 27, 2018, subject to a number of conditions.
- Ecology reviewed and commented on the first Draft RI Work Plan for the Jorgensen Forge upland cleanup Site in July 2018. A revised RI Work Plan was due to Ecology in January 2019.
- Phase 2 of the Jorgensen Forge Outfall Site Removal Action was completed in 2017 (Floyd|Snider 2018a [11437]). EPA approved the removal action in May 2018 (EPA 2018a [11524]).

Upper Reach – West Side

RM 4.2-5.8 West (Restoration Areas)

- Ecology added the Duwamish Substation to the confirmed and suspected contaminated sites list in March 2018 (Ecology 2018m [11496]).

RM 3.8-4.2 West (Sea King Industrial Park)

- Quarterly groundwater samples collected at the Glen Acres Golf & Country Club in August 2018 contained lead and BTEX concentrations that were below the MTCA Method A Cleanup levels in samples collected from all four groundwater monitoring wells. Petroleum hydrocarbon concentrations were above MTCA Method A cleanup levels in the sample collected from MW3 (Aerotech 2018b [11492]).

RM 3.4- 3.8 West (EAA-5: Terminal 117)

- Ecology continued negotiating an Agreed Order to perform a Remedial Investigation and study of environmental conditions at the South Park Marina Site through 2018.
- The Port of Seattle and the city of Seattle submitted a draft final Joint Long-Term Monitoring and Maintenance Plan for Terminal 117 to EPA in June 2018. EPA approved the plan in July 2018 (Peterson 2018 [11522]); it was finalized in September 2018 (Integral 2018b [11520]). The plan addresses inspections of the upland area (bank and cap), monitoring of the offshore sediment and storm drain solids, and maintenance of the City's drainage/stormwater treatment system in the adjacent streets, post cleanup.

Middle Reach – East Side

RM 2.8 East (EAA-3: Slip 4)

- 8th Avenue Terminals submitted a revised draft Remedial Investigation Report for the Crowley Marine Services 8th Avenue S Site to Ecology in June 2018.
- Ecology approved a Phase II Engineering Report from Crowley Marine Services 8th Avenue S Site on August 6, 2018. The report described a new stormwater conveyance system that would deliver the facility's stormwater runoff to one centralized Chitosan Enhanced Sand Filtration system for treatment.
- The Duwamish Reload Facility triggered copper, zinc, and turbidity benchmark exceedances in their stormwater samples collected from most of their outfalls during monitoring events in Quarters 1, 2, and 4 of 2018. Ecology WQ issued a Warning Letter to the facility on November 15, 2018.
- Boeing and Seattle City Light (SCL) conducted several groundwater sampling events at North Boeing Field and the Georgetown Steam Plant (NBF-GTSP) during 2018. This work was conducted as part of the Phase 3 supplemental groundwater investigation for the NBF-GTSP Remedial Investigation. One of the events involved sampling groundwater for PCB congeners at the NBF property boundary along East Marginal Way S. PCB congeners were detected at concentrations above the proposed cleanup level protective of LDW surface water (Landau 2018d [11312]).
- Boeing and SCL completed off-property soil vapor and groundwater sampling along Ellis Avenue in April and May 2018. Sampling was prompted by concerns that trichloroethylene (TCE) and vinyl chloride (VC) in groundwater could pose a vapor intrusion risk to businesses and residents in the area. The investigation did not indicate a risk for vapor intrusion.

RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)

- Seattle Iron & Metals (SIM) submitted a draft Interim Action Completion Report for the Whitehead Tye Site to Ecology in August 2018. This document was in Ecology's review process through the end of 2018.
- In October 2018, SIM installed a Stormcapture Modular Wetland Treatment System at the Whitehead Tye Site. SIM amended their sampling point location and started monitoring stormwater from a single new sample point which is located post treatment system.
- At the Whitehead Tye Site, stormwater was not making it through the system to the point of discharge from the treatment system. Troubleshooting identified a leak in the system at the pre-treatment unit. As a result, no stormwater was discharged from the system in 2018. Repair work continued into early 2019.
- Ecology issued an Immediate Action Order (Administrative Order Docket No. 15573) to SIM on January 10, 2018 in response to the violations that were observed by Ecology at a November 2017 inspection.
- Stormwater samples collected at the SIM discharge monitoring locations exceeded permissible limits for a range of parameters, including lead, copper, zinc, TSS and TPH throughout 2018. Ecology issued a Warning Letter to SIM on October 4, 2018 (and ultimately a Notice of Penalty on February 11, 2019) for exceedances of lead, copper, and zinc effluent limits in samples collected during various quarterly monitoring periods in 2018.

RM 1.7-2.0 East (Slip 2 to Slip 3)

- Duwamish Marine Center submitted a Draft Remedial Investigation Report in January 2018. Ecology reviewed the report and provided comments on March 21, 2018. Duwamish Marine Center revised the report and submitted a second draft to Ecology on May 4, 2018.
- At the Georgetown Wet Weather Treatment Station, deconstruction of the existing site building and site preparation construction work began in 2018. Work started on construction of the new outfall structure in the summer of 2018. In the fall of 2018, preparation work started on constructing the conveyance pipeline, which will connect the treatment station to the outfall.
- Ecology added the Georgetown Wet Weather Treatment Station to the confirmed and suspected contaminated sites list in September 2018 (Ecology 2018al [11900]).
- Consolidated Freightways submitted a Cleanup Action Closure Report to Ecology in July 2018 (Farallon 2018e [11513]). In October 2018, Ecology determined that upon completion of the proposed cleanup, no further remedial action will likely be necessary to address contamination at this site (Ecology 2018am [11495]).
- Ecology determined that upon completion of the proposed cleanup at the Kelly Moore Site, further remedial action will likely be necessary to clean up contamination.

- In 2018, a soil vapor extraction system was installed and started operating at the Kelly Moore Site. An air sparge system was installed and was expected to become operational in 2019. Kelly Moore planned to collect indoor air samples to assess baseline conditions prior to starting up the sparge system, and to compare soil vapor concentrations against results from baseline samples collected for the soil vapor extraction system.
- Kelly Moore developed cleanup levels based on the suggestions presented by Ecology in a meeting on May 8, 2018 (Wood 2018a [11491], 2019 [11927]).
- A property adjoining the Emerald Tool Site, located at 6346 6th Avenue, conducted a Phase II Limited & Targeted Subsurface Investigation (Aerotech 2018c [12394]). Soil and groundwater samples were collected from six boring locations along the boundary between the two properties. One soil sample, from 3.5 to 4 feet below ground surface, contained TCE at a concentration of 0.16 milligrams per kilogram (mg/kg), above the MTCA Method A cleanup level of 0.03 mg/kg. One groundwater sample contained VC at 12 micrograms per liter (µg/L), above the MTCA Method A groundwater cleanup level of 0.2 µg/L.
- Ecology conducted an Initial Investigation on the property adjoining the Emerald Tool Site, and determined that the release of chlorinated volatile organic compounds (VOCs) observed on the northern portion of the property likely migrated from the Emerald Tool Site. Ecology issued a No Further Action Memorandum for the 6346 6th Avenue Site (Ecology 2018aa [12397]).

Middle Reach – West Side

RM 2.1-2.2 West (EAA-2: Trotsky Inlet)

- Industrial Container Services submitted a revised draft Remedial Investigation Report in April 2018. Ecology provided comments to the PLPs in July 2018. The PLPs revised and resubmitted the report in October 2018.
- Ecology provided comments on Douglas Management Dock’s 2017 draft Remedial Investigation Report in January 2018. The PLPs submitted a revised draft report to Ecology in August 2018.

RM 2.1 West (1st Avenue S Storm Drain)

- Ecology issued a Final Cleanup Action Plan (CAP) for the Former South Park Landfill site in March 2018. The CAP describes the cleanup action approved by Ecology for the “Settlement Area” portion of this site. The cleanup action consists of a landfill cap/cover, landfill gas controls, stormwater controls, long-term monitoring, and environmental covenants (Ecology 2018n [11904]).

RM 1.6-2.1 West (Terminal 115)

- Ecology provided comments on the North Terminal 115 Site Draft Remedial Investigation Report in December 2018. Ecology required the Port of Seattle to submit a second Draft Remedial Investigation Report in 2020.

Lower Reach – East Side

RM 1.0-1.2 East (King County Lease Parcels)

- At the East of 4th Site, Stericycle proceeded to prepare a Conceptual Design for a full-scale 1,4-dioxane in-situ chemical oxidation (ISCO)-based cleanup action using injections in 2018. Additional sampling and bench-scale tests were then performed to optimize the design of the remedy (ISOTEC 2018 [11997]).
- Ecology approved a Tier 5 Well Installation Work Plan for the East of 4th Site in August 2018 (Ecology 2018ak [11903], Pioneer 2018 [11998]).
- Ecology approved two pilot-study work plans for the West of 4th Site in January 2018: the In Situ Metals Immobilization Pilot Testing Work Plan and the Chlorinated VOC Pilot Study Work Plan. PLPs subsequently started preliminary pilot study work (Ecology 2018d [11906], Ecology 2018e [11908]).
- Ecology approved the West of 4th Site’s interim action work plan for remediating contaminated soils and shallow groundwater beneath Capital Industries’ Plant 4 in January 2018 (Ecology 2018f [11895]).
- Ecology approved a revised Metals Immobilization Pilot Study Field Implementation Work Plan for the West of 4th Site in August 2018 (Aspect 2018g [11809], Ecology 2018aj [11907]).
- At the West of 4th Site, a potassium permanganate solution was injected into five first-phase locations below Capital Industries’ Plant 4 slab in mid-August 2018.
- In November 2018, the West of 4th Site PLP Group collected direct-push groundwater samples in close proximity to vapor intrusion-mitigated homes located along Orcas Street (in Site Unit 2). They installed two new water table monitoring wells near homes located one block south and west. In both areas the objective is to determine the current levels of groundwater TCE concentrations and to determine whether there is still the potential for unacceptable vapor intrusion impacts to indoor air.
- General Electric (GE) completed Phase I of the ISCO remedy at the GE Aviation Site in March 2018. The ISCO remedy included injection of sodium persulfate into the shallow and intermediate groundwater, continued operation of the hydraulic control system, continued operation of the vapor intrusion mitigation system, and institutional controls. Post-injection groundwater monitoring indicated the method did not adequately destroy the TCE and other groundwater contaminants (AECOM 2018a [11282]).
- GE continued to operate the groundwater hydraulic control system, and the vapor intrusion mitigation system at the GE Aviation site, which are requirements of the Ecology CAP and final cleanup engineering design report (Ecology 2018ag [11286], Ecology 2018ah [11287]).
- In December 2018, Ecology approved an indoor air quality monitoring plan to verify indoor air quality for the south side of McKinstry’s 5005 3rd Avenue building (AECOM 2018d [11208], Ecology 2018at [11899], Ecology 2018au [11285]).

- Ecology conducted a supplemental site investigation at Bob's Texaco Site in 2017 to provide current environmental data for the property; a draft report was published in May 2018 (Kennedy/Jenks 2018 [12392]). The investigation identified several data gaps, including insufficient information regarding the lateral extent of subsurface soil and groundwater contamination, and the lack of data to evaluate the vapor intrusion pathway.

RM 0.9-1.0 East (Slip 1)

- An Environmental Summary and Data Gap Analysis was prepared for the northern portion of the GSA Federal Center South property in 2018 (Kane 2019 [12388]). This report recommended redevelopment of all available groundwater monitoring wells followed by sampling and chemical analysis for TPH and VOCs. These data will be used to develop a plan for further investigation of soil and groundwater at the Site.

RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way)

- EPA and the Port of Seattle signed an Administrative Settlement Agreement and Order on Consent for Removal Action, Preliminary Assessment and Site Investigation at Terminal 108 on April 5, 2018.
- The Terminal 108 Preliminary Assessment report was submitted to EPA in December 2018.
- Ecology entered into Prospective Purchaser Consent Decrees with Grand Street Commons and MBHA for the Grand Street Commons Site. The consent decrees require Grand Street Commons and MBHA to complete a Remedial Investigation and Feasibility Study to evaluate the extent of the contaminated area and to develop cleanup options.
- The Grand Street Commons Site PLPs started preparing a Remedial Investigation work plan in the fall of 2018 (Aspect 2018h [11722]).

Lower Reach – West Side

RM 1.3-1.6 West (Glacier Bay)

- Duwamish Shipyard continued revisions to the Remedial Investigation Report during 2018. A revised Remedial Investigation Report was expected to be completed in 2019.
- Glacier Northwest submitted a data gaps work plan to Ecology in July 2018, and a treatability testing work plan in October 2018.

RM 1.0-1.3 West (Kellogg Island to Lafarge Cement)

- On September 19, 2018 Lafarge Cement violated the conditions of their NPDES permit when they dropped a super sack containing 21,300 pounds of soil predominantly contaminated with diesel and metals during transloading activities. Some of the contaminated soil fell into the LDW. Lafarge's contractor recovered approximately 4,000 pounds of the estimated 4,020 pounds of soil that spilled into the LDW.

Ecology sent Lafarge a letter on September 19, 2018 requiring Lafarge to clean up the dock and barge to minimize the contaminated soil that could enter the storm drain or the

waterway, and to update best management practices for transloading super sacks. Lafarge responded to Ecology on October 18, 2018.

Table ES-1. High Priority Action Items to be Completed

| Facility | Facility/ Site ID | Action Item | Action Item Category | Responsible Party | Status |
|--|----------------------|--|-------------------------|-------------------------------------|-------------|
| Upper Reach | | | | | |
| RM 4.9 East (EAA-7: Norfolk CSO/SD) | | | | | |
| BDC-South | 4581384 | Continue sediment monitoring in the vicinity of the south storm drain sediment removal activities. | Cleanup | Boeing | In Progress |
| BDC-South | 4581384 | Continue monitoring storm drain solids. | Environmental Sampling | Boeing | In Progress |
| RM 3.9-4.3 East (Slip 6) | | | | | |
| 8801 Site (Former PACCAR Site) | 2072 | Re-evaluate existing soil and groundwater data and compare to site-specific screening levels (to be developed) for metals, PAHs, petroleum hydrocarbons, PCBs, SVOCs, and VOCs as COCs in the LDW, and test for dioxin/furans. | Cleanup | Ecology, Property owner/operator | In Progress |
| 8801 Site (Former PACCAR Site) | 2072 | Complete Phase 2 of the Sediment Evaluation Work, which includes sediment core sampling in selected locations in the LDW adjacent to the site. | Cleanup | Ecology, Property owner/operator | |
| 8801 Site (Former PACCAR Site) | 2072 | Negotiate expanding the stormwater and storm drain solids monitoring to add COCs at the site. Review future monitoring results to determine if further actions are necessary. | Cleanup | Ecology, Property owner/operator | In Progress |
| Former Rhone-Poulenc Site | 2150 | Continue to monitor the effectiveness of the hydraulic interim control measure, and investigate the presence of elevated copper concentrations in groundwater outside the barrier wall and the potential leak in the barrier wall. | Cleanup | EPA, Property owner/operator | In Progress |
| Former Rhone-Poulenc Site | 2150 | Investigate and address shoreline bank contamination from historical site operations and releases (e.g. application of vanillin black liquor solids to the shoreline bank for weed control). | Cleanup | EPA, Property owner/operator | In Progress |

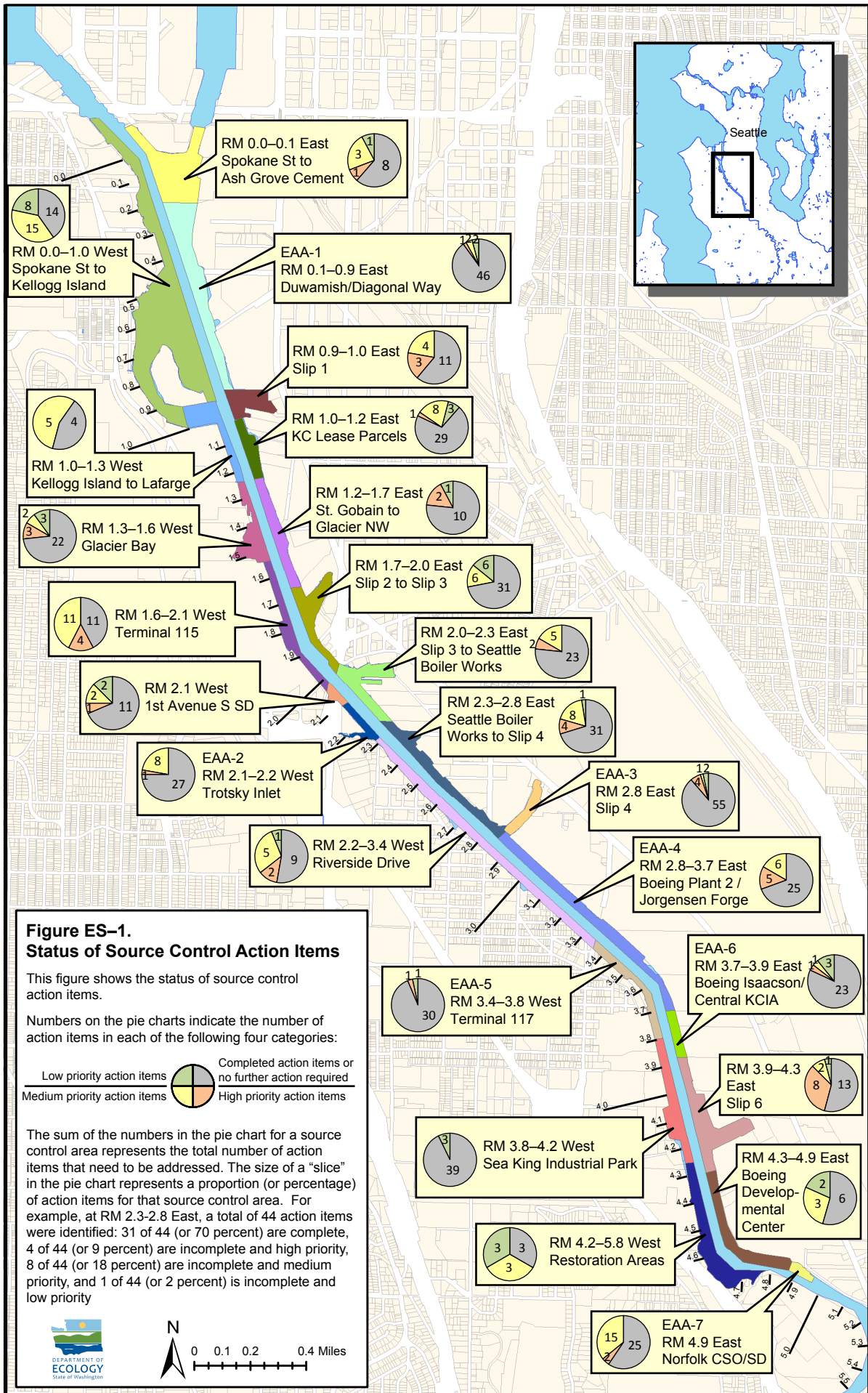
| Facility | Facility/ Site ID | Action Item | Action Item Category | Responsible Party | Status |
|--|----------------------|---|---------------------------|--|----------------|
| Former Rhone-Poulenc Site | 2150 | Review the current SWPPP and Operations and Maintenance Plan. Make necessary changes and additions to prevent contaminants from potential upland sources (such as fuel leaks from damaged vehicles) from migrating to Slip 6 source control area sediments via the stormwater system. | BMP Implementation | Ecology, Property owner/operator | |
| Museum of Flight (MOF) | 98798343 | Monitor stormwater and/or storm drain solids at MOF and former BDC properties in the vicinity of USTs and associated groundwater contamination. | Environmental Sampling | Ecology, Property owner/operator | In Progress |
| Museum of Flight (MOF) | 98798343 | Identify the source and extent of groundwater contamination on the former BDC property, and conduct remedial action, as necessary. | Cleanup | Ecology, Property owner/operator | In Progress |
| RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA) | | | | | |
| Boeing Isaacson/ Thompson Site | 2218 | If COCs in soil and groundwater are present at concentrations that pose a risk of sediment recontamination, then develop a plan for controlling these contaminant sources. | Cleanup | Ecology, Boeing | In Progress |
| RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge) | | | | | |
| Boeing Plant 2 | 2100 | Continue shoreline groundwater monitoring. | Cleanup | EPA, Boeing | In Progress |
| Boeing Plant 2 | 2100 | Conduct an investigation to provide additional hydrogeologic data at the boundary of the Boeing Plant 2/Jorgensen Forge facilities. | Source Assessment | Boeing | In Progress |
| Boeing Plant 2 | 2100 | Collect in-line sediment samples in the city of Seattle and city of Tukwila systems immediately prior to discharge to Plant 2's storm drain system. | Environmental Sampling | Ecology, Boeing | |
| Jorgensen Forge | 2382 | Develop a hydrogeologic site model as part of the source control investigation to characterize the groundwater system on site, including tidal influence. | Source Assessment | Jorgensen, Boeing | In Progress |
| Jorgensen Forge | 2382 | Complete a Remedial Investigation/Feasibility Study of the upland site area | Cleanup | Jorgensen, Boeing | In Progress |
| RM 3.4-3.8 West (EAA-5: Terminal 117) | | | | | |
| Adjacent Streets/Dallas Ave. | NA | Continue monitoring of storm drain solids | Environmental Sampling | SPU, Port of Seattle | In Progress |

| Facility | Facility/ Site ID | Action Item | Action Item Category | Responsible Party | Status |
|---|----------------------|--|-------------------------|---|-------------|
| Middle Reach | | | | | |
| RM 2.8 East (EAA-3: Slip 4) | | | | | |
| North Boeing Field / KCIA / I-5 Storm Drains | 2387398, 2753918 | Reinstall sediment traps and continue monitoring as needed. | Environmental Sampling | SPU, Boeing, King County | In Progress |
| North Boeing Field | 2753918 | Determine impact of remaining joint sealant material on PCB concentrations in stormwater. | Source Assessment | Ecology | In Progress |
| North Boeing Field | 2753918 | Continue source tracing in north drain line to identify and/or eliminate transport of PCBs to Slip 4. | Source Assessment | Boeing | In Progress |
| NBF-GTSP | 2050 | Conduct RI/FS and implement interim actions (as needed). | Cleanup | Ecology, Boeing, City of Seattle, King County | In Progress |
| RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | | | | | |
| S Garden Street and S Myrtle Street Storm Drains | NA | Conduct source tracing to identify potential contaminant sources to stormwater discharging to the LDW. | Source Assessment | SPU, Ecology | In Progress |
| Seattle Boiler Works, Inc. | 17577864 | Determine if the five outfalls that are not included in Seattle Boiler Work's NPDES permit are in use. If in use and Seattle Boiler Works is the source of discharge, modify the facility's stormwater permit to include these outfalls. | Inspection | Ecology | |
| Puget Sound Truck Lines | 41684823 | Determine whether the five outfalls identified at the property are active, and identify the source of discharge from these outfalls, if any. | Source Assessment | Ecology, Property owner/operator | |
| Crowley Marine Services | 1940187 | In conjunction with an Agreed Order for the Crowley Marine Services site, perform additional investigations that include collection of data on chemical concentrations in soil and groundwater at the western and southern portions of the property. | Cleanup | Property owner/operator | In Progress |
| RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) | | | | | |
| S Brighton Street SD | NA | Conduct source tracing in the S Brighton Street SD basin. | Source Assessment | SPU, Ecology | In Progress |
| S River Street SD | NA | Conduct source tracing in the S River Street SD basin. | Source Assessment | SPU, Ecology | In Progress |

| Facility | Facility/ Site ID | Action Item | Action Item Category | Responsible Party | Status |
|---|----------------------|--|-------------------------|--------------------------|-------------|
| RM 2.2-3.4 West (Riverside Drive) | | | | | |
| Independent Metals Plant 2 | 16139 | Request drainage information from Independent Metals or the current operator at this property for Outfalls 2109 and 2111 to determine if the outfalls are operational and to identify the drainage areas associated with the outfalls, if any. | Information Request | Ecology | |
| American Civil Constructors Barge Removal Ramp | NA | Request American Civil Constructors to provide information about the fill used for a barge removal ramp, to determine if the fill is a potential source of contaminants to adjacent sediments. | Information Request | EPA, USACE | |
| RM 2.1-2.2 West (EAA-2: Trotsky Inlet) | | | | | |
| 2nd Avenue S SD | NA | Continue source tracing to identify sources of phthalates and other COCs. | Source Assessment | SPU | In Progress |
| RM 2.1 West (1st Avenue S SD) | | | | | |
| 1st Avenue S Bridge Drains (Outfalls 2505, 2507, 2510, 2512) | NA | Request additional information from WSDOT regarding the quantity and quality of stormwater and solids discharged to the LDW through the bridge drains. | Information Request | Ecology | |
| RM 1.6-2.1 West (Terminal 115) | | | | | |
| Terminal 115 - Port of Seattle Storm Drain Outfalls (Outfalls 2122, 2123, 2124, 2220, and POS 6146) | 4040072 | Negotiate an Agreed Order with the Port, to include Terminal-wide investigations to characterize the nature and extent of potential COC sources in fill material, soil, groundwater, and stormwater at Terminal 115, including specific areas identified in the Terminal 115 SCAP. | Cleanup | Ecology, Port of Seattle | In Progress |
| Terminal 115 - Port of Seattle Storm Drain Outfalls (Outfalls 2122, 2123, 2124, 2220, and POS 6146) | 4040072 | Perform a video inspection of storm drain lines to identify areas where groundwater infiltrates the storm drain system. | BMP Implementation | Port of Seattle | |

| Facility | Facility/ Site ID | Action Item | Action Item Category | Responsible Party | Status |
|---|----------------------|---|----------------------------|----------------------------|--------|
| RM 1.2-1.7 East (Saint Gobain to Glacier Northwest) | | | | | |
| Terminal 115 - Port of Seattle Storm Drain Outfalls (Outfalls 2122, 2123, 2124, 2220, and POS 6146) | 4040072 | Provide information regarding discharges to the deck drains north of Berth 1 to Ecology. Information to be provided will include, at minimum, a description of BMPs employed to prevent pollution of the stormwater runoff that is conveyed to the deck drains. | Information Request | Port of Seattle | |
| Former Foss Environmental Services | 36326474 | Request that Haslund MP perform an environmental investigation to characterize the nature and extent of potential sediment COCs in soil and groundwater beneath the property. Soil and groundwater contamination may be present due to historical operations by Boeing. | Environmen tal Sampling | Ecology | |
| Lower Reach | | | | | |
| Saint Gobain Containers Inc. | 94925241 | Determine appropriate engineering controls for the inaccessible contamination located beneath the soil/water separator described in the 1991 Limited UST Assessment. | Cleanup | Property Owner/Operator | |
| Longview Fibre Paper and Packaging | 2226 | Review the latest groundwater monitoring report regarding exceedances of diesel-range hydrocarbons. | Data Evaluation | Ecology | |
| RM 1.0-1.2 East (KC Lease Parcels) | | | | | |
| Cadman Seattle, Inc. | 70313617 | Require Cadman to report when discharges to Outfall No. 2244 occur to allow Ecology to track overflow events and evaluate potential impacts to the LDW. | Information Request | Ecology | |
| RM 0.9-1.0 East (Slip 1) | | | | | |
| Federal Center South | 10233917 | Perform Site Hazard Assessment | Source Assessment | Ecology | |

| Facility | Facility/ Site ID | Action Item | Action Item Category | Responsible Party | Status |
|---|----------------------|--|---------------------------|----------------------------|----------------|
| Manson Construction Company | 80333167 | Obtain laboratory data and site plans from historical site assessment(s) and remediation performed at the property. Confirm that satisfactory completion of soil cleanup activities was achieved. Determine if arsenic or other sediment COCs are present in soil and groundwater beneath the facility at concentrations that may recontaminate sediments. | Records Review | Ecology | |
| Manson Construction Company | 80333167 | If satisfactory soil cleanup was not achieved, require the property owner/operator to conduct a site assessment to determine residual concentrations of sediment COCs in soil and groundwater beneath the property. | Environmental Sampling | Ecology | |
| RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) | | | | | |
| Rainier Commons / Former Rainier Brewery Property | 8972, 9192461 | Sample and remove PCB-contaminated building materials, including interior paint, as needed. | Cleanup | EPA/Property Owner | In Progress |
| RM 0.0-0.1 East (Spokane Street to Ash Grove Cement) | | | | | |
| Port of Seattle Terminal 104 | 72668645 | Review post remediation reports and annual report as part of the VCP and determine whether further action is needed. | Records Review | Ecology | |
| RM 1.3-1.6 West (Glacier Bay) | | | | | |
| Duwamish Shipyards | 2071 | Conduct site investigations as specified in the Agreed Order Statement of Work. | Cleanup | Property owner/operator | In Progress |
| Duwamish Shipyards | 2071 | Review site investigation results and assess potential for sediment recontamination and need for remedial actions. | Cleanup | Ecology | In Progress |
| Glacier Northwest | 23881883 | Review site investigation results and assess potential for sediment recontamination and need for remedial actions. | Cleanup | Ecology | In Progress |



1.0 Introduction

This Source Control Status Report summarizes the source control activities conducted by the Lower Duwamish Waterway (LDW) Source Control Work Group¹ from January 1, 2018 through December 31, 2018. Previous status reports provided an overview of the LDW Superfund site, the strategy for controlling sources of pollutants to the LDW, the process for developing Source Control Action Plans (SCAPs), the methods and process for implementing SCAPs, issues associated with permitted discharges, and summaries of source control activities conducted between 2003 and December 2017 (Ecology 2007 [00021]², 2008a [00065], 2008d [00068], 2009c [00090], 2011c [00095], 2012b [00098], 2013 [10359], 2014 [10620], 2018y [12005], and 2019a [12262]).

This report updates relevant information related to LDW source control, including the status of source control action items; business inspections and source tracing activities conducted during the reporting period (2018); status of site assessments and cleanups; public involvement and outreach activities; and other source control activities conducted during the current reporting period. Detailed background information on individual source control areas is provided in the Summary of Existing Information and Identification of Data Gaps (Data Gaps Reports) and SCAP for each area, as referenced in the text.

Section 1.0 summarizes background information on the LDW Superfund site. Section 2.0 describes basin-wide source control activities. Sections 3.0, 4.0, and 5.0 describe site-specific source control activities for the upper, middle, and lower reach of the LDW, respectively. Section 6.0 contains a list of references.

Appendix A provides a folio with maps of each LDW source control area. Appendix B summarizes action items that were reported as complete during the current reporting period, and action items that have not yet been completed. Appendices C, D, and E list the Seattle Public Utilities (SPU), King County, and Washington State Department of Ecology (Ecology) source control inspections conducted during the current reporting period, respectively. Appendices F and G provide SPU and King County source tracing sample results for 2018.

1.1 Lower Duwamish Waterway Site

The LDW Superfund site is approximately 5 miles long and represents the downstream portion of the Duwamish River. The site extends from the southern tip of Harbor Island in Seattle, Washington, to just south of the turning basin near S 102nd Street in Tukwila, Washington (Figure 1-1). The source area is defined by the combined stormwater/sanitary sewer service area

¹ The Source Control Work Group includes the primary public agencies responsible for source control for the LDW: the Washington Department of Ecology, the City of Seattle, King County, the Port of Seattle, the City of Tukwila, the Puget Sound Clean Air Agency, the Washington State Department of Transportation and the U.S. Environmental Protection Agency.

² Numbers in brackets [xxxxx] refer to the LDW Source Control Document Number. For example, 'Ecology 2019a' is document number 12262. This number is provided to minimize confusion between documents with similar reference names.

and the separated stormwater drainage basins, and it encompasses 20,400 acres, or approximately 32 square miles.

Chemicals of concern (COCs) in the waterway include arsenic and other metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), dioxins/furans, phthalates, and other organic compounds. These chemicals pose a health risk to people, fish, and wildlife.

1.1.1 Lower Duwamish Waterway Sediment Cleanup

In December 2000, the Lower Duwamish Waterway Group (LDWG), composed of the City of Seattle, King County, the Port of Seattle, and The Boeing Company (Boeing), entered into an Administrative Order on Consent for Remedial Investigation/Feasibility Study. LDWG completed a remedial investigation (RI) and feasibility study (FS) for the LDW Superfund site in July 2010 and October 2012, respectively (Windward 2010 [00011]; AECOM 2012 [00099]).

In 2013, the U.S. Environmental Protection Agency (EPA) issued a Proposed Plan that included a summary of the cleanup alternatives and identified EPA's preferred cleanup option for the LDW (EPA 2013 [02415]). EPA issued a Record of Decision (ROD) for the site in November 2014 (EPA 2014 [12119]). The ROD provides an overview of the contamination present in the LDW, summarizes the associated risks to human health and the environment, describes the cleanup alternatives considered, and identifies EPA's Selected Remedy to address these risks. In August 2015, EPA added a correction memorandum to the LDW site file, which identified a few minor errors in the ROD (EPA 2015 [11095]).

The Selected Remedy is a component of an overall strategy for addressing contamination and the associated risks in the LDW. This strategy includes:

- Early identification and cleanup of the most contaminated areas in the LDW, referred to as early action areas (EAAs) (Figure 1-1),
- Controlling sources of contamination to the LDW, and
- Cleanup of the remaining contamination in the LDW, including long-term monitoring to assess the success of the remedy in achieving cleanup goals.

EPA, Ecology, and the LDWG members signed a fourth amendment to the Agreed Order on Consent for the LDW on July 9, 2018 (EPA 2018b [11299]). The purpose of the fourth amendment is to design the remedy for the LDW upper reach (River Mile [RM] 3.0 to RM 5.0), to incorporate and supersede the work being carried out under the third amendment to the Agreed Order on Consent in support of the development of seafood consumption institutional controls for the site, and to provide for timely periodic monitoring of selected site conditions (EPA 2018b [11299]).

The Selected Remedy will be implemented after cleanup of the EAAs has been completed, source control has been implemented that is sufficient to minimize recontamination, additional sampling and analyses have been conducted, and a remedy design has been completed.

1.1.2 Progress Toward Sediment Cleanup During 2017/2018

LDWG started working to design the cleanup for the upper reach in 2018.

Enhanced Natural Recovery/Activated Carbon Pilot Study

LDWG is conducting an enhanced natural recovery/activated carbon pilot study to evaluate the effectiveness and potential impacts of using this kind of treatment technology in the LDW, as well as to identify the areas that may be best suited for this technology (AMEC 2015 [11213]). This study will determine whether enhanced natural recovery material impregnated with granular activated carbon can be successfully applied to reduce the bioavailability of PCBs in remediating contaminated sediments in the LDW. The pilot study construction was completed in early 2017 (AMEC 2018c [11441]), and Year 0 samples were subsequently collected between January and February 2017 (AMEC 2018a [11284]). Surface sediment and solid-phase microextraction extract samples were collected from the scour, intertidal, and subtidal plots to determine concentrations of freely dissolved PCBs in porewater, and PCBs, total organic carbon (TOC), activated carbon, and grain size in bulk sediment. The Year 1 data package (submitted in September 2018) characterized the conditions one year after the pilot study construction (Wood 2018b [11527]). Sampling will continue annually through Year 3 of the pilot study (March through June in 2019 and 2020).

In 2018, LDWG submitted a third Quality Assurance Project Plan (QAPP) addendum for the enhanced natural recovery/activated carbon pilot study. This addendum details modifications to the analytical methods for carbon analysis and it adds a sieving step to the preparation of samples comprised of the gravelly sand enhanced natural recovery substrate. It also formally documents a series of discussions and decisions that took place between LDWG, EPA, and Ecology (AMEC 2018 [11493]).

Pre-design Studies

LDWG is conducting pre-design studies to help EPA ensure that all remedial design data requirements are addressed in the correct sequence and schedule for the ROD implementation (Windward 2017c [11097]). The purpose of the pre-design studies is to:

- Establish post-EAA cleanup baseline conditions in environmental media,
- Evaluate the effectiveness of EAA cleanups and the degree to which natural recovery has occurred since the RI/FS,
- Establish baseline data for comparison to post-remedial action data,
- Aid in the evaluation of source control,
- Perform a survey of waterway users and an assessment of in-water structures to inform recovery category recommendations,
- Identify other site-wide and area-specific remedial design and remedial action information needs, and to
- Develop a strategy for remedial design phasing.

Fish and Crab Tissue. In August/September 2017, LDWG collected baseline fish and crab tissue samples. Species targeted for collection included English sole, shiner surfperch, Dungeness crab, and graceful crabs (Windward 2017a [11450]). The Baseline Fish and Crab Tissue Data Report was completed in 2018 (Windward 2018e [11297]).

Surface Water. LDWG conducted baseline surface water sampling during 2017/2018 which involved collection of composite grab surface water samples during eight sampling events at two locations in the LDW (RM 0.75 and RM 3.3) and at one reference location upstream of the LDW at RM 10. In addition, passive samplers were deployed approximately 1 meter above the sediment surface at two locations (RM 2.1 and RM 3.3) during dry baseflow conditions (August 2017 and August 2018). These samplers were used to measure freely dissolved PCB concentrations in LDW surface water (Windward 2018b [11295]). The results will be presented in a final baseline surface water data report in April 2019.

Surface Sediment. LDWG collected baseline samples of subtidal sediment in February and March 2018. An initial draft data report with partial sediment data was developed in 2018 (Windward 2018e [11298]). This was later finalized in 2019 in the Surface Sediment Data Report (Windward 2019 [12109]), which included the complete dataset. The sediment data report provides QAPP deviations and the results of chemical analyses and validation of 0-10 cm surface sediment samples, near-outfall sediment samples, the 0-45 cm intertidal sediment samples, bank samples, and the PCB porewater assessment.

Clam Tissue. Clam tissue samples and co-located sediment samples were collected in May 2018. The results of the baseline chemical analyses of clam and co-located sediment samples will be presented in a final Clam Data Report in February 2019. In addition to the clam tissue results, the Clam Data Report will also present the results of the porewater investigation of carcinogenic PAHs (cPAHs).

Seeps. Seep sampling was performed in May/June 2018. The purpose of this effort was to collect and analyze seep samples to help Ecology identify sources and assess source control sufficiency. The baseline chemical analysis of seep water samples were described in a draft Baseline Seep Data Report (Windward 2018i [11442]). The Seep Data Report was later finalized in March 2019.

Compilation of Existing Data. In November 2018, LDWG completed a technical memorandum that compiled relevant in-waterway data, source control related data, and upstream data that were obtained or made available starting in April 2010 through June 15, 2018 (Windward 2018h [11526]). The goal of this technical memorandum was to compile all the relevant data that were collected after completion of the RI/FS.

Waterway User Survey and Assessment of In-Water Structures. LDWG developed a waterway user survey that was designed to gather physical information to facilitate an assessment for potential changes to recovery category designation and technology assignments, based on up-to-date waterway use information. The survey focused on collecting information on current and potential future waterway uses and activities that may have the potential to disturb the sediment bed to a degree that could alter the recovery potential and recovery category designation identified in the ROD. Examples of these types of activities include maneuvering and anchoring ships and barges, spud use, dragging bridle chains, and future berth and wharf development and maintenance projects.

Interviews were conducted between May 20 and December 10, 2017. The assessment of in-water structures was conducted between January 1 and February 28, 2018. The results of the user survey and assessment provides an update of geographic information system (GIS) data and maps related to structures, berthing areas, and property ownership. These data will be used to support the identification of areas potentially subject to scour or other disturbances based on

current vessel movement patterns and berthing operations. These potential scour areas were overlaid on the recovery category map to assess where adjustments may be needed and to help identify location-specific investigations or analyses that may be needed during design (Integral 2018 a [11310]). This information will be used to make decisions about future sampling, remedial design, and construction planning. EPA reviewed the Waterway Users Survey during the summer of 2018 (EPA 2018c [11300]).

Further information about the LDW sediment cleanup can be found at EPA's LDW website³ and the LDWG website.⁴

1.2 Memoranda of Understanding and Agreement

EPA and Ecology signed an interagency Memorandum of Understanding (MOU) in April 2002, which was revised in 2004. The MOU defined federal and state responsibilities for the LDW (EPA and Ecology 2002 [00008], 2004 [00009]). Under the MOU, EPA is the lead agency for the sediment investigation and Ecology is the lead agency for coordinating and implementing source control. In November 2014, in conjunction with publication of the ROD, EPA and Ecology clarified their responsibilities in a Memorandum of Agreement (MOA). The MOA expanded the coordination and cooperation effort to include additional EPA Region 10 and Ecology programs, particularly the water quality programs (EPA and Ecology 2014 [12132]). The MOA acknowledged that both source control and the in-waterway cleanup are complex, and described a collaboration framework between agencies to coordinate the in-waterway cleanup and source control activities. The MOA details both state involvement in the EPA-led cleanup of the LDW and EPA's involvement with the state-led source control work.

1.3 Lower Duwamish Waterway Source Control Strategy

Ecology developed a Source Control Strategy (herein referred to as the Strategy) for the LDW in 2004. The Strategy was revised in June 2016 (Ecology 2016b [11061]).

The Strategy is a framework for organizing the work of federal, state, and local source control agencies in the LDW as the Superfund project moves from the RI/FS phase into remedial design and construction activities for sediment cleanup. It identifies the goals and priorities of the LDW source control effort that will allow EPA to begin active sediment remediation, as described in the ROD. Implementation of these goals and priorities is largely influenced by the complex regulatory framework for controlling sources and pathways of contaminants within the 24 source control areas of the LDW basin (Figure 1-2). The Strategy clarifies the regulatory framework that Ecology and other source control partner agencies use to ensure regulatory controls are in place to minimize the potential for recontamination. The Strategy also describes the documentation, tracking, and reporting of the collective source control efforts and the external communication processes among the agencies.

Ecology, the City of Seattle, King County, the Port of Seattle, the City of Tukwila, the Puget Sound Clean Air Agency, the Washington State Department of Transportation (WSDOT), and EPA have been active participants in coordinating source control work in the LDW. Together,

³ <https://cumulis.epa.gov/supercpad/cursites/csinfo.cfm?id=1002020>

⁴ <http://www.ldwg.org/project-library/>

they are known as the LDW Source Control Work Group (SCWG). The focus of the SCWG is to share information, discuss strategy, develop action plans, implement source control measures, and track progress through coordinated monthly meetings.

Further information about LDW source control can be found at Ecology's LDW website.⁵

1.3.1 Source Control Implementation Plans

The Strategy calls for Ecology, King County, the City of Seattle, and EPA to develop Source Control Implementation Plans (SCIPs), which will be considered part of this Strategy (Ecology 2016b [11061]). The SCIPs describe how each agency will manage its programs to address source control.

The City of Seattle submitted its SCIP to Ecology in May 2016 (Seattle 2016 [12271]). Seattle submitted an annual summary of activities to Ecology in March 2019 as part of SPU's municipal separate storm sewer system (MS4) Phase 1 National Pollutant Discharge Elimination System (NPDES) annual report for 2018 (SPU 2019 [11926]). Relevant information has been incorporated into this LDW Source Control Status Report.

King County submitted a SCIP to Ecology in June 2014, followed by a revised plan in January 2016, which covers the period from 2014 through 2018 (King County 2016 [11543]). In November 2019, King County submitted an annual report to Ecology describing source control activities conducted in 2018 (King County 2019 [11925]). The 2018 annual report was King County's final annual report associated with the SCIP for 2014 through 2018. King County's next SCIP covers the period from 2019 to 2023. Relevant information has been incorporated into this LDW Source Control Status Report.

1.4 Source Control Process

The source control process is described in detail in the Strategy (Ecology 2016b [11061]). Between February 2003 and September 2013, Ecology developed SCAPs for each of the 24 source control areas (sub-basins) that drain to the LDW Superfund site. The SCAPs identified potential contaminant sources and actions needed to fill data gaps, and assessed the presence of ongoing sources that could recontaminate sediments after cleanup. SCAPs are available on Ecology's website.⁶

Ecology grouped the 24 source control areas into three larger sub-areas: upper reach, middle reach, and lower reach (Figure 1-3). Ecology plans to use an upstream-to-downstream approach to source control so that EPA can most quickly begin active cleanup of LDW sediments. Ecology intends to focus on completing high-priority action items in the source control areas that comprise each sub-basin. For example, Ecology plans to complete high-priority actions first in the upper reach, then the middle reach, and finally the lower reach. More information about Ecology's plan for completing action items can be found in the Strategy (Ecology 2016b [11051]).

⁵ <https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Cleanup-sites/Toxic-cleanup-sites/Lower-Duwamish-Waterway/Source-control>

⁶ <https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Cleanup-sites/Toxic-cleanup-sites/Lower-Duwamish-Waterway/Source-control-area-map>

The 24 source control areas, by reach, are listed in Table 1-1.

Table 1-1. List of Source Control Areas, by Reach

| Source Control Areas – East Side of LDW | Source Control Areas – West Side of LDW |
|--|--|
| Upper Reach | |
| RM 4.9 East (EAA-7: Norfolk CSO/SD) | RM 4.2-5.8 West (Restoration Areas) |
| RM 4.3-4.9 East (Boeing Developmental Center [BDC]) | RM 3.8-4.2 West (Sea King Industrial Park) |
| RM 3.9-4.3 East (Slip 6) | RM 3.4-3.8 West (EAA-5: Terminal 117) |
| RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central King County International Airport) | |
| RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge) | |
| Middle Reach | |
| RM 2.8 East (EAA-3:Slip 4) | RM 2.2-3.4 West (Riverside Drive) |
| RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | RM 2.1-2.2 West (EAA-2: Trotsky Inlet) |
| RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) | RM 2.1 West (1 st Avenue South Storm Drain) |
| RM 1.7-2.0 East (Slip 2 to Slip 3) | RM 1.6-2.1 West (Terminal 115) |
| Lower Reach | |
| RM 1.2-1.7 East (Saint Gobain to Glacier Northwest) | RM 1.3-1.6 West (Glacier Bay) |
| RM 1.0-1.2 East (King County Lease Parcels) | RM 1.0-1.3 West (Kellogg Island to Lafarge Cement) |
| RM 0.9-1.0 East (Slip 1) | RM 0.0-1.0 West (Spokane Street to Kellogg Island) |
| RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) | |
| RM 0.0-0.1 East (Spokane Street to Ash Grove Cement) | |

CSO = combined sewer overflow KCIA = King County International Airport SD = storm drain

Note: Company names are used only to designate source control area locations; source control area names are not intended to assign responsibility for contamination or to identify properties that may need remediation.

1.4.1 Source Control Goals

The Strategy describes two primary goals for source control: a near-term goal to allow the start of active in-waterway cleanup, and a long-term goal to minimize the risk of recontaminating sediments above the sediment cleanup standards established in the ROD (Ecology 2016b [11061]). This Source Control Status Report is focused on describing progress toward the first goal.

The principal sources of information used to evaluate the status of source control, and whether sufficient source control progress has been made to proceed with in-waterway cleanup, include the following (from Section 6.3.2 of the Strategy):

- Status of high- and medium-priority action items identified in the SCAPs;
- Information collected through business inspections and spill investigations/response;
- Relevant information collected through other studies;
- Status of permit compliance, where applicable; and
- Status of upland site cleanups.

Section 2 of this Source Control Status Report summarizes new information obtained during the current reporting period (January through December 2018) in the categories listed above.

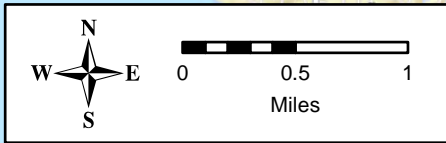
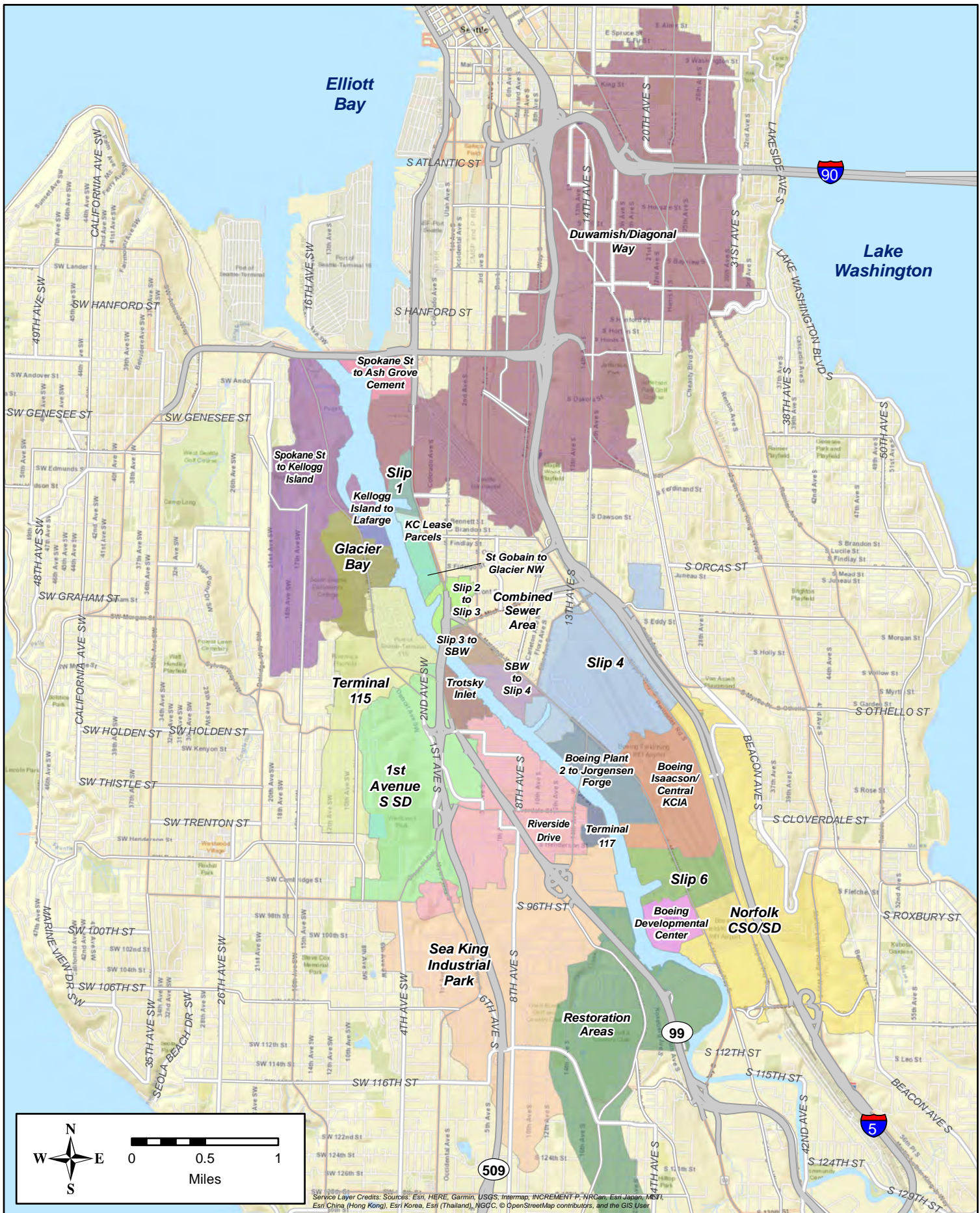
Specific programs within Ecology, including the Water Quality (WQ) and Hazardous Waste & Toxics Reduction (HWTR) programs, maintain information about permit compliance status; information on permit compliance status was generally not available during preparation of this Source Control Status Report.

As described in the Strategy, Ecology is responsible for evaluating and documenting source control sufficiency. Ecology plans to provide source control sufficiency evaluations and recommendations to EPA.



Figure 1-1. Lower Duwamish Waterway Source Area





Service Layer Credits: Sources: Esri, HERE, Garmin, USGS, Intermap, iPCREMENT P., NRCAn, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, © OpenStreetMap contributors, and the GIS User Community

Figure 1-2. Lower Duwamish Waterway Source Control Areas



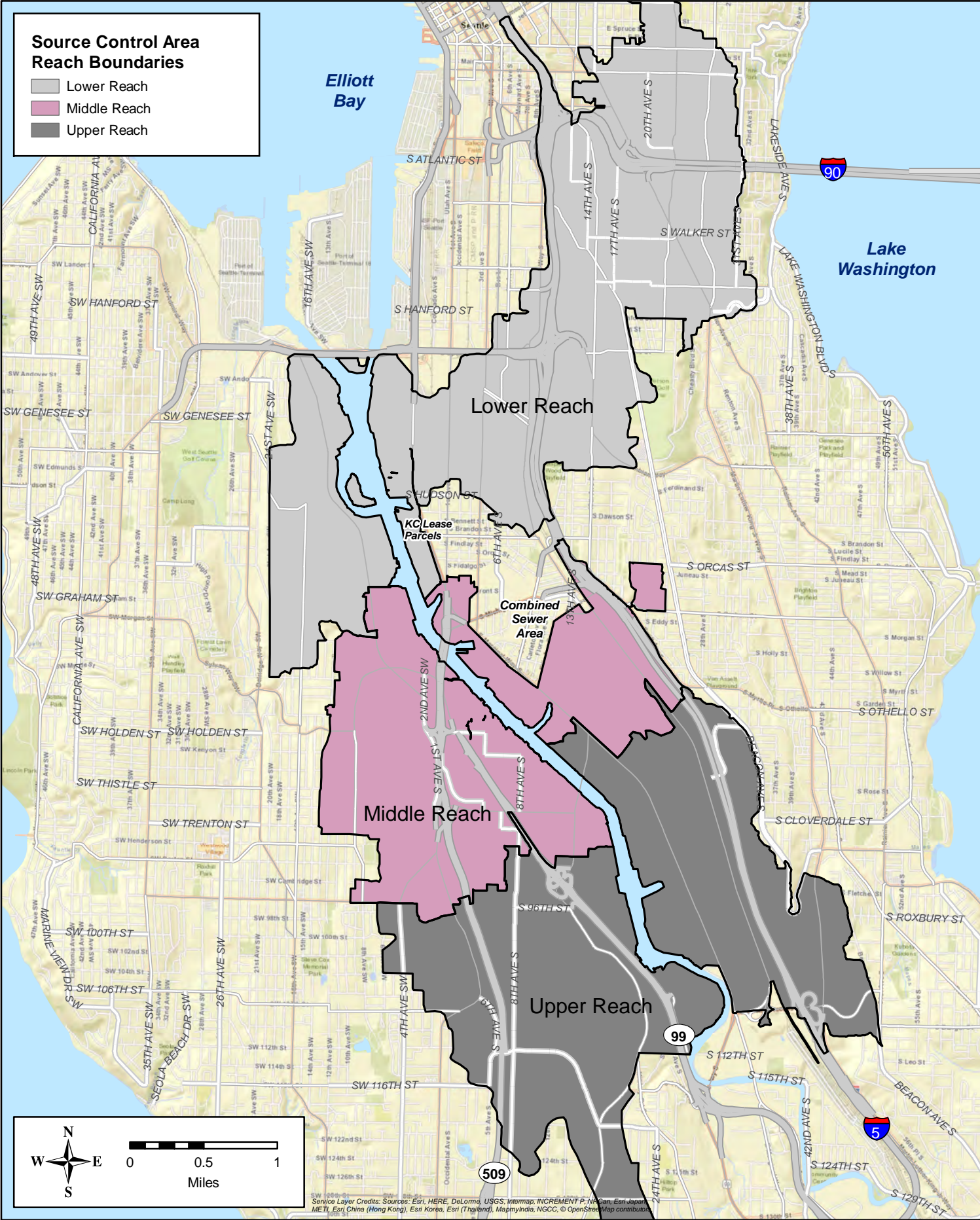


Figure 1-3. Lower Duwamish Waterway Reach Boundaries



2.0 Basin-wide Source Control Activities

2.1 Action Item Status

The SCAP for each source control area included a list of action items needed to identify and control contaminant sources. These action items have been updated as new information was obtained, as documented in previous Source Control Status Reports. Routine functions, such as ongoing inspections and review of NPDES permits, were originally included as action items but have since been removed from the action item list. In some cases, multiple action items have been consolidated into a single action item or an action item has been split into its component parts to allow more efficient tracking. Some action items have been edited for brevity and clarity.

Follow-on action items have been added based on the outcomes of original action items published in the SCAPs. In addition, action items have been added as new information about a facility or source control area has become available. For example, if an inspection was conducted that led to additional investigation activities at a facility, these activities were added as a new action item. This Source Control Status Report identifies the action items for each source control area that were completed during the current reporting period and the action items for each source control area that have not yet been completed.

Table 2-1 lists the number of action items currently identified for each source control area. In addition, it identifies the number of completed and incomplete high priority action items for each source control area.

Table 2-1. Number of Action Items by Source Control Area

| Source Control Area | Total No. of Action Items ^a | Percent of Action Items Completed ^a | No. of High Priority Action Items | Percent of High Priority Action Items Completed | No. of Incomplete High Priority Action Items |
|---|--|--|-----------------------------------|---|--|
| Upper Reach | | | | | |
| RM 4.9 East (EAA-7: Norfolk CSO/SD) | 42 | 60% | 3 | 33% | 2 |
| RM 4.3-4.9 East (BDC) | 11 | 55% | 2 | 100% | 0 |
| RM 3.9-4.3 East (Slip 6) | 24 | 54% | 16 | 50% | 8 |
| RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA) | 28 | 82% | 8 | 88% | 1 |
| RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge) | 36 | 69% | 24 | 79% | 5 |
| RM 4.2-5.8 West (Restoration Areas) | 9 | 33% | 0 | NA | 0 |
| RM 3.8-4.2 West (Sea King Industrial Park) | 42 | 93% | 4 | 100% | 0 |
| RM 3.4-3.8 West (EAA-5: Terminal 117) | 32 | 94% | 9 | 89% | 1 |
| Total – Upper Reach | 224 | 73% | 66 | 74% | 17 |
| Middle Reach | | | | | |
| RM 2.8 East (EAA-3: Slip 4) | 62 | 89% | 25 | 84% | 4 |

LDW Source Control Status Report

| Source Control Area | Total No. of Action Items ^a | Percent of Action Items Completed ^a | No. of High Priority Action Items | Percent of High Priority Action Items Completed | No. of Incomplete High Priority Action Items |
|--|--|--|-----------------------------------|---|--|
| RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | 44 | 70% | 19 | 79% | 4 |
| RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) | 30 | 77% | 12 | 83% | 2 |
| RM 1.7-2.0 East (Slip 2 to Slip 3) | 43 | 72% | 5 | 100% | 0 |
| RM 2.2-3.4 West (Riverside Drive) | 17 | 53% | 3 | 33% | 2 |
| RM 2.1-2.2 West (EAA-2: Trotsky Inlet) | 36 | 75% | 8 | 88% | 1 |
| RM 2.1 West (1 st Avenue S SD) | 16 | 69% | 1 | 0% | 1 |
| RM 1.6-2.1 West (Terminal 115) | 26 | 42% | 7 | 43% | 4 |
| Total – Middle Reach | 274 | 72% | 80 | 78% | 18 |
| Lower Reach | | | | | |
| RM 1.2-1.7 East (Saint Gobain to Glacier Northwest) | 13 | 77% | 5 | 60% | 2 |
| RM 1.0-1.2 East (King County Lease Parcels) | 41 | 71% | 8 | 88% | 1 |
| RM 0.9-1.0 East (Slip 1) | 18 | 61% | 5 | 40% | 3 |
| RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) | 51 | 90% | 7 | 86% | 1 |
| RM 0.0-0.1 East (Spokane Street to Ash Grove Cement) | 13 | 62% | 5 | 80% | 1 |
| RM 1.3-1.6 West (Glacier Bay) | 30 | 73% | 10 | 70% | 3 |
| RM 1.0-1.3 West (Kellogg Island to Lafarge Cement) | 9 | 44% | 0 | NA | 0 |
| RM 0.0-1.0 West (Spokane Street to Kellogg Island) | 37 | 41% | 0 | NA | 0 |
| Total – Lower Reach | 212 | 68% | 40 | 73% | 11 |
| Total – All Reaches | 710 | 71% | 186 | 75% | 46 |

^a Includes action items that have been canceled because they were no longer needed (e.g., facility is no longer present, action is routine and ongoing, or is no longer relevant).

Note: Company names are used only to designate source control area locations; source control area names are not intended to assign responsibility for contamination or to identify properties that may need remediation.

A total of 507 out of 710 action items (71 percent) have been completed or canceled:

- 140 of 186 high priority action items (75 percent) have been resolved;
- 217 of 331 medium priority action items (66 percent) have been resolved;
- 150 of 193 low priority action items (78 percent) have been resolved.

A total of 46 high priority action items remain to be completed; of these, 17 action items are in the upper reach, 18 are in the middle reach, and 11 are in the lower reach.

The 18 action items that were identified as complete or canceled (no longer needed) since publication of the last Source Control Status Report are listed in Appendix B, Table B-1. Action items that have not been completed are shown in Appendix B, Table B-2.

2.2 Business Inspections and Spill Investigations

The City of Seattle operates the local sanitary/combined sewers that collect wastewater and stormwater and route it to the King County interceptor system, and it operates the municipal storm drains within its city limits. The City of Tukwila operates the municipal storm drains within its city limits. King County operates the large interceptor pipes that convey municipal and industrial wastewater, as well as stormwater, to the West Point treatment plant. King County operates its MS4 in unincorporated King County, and conducts inspections on county-owned and/or operated parcels within the incorporated municipal boundaries.⁷ The sanitary/combined sewer and storm drains (including private storm drains) within the LDW drainage basin serve an area of about 19,800 acres and 8,940 acres, respectively.

SPU, King County, and Ecology all conduct business inspections in the LDW basin:

- SPU focuses its business inspections in areas that discharge to the LDW through the City MS4 system. Inspections in the combined sanitary/storm sewer system are conducted in response to requests and complaints, and as additional resources allow. SPU's business inspection program conducts stormwater inspections and refers hazardous waste or industrial waste issues to Ecology and King County, respectively. Seattle's storm drain basins are shown in Figure 2-1.
- King County provides technical support on industrial waste and small business hazardous waste issues as needed, and it inspects facilities permitted through the King County Industrial Waste (KCIW) program. King County inspects industrial users of the sanitary sewer system, including facilities within combined sewer systems in the LDW basin that discharge to the LDW during combined sewer overflow (CSO) events. LDW CSO basins are shown in Figure 2-2. Through its Water and Land Resources Division Stormwater Services program, King County also inspects businesses in unincorporated areas, and on county-owned or operated parcels that discharge to the LDW.
- Ecology conducts water quality inspections for NPDES-permitted facilities; these inspections focus on stormwater permit compliance issues. Ecology also conducts dangerous waste inspections at regulated businesses and facilities. Under the Local Source Control Partnership, Ecology provides technical assistance and grants to local jurisdictions to conduct technical assistance visits to smaller business generators of hazardous/dangerous wastes.

In addition, Ecology, SPU, and King County work together to conduct source control inspections under the Urban Waters Initiative. The Urban Waters Initiative, a component of the Puget Sound Initiative since 2007, is a comprehensive, multi-program approach to accomplish the following: identify potential sources of contamination; ensure that facilities are both permitted (if applicable) and in compliance with permit conditions; increase inspections of regulated facilities; assist in the development of appropriate source control measures; provide assistance on toxics reduction and pollution prevention; build capacity at the local level to safely manage and reduce toxics at small businesses and households.

⁷ On King County leased parcels, the tenants are responsible for maintenance activity but the County performs inspections for compliance.

The initiative is described in more detail in the May 2008 LDW Source Control Status Report (Ecology 2008a).

2.2.1 Seattle Public Utilities Inspections

During the current reporting period, SPU continued inspections of local businesses in the LDW area to ensure that they are implementing appropriate pollution prevention practices and complying with local stormwater pollution prevention compliance, and triage for referrals for hazardous waste management and industrial waste management. In 2018, SPU conducted 222 inspections at 139 facilities in the LDW. The inspections resulted in 107 Corrective Action Letters. Four of these sites were referred to Ecology for potential NPDES Industrial Stormwater permit coverage. Seven facilities were issued notices of violation for non-compliance with the City’s Stormwater Code. SPU also inspects the flow control and/or treatment facility. Within the LDW, SPU inspected 54 facilities for code compliance with regard to flow control and treatment system code requirements during 2018 (SPU 2019 [11926]).

Facilities inspected by SPU in the LDW basin during the current reporting are listed in Appendix C. This list includes screening visits, initial inspections, and follow-up inspections. A summary of the number of facilities inspected by SPU by source control area during 2018 is shown in Table 2-2.

Table 2-2. Summary of 2018 SPU Inspections by Source Control Area

| Source Control Area | Sub-Basin | No. of Facilities Inspected 2018 |
|--|---|----------------------------------|
| Upper Reach | | |
| RM 4.9 East (EAA-7: Norfolk CSO/SD) | Norfolk CSO/PS17/EOF/SD | 11 |
| RM 3.8-4.2 West (Sea King Industrial Park) | S 96 th Street SD | 6 |
| Middle Reach | | |
| RM 2.8 East (EAA-3: Slip 4) | I-5 SD at Slip 4, KCIA SD#3/PS 44 EOF, Georgetown SD | 1 |
| RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | Duwamish East Direct, S Garden Street SD, S Myrtle Street SD | 3 |
| RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) | S Brighton Street SD, S River Street SD | 5 |
| RM 1.7-2.0 East (Slip 2 to Slip 3) | Duwamish East Direct | 2 |
| RM 2.2-3.4 West (Riverside Drive) | Duwamish West Direct, 7 th Avenue S SD, 8 th Avenue S CSO | 22 |
| RM 2.1-2.2 West (EAA-2: Trotsky Inlet) | Duwamish West Direct, Trotsky Inlet, 2nd Avenue S SD | 5 |
| RM 2.1 West (1st Avenue S SD) | 1st Avenue S SD | 8 |
| RM 1.6-2.1 West (Terminal 115) | Duwamish West Direct, SW Kenny SD, Highland Park Way SW SD | 2 |
| Lower Reach | | |
| RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) | Diagonal Avenue S SD, Diagonal CSO/SD, S Nevada Street SD | 71 |

| Source Control Area | Sub-Basin | No. of Facilities Inspected 2018 |
|--|---|----------------------------------|
| RM 0.0-1.0 West (Spokane Street to Kellogg Island) | SW Dakota Street SD, SW Idaho Street SD | 3 |
| | Total | 139 |

Notes: Source control areas in which no inspections were performed during the reporting period are not included in this table. Company names are used only to designate source control area locations; source control area names are not intended to assign responsibility for contamination or to identify properties that may need remediation.

SPU inspectors respond to water quality complaints. In 2018, 76 water quality complaints were reported in the LDW, which resulted in six business inspections. SPU responded to 92 spills within the LDW in 2018 (SPU 2019 [11926]).

SPU conducted source control actions in combined sewer basins located within Seattle in 2018 (this includes the LDW drainage area plus all other combined basins within the City of Seattle served by King County and City CSOs). These actions include response to spills and water quality complaints, and street sweeping. In 2018, SPU responded to 169 spill reports and 118 water quality complaints in the King County combined sewer basins. In 2018, SPU and Seattle Department of Transportation swept 10,555 lane miles in combined sewer basins (King County 2019 [11925]).

Enhanced Business Inspection Program

SPU’s SCIP described several planned enhancements to streamline SPU’s business inspection program in the LDW. These efforts are described below (SPU 2019 [11926]).

- **Shortened Business Compliance Period:** The SPU source control team modified the business inspection process. Instead of sending a “second and final” letter before issuing a notice of violation, now inspected businesses have 30 days to come into compliance after receiving the corrective action letter. If the corrections are not made, SPU issues a notice of violation.

SPU also implemented a procedure for businesses that have been inspected multiple times. If the business does not maintain best management practices between inspection cycles, SPU can immediately issue a notice of violation. These changes have resulted in a reduction of process time which has allowed SPU to inspect more businesses (SPU 2019 [11926]).

- **Revisions to Business Inspection Information Gathering Protocols:** To improve efficiency with the inspection process, SPU decided to discontinue entering data for non-city stormwater code violations in 2017. SPU inspectors still act as a “triage” for other agencies such as KCIW and Ecology’s HWTR and WQ programs. The SPU inspector refers issues or problem sites to another agency for follow up and will take part in that agency’s enforcement activity to resolve the issue. These changes have helped to shorten SPU’s inspection time onsite, without compromising the integrity of the inspection and still providing important compliance information to other partner agencies (SPU 2019 [11926]).

- Transition to Electronic Information Collection: SPU has used paper inspection forms and two Microsoft Access databases to track business inspections, stormwater facility inspections, water quality complaints, and spills since 2003. To become more efficient, SPU designed and built a replacement database and mobile solution. The new database went “live” on July 31, 2018. The SPU Source Control Team has been using the database since that time (SPU 2019 [11926]).

2.2.2 King County Inspections

King County Industrial Waste Inspections

The KCIW Program is a state and federal delegated pretreatment program with the authority to regulate the discharge of industrial wastewater to the King County regional wastewater system (King County 2015 [12182]). KCIW issues several types of discharge approvals, including waste discharge permits for significant industrial users (SIUs) and lower-level discharge authorizations for non-SIUs. Active industrial users in the LDW basin are listed in King County's Source Control Annual Report (King County 2019 [11925]).

In 2018, there were 19 facilities operating under waste discharge permits in the LDW basin; these facilities are inspected on an annual basis (King County 2019 [11925]). KCIW conducts periodic inspections of major non-SIUs, typically once within each five-year permitting cycle or when significant facility modifications occur. Facilities inspected by KCIW during 2018 are listed in Appendix D, Table D-1.

A KCIW inspector regularly attends meetings with inspectors from Ecology and SPU to coordinate and discuss source control issues at facilities in the LDW, and to identify issues of regulatory overlap. KCIW also responds to referrals related to illicit discharges and spills to the sanitary sewer.

KCIW conducted an industrial user survey from 2016-2018 to identify facilities with activities that may require a waste discharge permit or authorization. They identified six active facilities located within the LDW CSO basin that were categorized as the highest priority level for further evaluation by a KCIW inspector (King County 2019 [11925]).

King County Stormwater Services Inspections

King County Stormwater Services created an inventory of parcels in the unincorporated portion of the LDW drainage area and ranked each parcel according to its potential to pollute and its history of stormwater inspection compliance. King County started conducting accelerated source control inspections in 2016. King County conducted 29 source control inspections at 12 facilities in the LDW unincorporated area in 2018. Source control inspections conducted by King County are listed in Appendix D, Table D-2. These include 11 facilities in the RM 3.8-4.2 West (Sea King Industrial Park) source control area and one facility in the RM 3.4-3.8 West (EAA-5: Terminal 117) source control area. King County did not receive any water quality complaints in the LDW area in 2018 (King County 2019 [11925]).

Other King County Inspections

King County's Local Hazardous Waste Management Program team conducted 44 site visits in the LDW drainage area in 2018. Their efforts focus on technical assistance visits for hazardous

material and waste management, including discharges to sanitary and storm drains (King County 2019 [11925]).

King County International Airport (KCIA) performed annual stormwater facility inspections in October 2018. Six KCIA tenants are also covered by the Industrial Stormwater General Permit (ISGP) and comply directly with Ecology requirements. In September 2018, KCIA performed their annual illicit discharge/connection inspections. King County did not identify any suspected or obvious illicit connections (King County 2019 [11925]).

King County's Facilities Management Division performs inspections at properties that are under King County custodial control. Annual facility maintenance inspections are performed on all Facilities Management Division managed properties with constructed stormwater facilities, such as catch basins or storage and treatment ponds. During 2018, water quality inspections were performed at five undeveloped properties; all were found to be in compliance (King County 2019 [11925]). In addition, four businesses on leased County property fronting on the LDW were inspected (Manson Construction, Lehigh-Cadman, JA Jacks, and Ardagh Glass Company) along with one tax title property that is undeveloped except for a stormwater facility. The inspections found businesses were either in compliance or in need of catch basin cleaning (King County 2019 [11925]).

2.2.3 Ecology Inspections

Ecology Water Quality Inspections

Currently, 93 active NPDES permits are on record for areas within the 24 LDW source control areas.⁸ These include two industrial individual permits, 83 facilities covered under the ISGP, five facilities covered under the sand and gravel general permit, one facility covered under the vessel deconstruction general permit, and two facilities covered under the boatyard general permit. While the permits limit and control the discharge of a number of water quality pollutants, they do not necessarily control contaminants that pose a threat to sediments, such as PCBs, PAHs, arsenic, and mercury.

The following facilities were granted coverage under a NPDES general permit during 2018:

- MV Transportation Seattle (WAR307006)
- Orca Bay Foods, LLC (WAR308432)

Ecology is continuing to inspect NPDES-permitted facilities to ensure compliance with permit conditions. In addition, Ecology WQ inspections continue to identify facilities in the LDW that may need to apply for NPDES permits. Ecology will follow up with these facilities to ensure they submit an application for a stormwater permit or a Conditional No Exposure Certificate, as appropriate.

During the current reporting period (2018), Ecology WQ conducted 17 inspections at 16 facilities. Ecology WQ inspections are listed in Appendix E, Table E-1.

⁸ The 93 active permits do not include construction stormwater permits.

Ecology HWTR Inspections

Ecology's HWTR program conducted hazardous waste inspections at 12 facilities within the LDW basin; these are listed in Appendix E, Table E-3.

Urban Waters Initiative Inspections

During the current reporting period, Ecology's WQ and HWTR inspectors and Toxics Cleanup Program (TCP) staff continued to coordinate facility inspections and priorities with SPU and King County inspectors to avoid overlap in the field. During 2018, a total of 56 Urban Waters Initiative inspections were conducted in the LDW basin; these are listed in Appendix E, Table E-2.

Table 2-3 summarizes Ecology and Urban Waters inspections conducted in 2018.

Table 2-3. Summary of 2018 Ecology Inspections by Source Control Area

| Source Control Area | No. of Facilities Inspected in 2018 | | |
|---|-------------------------------------|--------------|-------------------------|
| | WQ Program | HWTR Program | Urban Waters Initiative |
| Upper Reach | | | |
| RM 4.9 East (EAA-7: Norfolk CSO/SD) | 1 | | 7 |
| RM 3.9-4.3 East (Slip 6) | | | 1 |
| RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge) | 1 | | |
| RM 4.2-5.8 West (Restoration Areas) | | | 4 |
| RM 3.8-4.2 West (Sea King Industrial Park) | 1 | 2 | 3 |
| RM 3.4-3.8 West (EAA-5: Terminal 117) | | | 1 |
| Middle Reach | | | |
| RM 2.8 East (EAA-3: Slip 4) | 1 | 1 | 5 |
| RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | 2 | | |
| RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) | | | 1 |
| RM 2.2-3.4 West (Riverside Drive) | 2 | 1 | 13 |
| RM 2.1-2.2 West (EAA-2: Trotsky Inlet) | 1 | 1 | 1 |
| RM 2.1 West (1 st Avenue S SD) | | | 3 |
| RM 1.6-2.1 West (Terminal 115) | | 1 | |
| Lower Reach | | | |
| RM 1.2-1.7 East (St. Gobain to Glacier Northwest) | 2 | | |
| RM 1.0-1.2 East (King County [KC] Lease Parcels) | | 3 | 3 |
| RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) | 5 | 3 | 13 |
| Total | 16 | 12 | 56* |

*Source control area for one facility could not be determined.

Note: Company names are used only to designate source control area locations; source control area names are not intended to assign responsibility for contamination or to identify properties that may need remediation.

2.3 Source Tracing and Sampling

Source tracing activities include identification and assessment of potential sources of contaminants to the LDW through the storm drain/combined sewer systems. Source tracing is

designed to identify sources by strategically collecting samples at key locations within the LDW drainage basin. A variety of sampling techniques are used because no single sampling method exists to effectively trace sources of contaminants to LDW sediments.

In this report, storm drain solids and combined sewer solids data are compared to the Washington State Sediment Management Standards (SMS) to provide a rough indication of overall quality. The SMS include the benthic Sediment Cleanup Objectives (SCOs), which identify surface sediments that have no adverse effects on biological resources, and Cleanup Screening Levels (CSLs), which are used as an upper regulatory threshold for making decisions about source control and cleanup. For most organic compounds, the SCO and CSL are presented in the SMS as organic carbon (OC) normalized concentrations. For simplicity, in this report all concentrations are presented as dry weight (DW) concentrations; storm drain and combined sewer solids data for organics are compared to the Lowest Apparent Effects Threshold (LAET) or Second Lowest Apparent Effects Threshold (2LAET) values, which are functionally equivalent to the SCO and CSL, respectively (Ecology 2019b).

To determine whether source tracing should be initiated, SPU and King County compare storm drain solids data to the CSL/2LAET values.⁹ King County compares combined sewer solids data to twice the 2LAET.

For petroleum hydrocarbons, Model Toxics Control Act (MTCA) Method A soil cleanup levels are used for comparison to storm drain solids concentrations. Concentrations of cPAHs are compared to the LDW-wide Remedial Action Level (RAL) of 1 milligram per kilogram (mg/kg) toxicity equivalents (TEQ). Dioxin/furan concentrations are compared to the LDW-wide RAL of 25 nanograms per kilogram (ng/kg) TEQ.

In this Source Control Status Report, the values described above that are used for comparison to storm drain and combined sewer solids data are referred to as “storm drain screening levels.” It should be emphasized that none of these values are applied as cleanup levels to storm drain or combined sewer solids. It is important to note that any comparison of this kind is most likely conservative given that sediments discharged from storm drains are highly dispersed in the receiving environment and mixed with the natural sedimentation taking place in the system. The storm drain screening levels are listed in Table 2-4.

⁹ Once storm drain solids are found to be below the CSL/2LAET, King County uses the SCO/LAET as well as other lines of evidence to determine the need for source tracing (King County 2016a).

Table 2-4. Storm Drain Screening Levels
(All concentrations expressed as mg/kg DW)

| Chemical Class | Chemical Parameter | SCO | CSL | MTCA Method A | LDW RAL |
|----------------|---|-------|-------|---------------|----------|
| PCBs | Total Aroclors | 0.13 | 1.0 | | |
| Dioxins/Furans | Dioxin/furan TEQ (NDx0.5) ^a | | | | 0.000025 |
| Metals | Arsenic | 57 | 93 | | |
| | Cadmium | 5.1 | 6.7 | | |
| | Chromium | 260 | 270 | | |
| | Copper | 390 | 390 | | |
| | Lead | 450 | 530 | | |
| | Mercury | 0.41 | 0.59 | | |
| | Silver | 6.1 | 6.1 | | |
| | Zinc | 410 | 960 | | |
| HPAHs | Benzo(a)anthracene ^{b,c} | 1.3 | 1.6 | | |
| | Benzo(a)pyrene ^{b,c} | 1.6 | 1.6 | | |
| | Benzo(g,h,i)perylene ^b | 0.67 | 0.72 | | |
| | Chrysene ^{b,c} | 1.4 | 2.8 | | |
| | Dibenz(a,h)anthracene ^{b,c} | 0.23 | 0.23 | | |
| | Fluoranthene ^b | 1.7 | 2.5 | | |
| | Indeno(1,2,3-cd)pyrene ^{b,c} | 0.60 | 0.69 | | |
| | Pyrene ^b | 2.6 | 3.3 | | |
| | Total benzofluoranthenes ^{b,c} | 3.2 | 3.6 | | |
| | Total cPAH TEQ (NDx0.5) | | | | 1.0 |
| | Total HPAH | 12 | 17 | | |
| LPAHs | 2-Methylnaphthalene | 0.67 | 0.67 | | |
| | Acenaphthene ^d | 0.50 | 0.50 | | |
| | Acenaphthylene ^d | 1.3 | 1.3 | | |
| | Anthracene ^d | 0.96 | 0.96 | | |
| | Fluorene ^d | 0.54 | 0.54 | | |
| | Naphthalene ^d | 2.1 | 2.1 | | |
| | Phenanthrene ^d | 1.5 | 1.5 | | |
| | Total LPAH | 5.2 | 5.2 | | |
| Phthalates | Bis(2-ethylhexyl)phthalate | 1.3 | 1.9 | | |
| | Butylbenzyl phthalate | 0.063 | 0.90 | | |
| | Diethyl phthalate | 0.20 | >1.2 | | |
| | Dimethyl phthalate | 0.071 | 0.16 | | |
| | Di-n-butyl phthalate | 1.4 | 1.4 | | |
| | Di-n-octyl phthalate | 6.2 | 6.2 | | |
| Phenols | 2,4-Dimethylphenol | 0.029 | 0.029 | | |
| | 2-Methylphenol | 0.063 | 0.063 | | |
| | 4-Methylphenol | 0.67 | 0.67 | | |
| | Pentachlorophenol | 0.36 | 0.69 | | |
| | Phenol | 0.42 | 1.2 | | |
| Other SVOCs | 1,2,4-Trichlorobenzene | 0.031 | 0.051 | | |
| | 1,2-Dichlorobenzene | 0.035 | 0.050 | | |
| | 1,4-Dichlorobenzene | 0.11 | 0.11 | | |
| | Benzoic acid | 0.65 | 0.65 | | |
| | Benzyl alcohol | 0.057 | 0.073 | | |
| | Dibenzofuran | 0.54 | 0.54 | | |

| Chemical Class | Chemical Parameter | SCO | CSL | MTCA Method A | LDW RAL |
|------------------------|-----------------------------|-------|-------|---------------|---------|
| | Hexachlorobenzene | 0.022 | 0.070 | | |
| | Hexachlorobutadiene | 0.011 | 0.12 | | |
| | N-nitrosodiphenylamine | 0.028 | 0.040 | | |
| Petroleum Hydrocarbons | Diesel-range hydrocarbons | | | 2,000 | |
| | Gasoline-range hydrocarbons | | | 30 | |
| | Oil-range hydrocarbons | | | 2,000 | |

HPAH = high molecular weight PAH

LPAH = low molecular weight PAH

ND = non-detect

Notes:

^a The LDW RAL for dioxins/furans is also expressed as 25 ng/kg TEQ.

^b Included in calculation of total HPAH.

^c Included in calculation of total cPAH TEQ.

^d Included in calculation of total LPAH.

Source tracing locations where samples were collected during the current reporting period (2018) are shown on Figure 2-3. Results are discussed below and as relevant in subsequent sections for the specific source control areas in which they are located.

2.3.1 SPU Source Tracing Activities

SPU collects grab samples from private onsite catch basins and catch basins located in the public right-of-way, grab samples from inline maintenance holes in the conveyance system, and inline sediment trap samples. SPU has received funding from Ecology to develop new source tracing tools. Projects include the use of dogs to detect PCBs, and the development of an improved sediment trap.

Detection Dog Pilot Test

SPU contracted with the University of Washington Conservation Canines and Windward Environmental in 2016 to conduct a pilot test to determine whether a specially trained dog can detect PCBs in the urban environment. This work was supported by an Ecology grant. In 2016, SPU conducted training and field testing at various sites in Seattle and Tacoma, Washington. The detection dog successfully identified PCB-contaminated caulk in buildings and in concrete pavement, as well as PCB-contaminated soil.

SPU conducted additional training events for the detection dog/handler team in 2017. The team was used to screen areas where SPU suspected there may be PCB sources. They successfully identified PCBs in several areas that would not likely have been found by standard source tracing techniques. SPU submitted a final report describing the pilot test results to Ecology in October 2017. SPU considers this pilot test a success.

In 2018, SPU received another Stormwater Financial Assistance Grant from Ecology to continue their work with UW Conservation Canines. SPU plans to train an additional detection dog and develop protocols for incorporating detection dog services into SPU's source tracing efforts in 2019 (SPU 2019 [11926]).

Sediment Trap Pilot Test

SPU has been testing a new sediment trap design to support source tracing efforts. The new sediment trap is designed to collect storm drain solids more effectively. Ecology awarded a grant to SPU to support this work. In 2018, SPU continued field testing field prototype designs at two

locations in the LDW (S Myrtle Street and Diagonal Ave S storm drain systems). SPU presented the results of the 2018 Sediment Pilot testing to Ecology in a progress report in 2019. These results will be discussed in the next status report (SPU 2019 [11926]).

Illicit Discharge Detection and Elimination

SPU conducted illicit discharge detection and elimination (IDDE) screening in the Diagonal Avenue S MS4 basin from June to September 2018. SPU investigated 214 sample locations, and collected 152 samples. The results of this sampling allowed SPU to discover two illicit connections. The first illicit connection was from a large food processing operation. The second illicit connection was from eight newly constructed townhomes. The food processor stopped all discharges from the facility and is awaiting permits to replumb the facility. The townhomes were replumbed to discharge to the sanitary sewer. SPU also discovered a broken side sewer at a fueling station. The side sewer was repaired. SPU visually traced a discharge of grease to a catch basin located in a fast food parking lot. SPU determined that a neighboring grocery store had been pouring waste grease into this drain. At the end of 2018, there were three ongoing investigations that were triggered by the sampling: two investigations of elevated bacteria, and one investigation of elevated fluoride and potassium. SPU plans to investigate these during dry weather throughout 2019 to determine their sources.

In September 2018, SPU screened three sample locations in the SW Idaho Street storm drain (SD). SPU collected one sample and made one visual determination of no flow. The sample results did not trigger an investigation in this basin (SPU 2019 [11926]).

Collection of Source Tracing Samples

Table 2-5 lists outfalls owned by Seattle, or owned or installed by others to which the Seattle MS4 discharges. As part of the effectiveness monitoring program required under Seattle's MS4 permit, SPU is on track to install or collect one sample per calendar year from each outfall and near-end-of-pipe monitoring location listed below (SPU 2019 [11926]):

Table 2-5. City of Seattle Outfalls in the LDW Basin

| Outfall Name | Outfall Ownership | Separated Stormwater Drainage Basin Area (acres) | Outfall Diameter (inches) | Effectiveness Monitoring Location |
|----------------------------------|-------------------|--|---------------------------|-----------------------------------|
| East Side of LDW | | | | |
| S Nevada Street | Seattle | 26 | 18 | No |
| Diagonal Avenue S (a) | Seattle | 2,666 | 144 | Yes |
| 1 st Avenue S (East) | Seattle | 15 | 36 | Yes |
| S River Street | Seattle | 7.6 | 8 | Yes |
| S Brighton Street | Seattle | 19 | 30 | Yes |
| S Myrtle Street | Seattle | 8.6 | 30 | Yes |
| North Boeing Field | Seattle | (b) | 24 | No |
| Georgetown | Seattle | 4.5 | 24 | Yes |
| Head of Slip 2 | Private | 12 | 24 | Yes |
| S Garden Street (c) | Private | 12 | 30 | Yes |
| I5 SD at Slip 4 | WSDOT | 150 (d) | 72 | Yes |
| 16 th Avenue S (East) | Tukwila | 12 | 12 | No |

LDW Source Control Status Report

| Outfall Name | Outfall Ownership | Separated Stormwater Drainage Basin Area (acres) | Outfall Diameter (inches) | Effectiveness Monitoring Location |
|---------------------------------|--------------------------|---|----------------------------------|--|
| KCIA SD#1 | King County | 192 (e) | 30 | No |
| S Norfolk Street (f) | Tukwila | 676 (g) | 84 | Yes |
| 15 SD at S Ryan Street (h) | WSDOT | 617 (i) | 60 | No |
| West Side of LDW | | | | |
| SW Dakota Street | Seattle | 54 (j) | 30 | Yes |
| SW Idaho Street | Seattle | 423 | 72 | Yes |
| SW Kenny Street (k) | Seattle | 154 | 48 | Yes |
| Highland Park Way SW | Seattle | 296 (l) | 72 | Yes |
| S Webster Street | Seattle | (m) | 6 | No |
| 7 th Avenue S | Seattle | 238 | 72 | Yes |
| 17 th Avenue S | Seattle | 2.9 | 18 | Yes |
| Duwamish substation SD#1 | Seattle | 0.6 | 8 | No |
| Duwamish substation SD#2 | Seattle | 1 | 8 | No |
| Duwamish substation SD#3 | Seattle | 1.9 | 8 | No |
| 1 st Avenue S (West) | WSDOT | 606 | open channel | Yes |
| 2 nd Avenue S | Private | 38 (n) | 24 | No |
| S 96 th Street | Unknown | 1,050 (o) | 72 | No |
| West Marginal Place SW | Unknown | 4.9 (p) | 36 | No |

- (a) SPU's CSO #111 and King County's Hanford #1 CSO also discharge to this outfall.
- (b) Based on recent video inspection findings, there are no longer active connections to this system.
- (c) Outfall ownership transferred to Seattle Iron and Metals Company in 2012.
- (d) Approximately 65 acres are served by Seattle-owned storm drains. The remainder is I-5 and railroad right-of-way drainage.
- (e) Approximately 114 acres are served by Seattle-owned storm drains. The remainder is I-5 right-of-way and King County Airport property.
- (f) King County's S Norfolk CSO and treated discharge from the Henderson/MLK Wet Weather Treatment Station discharge to this outfall.
- (g) Approximately 431 acres are served by Seattle-owned storm drains. The remainder is in the City of Tukwila.
- (h) Seattle installed a high flow bypass to the S Ryan Street system in 1992 to divert excess stormwater flow from the S Norfolk Street CSO/PS 17 EOF/SD drainage system to prevent flooding during large storm events.
- (i) Approximately 407 acres are served by Seattle-owned storm drains. The remainder is in the City of Tukwila.
- (j) 47 acres drains to the Seattle-owned SW Dakota Street SD system. An additional 9 acres drains to the constructed channel that discharges to the LDW downstream (east) of Seattle's outfall.
- (k) King County's T115 CSO discharges to this outfall (100 acres).
- (l) Does not include the approximately 7.3 acre overlap within the 1st Avenue S drainage basin.
- (m) A single catch basin in S Riverside Drive is connected to this outfall.
- (n) Approximately 18.4 acres are served by Seattle-owned storm drains. The remainder is privately-owned.
- (o) Approximately 99 acres are served by Seattle-owned storm drains. The remainder is unincorporated King County.
- (p) Seattle-owned drainage only.

In 2018, SPU collected 70 samples of storm drain solids from the City's MS4; sample results are provided in Appendix F. Sample results are summarized below:

- Arsenic concentrations ranged from 4.7 mg/kg DW to 150 mg/kg DW. Two samples in the Diagonal Avenue CSO/SD (CB324 and MH46) exceeded the CSL (93 mg/kg DW) for arsenic during 2018.

- Total PCB concentrations ranged from <0.018 mg/kg DW to 46 mg/kg DW. Six samples exceeded the CSL for PCBs (1.0 mg/kg DW); these were located in the S Myrtle Street SD, the 7th Avenue S SD, and the Diagonal Avenue S CSO/SD. The highest concentrations were detected at MH18 located near 6th Avenue S and S Snoqualmie Street (Diagonal Avenue S CSO/SD).
- The median concentration of PCBs in the Diagonal Ave S CSO/SD has increased by nearly a factor of two over the past four years. SPU thinks that this change may be due to the emphasis on following up in areas where the detection dog detected PCBs or where SPU inspectors suspected potential PCB sources. In 2018 SPU installed three additional traps in the S Snoqualmie sub-basin to assist in tracing elevated levels of PCBs found in the MH18 located at 6th Avenue S and S Snoqualmie Street (SPU 2019 [11926]).
- Total cPAH TEQ concentrations ranged from <0.086 mg/kg DW to 120 mg/kg DW; seven samples exceeded the LDW RAL (1.0 mg/kg DW). Exceedances were observed in the Norfolk CSO/PS17 EOF/SD, the Georgetown SD, the S Myrtle and S River Street SDs, and the Diagonal Avenue S CSO/SD.
- No samples were analyzed for dioxins/furans. Other chemicals with CSL exceedances in SPU storm drain solids samples include cadmium, chromium, copper, lead, mercury, zinc, various PAH compounds, phthalates, 1,2-dichlorobenzene, 1,4-dichlorobenzene, 4-methylphenol, benzoic acid, benzyl alcohol, dibenzofuran, n-nitrosodiphenylamine, and phenols. Diesel-range and oil-range hydrocarbons exceeded the storm drain screening levels.

SPU plans to conduct the following sampling in 2019 (SPU 2019 [11926]):

- Sample the city-owned portions of the S Garden Street SD, the 16th Avenue S SD (east), the S 96th Street SD, and the I-5 SD at S Ryan Street to check whether the city MS4 in these areas continues to be a low priority.
- Collect additional samples in the S Brighton Street SD to determine whether there are active sources of PCBs in this basin.
- Collect additional samples in the 2nd Avenue S SD to determine whether there are active sources of cPAHs in this basin.
- Resample the S Norfolk CSO/PS17 EOF/SD drainage system following the 2018 cleaning.
- Continue searching for sources of PCBs in the S Snoqualmie sub-basin of the Diagonal Avenue S CSO/SD.

2.3.2 King County Source Tracing Activities

King County's Sediment Management Program has been collecting solids samples from pipes, wet wells, and outfall weir structures in the combined sewer system since 2010. During 2018, King County sampled the T-115 CSO and Hanford #1 CSO basins. Sediment trap samples were collected in July 2018 following a 1-year deployment period; results are provided in Appendix G (King County 2019 [11925]). Concentrations of bis (2-ethylhexyl) phthalate (BEHP) and mercury were above the 2LAET in samples collected from these basins.

King County also collected sediment trap samples from two locations within the S Michigan CSO basin for another King County project in July 2018, after an approximately 1-year deployment period. Analytical results for the sediment trap samples analyzed by King County in 2018 are provided in Appendix G.

King County plans to continue to use sediment traps for source tracing activities at the Hanford #1 and T-115 combined sewer basin sampling locations in 2019. In addition, King County will conduct source investigations in the S Michigan CSO basin to evaluate potential sources of mercury in the system close to the regulator station (King County 2019 [11925]).

King County's Stormwater Services Section collected sediment trap samples from three locations in the S 96th Street SD (96-ST1, 06-ST2, and 96-ST3); these areas discharge stormwater into the north fork of Hamm Creek to the LDW. King County also obtained grab solids samples from four catch basins that contribute flow up-pipe to the 96-ST1 location. Analytical results for the sediment trap samples analyzed by King County in 2018 are provided in Appendix G.

King County plans to conduct sediment trap sampling (deployment in 2018 and retrieval in 2019) at 96-ST1 as follow-up to PAHs and zinc observed above screening levels in past samples. Future sampling will be described in King County's SCIP for 2019 to 2023.

King County collected four sediment trap samples and six grab samples representing storm drain solids from locations at KCIA that drain to Slip 4, Former Slip 5, and Slip 6 during 2018 (King County 2019 [11925]). Analytical results are presented in Appendix G.

2.4 Other Source Control Activities

2.4.1 Storm Drain Line Cleaning

In 2018, SPU cleaned approximately 11,500 linear feet of pipe in the Martin Luther King Jr. Way sub-basin of the S Norfolk CSO/PS17 EOF/SD system, and 500 linear feet of pipe in the Diagonal Avenue S CSO/SD system (SPU 2019 [11926]). These were identified as priority basins in the City's 2015 SCIP. SPU has identified and controlled several sources in the Norfolk system, but it continues to exhibit elevated levels of PAHs. The line was cleaned to facilitate future source tracing activities. The short segment in the Diagonal Avenue S CSO/SD was cleaned to remove PCBs (1.4 mg/kg DW) and arsenic (123 mg/kg) contamination that was found during routine source tracing sampling. This work is conducted to remove solids that have accumulated in the MS4 in order to prevent them from discharging into the LDW and to facilitate source tracing efforts. SPU plans to continue to inspect all catch basins in the MS4 system annually, and to perform maintenance as needed within six months. SPU will also conduct annual inspection and maintenance at Seattle-owned stormwater facilities. SPU will continue to clean a minimum of 4,000 linear feet of storm drain lines each year (SPU 2019 [11926]).

In 2019 SPU plans to:

- Finish cleaning the S Norfolk CSO/PS17 EOF/SD system.
- Clean a lateral on the S River Street SD system that was missed during the 2010 cleaning.

- Clean the S Dakota Street sub-basin, the Ohio Avenue S sub-basin, the 6th Avenue S/S Hinds Street sub-basin, and the Bush Place sub-basin, which are all located in industrial areas within the Diagonal Avenue S CSO/SD system (SPU 2019 [11926]).

KCIA is performing storm drain line cleaning in accordance with the ISGP. The 2015 ISGP requires stormwater line cleaning for permitted sites that discharge to the LDW. KCIA performs storm drain line cleaning in conjunction with their current catch basin cleaning schedule. KCIA East and Central Areas were cleaned in 2015 and 2016, respectively, per the ISGP. KCIA completed storm drain line cleaning in the KCIA West Areas in 2017 (taxiways, parking lots, maintenance shop, airparks, and outfalls) (King County 2019 [11925]).

2.4.2 Stormwater Treatment

SPU is planning to construct a South Park Water Quality Facility to treat stormwater runoff from the 7th Avenue S SD. In 2018, SPU conducted a preliminary feasibility analysis of bioretention treatment. SPU determined that bioretention could be used to treat runoff from the 230-acre drainage basin, but it would require more space for construction than a mechanical treatment system. In 2019, SPU will focus on identifying a site for the treatment system and beginning analysis of treatment options (SPU 2019 [11926]).

SPU completed a drainage system that was constructed as part of the Adjacent Streets and Stormwater Infrastructure project for the Terminal 117 EAA in 2017. The new drainage system routes stormwater from a 2.9-acre basin through nine bioretention cells and four Filterra™ tree box units. The bioretention cells are designed to infiltrate. Underdrains from the Filterra™ units, and overflows from the bioretention cells discharge to the LDW via a new 18-inch outfall.

SPU retrieved the end-of-pipe trap installed in the 17th Avenue S storm drain in June 2018, but there was insufficient material for analysis. Grab samples (RCB76 and RCB85) were collected from the pre-settling cells on bioretention cells C and D in 2018; PCBs were 0.063 mg/kg DW and 0.46 mg/kg DW, respectively. SPU will attempt to sample the sediment trap again in 2019. SPU also collected samples of treated stormwater flowing out of the bottom of Bioretention Cell B and Filterra™ unit D to assess the condition of the filter media (SPU 2019 [11926]). PCBs were not detected at 0.01 µg/L in any of the five samples collected from each location.

2.4.3 CSO Control Projects

Two King County CSO control projects are currently underway in the LDW. A third project was completed in 2018. The projects are the West Duwamish Wet Weather Storage Project (West Michigan and Terminal 115 CSOs), Georgetown Wet Weather Treatment Station (Brandon and Michigan CSOs), and Rainier Valley Wet Weather Storage Project and conveyance improvements (Hanford #1 CSO).

The objective of these projects is to control the remaining uncontrolled King County CSOs in the LDW to the state standard of no more than one untreated CSO discharge on average per year at each outfall, and will remove most of the untreated CSOs in the LDW.

King County submitted their 2018 CSO Control Program Consent Decree Annual Report to Ecology. This report includes the county's CSO control project and compliance activities from January through December 2018.

The West Duwamish project was in the predesign phase during this reporting period. King County expects this project to be in operation by 2030.

Construction work took place at the Georgetown Wet Weather Treatment Station throughout 2018. King County's contractor started treatment station construction in spring 2018. Work started on the construction on the new outfall structure in summer 2018. Preparation work started on constructing the conveyance pipeline, which will connect the treatment station to the outfall in the fall of 2018. The construction is expected to be completed in 2022.

The Rainier Valley Wet Weather Storage Project construction was completed in June 2018. This project became operational in 2018. King County is monitoring it for achievement of the performance standard (King County 2019 [11925]).

2.4.4 King County Mapping Updates

King County is required to map and document the MS4 on properties it owns or operates as part of their NPDES Phase 1 Municipal Stormwater Permit. King County created a stormwater asset inventory and initiated a project to resolve connectivity issues. In 2018 King County resolved 19 of these connectivity issues (King County 2019 [11925]).

2.5 Site Assessment and Cleanup

During SCAP development, Ecology and its contractors identified contaminated properties that have the potential to cause sediment contamination. This included review of available information about each property and assessment of whether the site poses a threat to LDW sediments. The detailed information on each property is documented in either a Property Review Report (Duwamish/Diagonal Way, Terminal 117, and Slip 4 source control areas) or in a Data Gaps Report (all other source control areas). Property reviews and/or data gaps reports have been completed for all 24 source control areas. Site characterization or cleanup is in progress at several facilities that are known or suspected threats to LDW sediments.

EPA is managing sites under the Resource Conservation and Recovery Act (RCRA); Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); and/or the Toxic Substances Control Act (TSCA). These are listed in Table 2-6. Ecology is managing the cleanup sites listed in Table 2-7.

The current status of cleanup at each of these sites is shown in Table 2-8. The total number of sites that will require characterization and/or cleanup in the LDW basin is unknown at this time.

Table 2-6. Cleanup Sites Under EPA Oversight

| Source Control Area | Facility Name | Regulatory Authority |
|---|--|----------------------|
| RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) | Rainier Commons | TSCA |
| RM 2.8 East (EAA-3: Slip 4) | Slip 4 EAA cleanup, including Georgetown Flume outfall replacement (completed in 2009) | CERCLA |
| RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge) | Boeing Former Electronics Manufacturing Facility (EMF) | CERCLA |
| | Boeing Plant 2 | RCRA |
| | Jorgensen Forge, Outfall Site (Time Critical Removal Action) (Completed in 2018) | CERCLA |
| | Jorgensen Forge, Sediment Site | CERCLA |
| RM 3.9-4.3 East (Slip 6) | Rhone-Poulenc | RCRA |
| RM 3.4-3.8 West (EAA-5: Terminal 117) | Terminal 117 | CERCLA |

Note: Company names are used only to designate source control area locations; source control area names are not intended to assign responsibility for contamination or to identify properties that may need remediation.

Table 2-7. Cleanup Sites Under Ecology Oversight

| Source Control Area | Facility Name | Regulatory Authority |
|---|---|--|
| Upper Reach | | |
| RM 4.9 East (EAA-7: Norfolk CSO/SD) | Emerald Gateway | In negotiations |
| | Boeing Field Chevron | MTCA Agreed Order (Jul 2015) |
| RM 3.9-4.3 East (Slip 6) | 8801 Site | MTCA Agreed Order (Jul 2006) MTCA Agreed Order (Nov 2008, amended Aug 2017) |
| RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA) | Boeing Isaacson Thompson | MTCA Agreed Order (Apr 2010) |
| RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge) | Jorgensen Forge, upland of the EPA-managed area | MTCA Agreed Order (Jul 2007, amended Jul 2013), Enforcement Order (Mar 2015), MTCA Agreed Order (Jul 2017) |
| RM 3.4-3.8 West (EAA-5: Terminal 117) | South Park Marina | In negotiations |
| Middle Reach | | |
| RM 2.8 East (EAA-3: Slip 4) | Crowley Marine Services 8 th Avenue S | MTCA Agreed Order (Oct 2009) |
| | North Boeing Field/Georgetown Steam Plant | MTCA Agreed Order (Aug 2008) |
| RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | Fox Avenue Building | MTCA Agreed Orders (May 2009, Jun 2012, amended Jun 2013) |
| | Whitehead Tyee Site | MTCA Agreed Order (Aug 2016) |
| RM 1.7-2.0 East (Slip 2 to Slip 3) | Duwamish Marine Center | MTCA Agreed Order (Sep 2011) |
| RM 2.1-2.2 West (EAA-2: Trotsky Inlet) | Douglas Management Dock | MTCA Agreed Order (May 2011) |
| | Industrial Container Services/Trotsky Property | MTCA Agreed Order (May 2010) |
| RM 2.1 West (1 st Avenue S Storm Drain) | South Park Landfill | MTCA Agreed Order (May 2009, amended Jun 2013 and Feb 2016) |
| RM 1.6-2.1 West (Terminal 115) | North Terminal 115 | MTCA Agreed Order (Mar 2011) |
| Lower Reach | | |
| RM 0.9-1.0 East (Slip 1) | Snopac Property | MTCA Agreed Order (July 2019) |
| RM 1.3-1.6 West (Glacier Bay) | Duwamish Shipyard | MTCA Agreed Order (Sep 2010) |
| | Glacier Northwest/Reichhold Chemical | MTCA Agreed Order (May 2009) |
| Combined sewer area | Burlington Environmental/East of 4 th Site | RCRA Agreed Order (May 2010) |
| | West of 4 th Site | RCRA Agreed Order (Apr 2014), Amended (Nov 2017) |
| | General Electric-Dawson Street Plant | RCRA Agreed Order (May 2007) |

Table 2-8. Ecology Cleanup Site Status

| Site Name | Agreed Order | Remedial Investigation | Feasibility Study | Cleanup Action Plan | Cleanup | Interim Action |
|---|------------------------------------|------------------------|-------------------|---------------------------------|-------------|----------------|
| Upper Reach | | | | | | |
| 8801 Site | 2006, 2008 | 2011 | In progress | In progress | | |
| Boeing Field Chevron | 2015 | In progress | In progress | | | |
| Boeing Isaacson/Thompson | 2010 | 2014 | In progress | | | |
| Emerald Gateway | Negotiations in progress | | | | | |
| Jorgensen Forge | 2007, 2015, 2017 | In progress | | | | 2014 |
| South Park Marina | Negotiations in progress 2016-2018 | | | | | |
| Middle Reach | | | | | | |
| Crowley Marine Services 8th Avenue S | 2009 | In progress | | | | |
| Douglas Management | 2011 | In progress | | | | |
| Duwamish Marine Center | 2011 | In progress | | | | |
| Fox Avenue Building | 1991, 2009, 2012, amended 2013 | 2011 | 2012 | Agreed Order 2012, amended 2013 | In progress | 2009 |
| Industrial Container Services | 2011 | In progress | | | | |
| North Boeing Field/Georgetown Steam Plant | 2008 | In progress | | | | 2011 |
| North Terminal 115 | 2011 | In progress | | | | |
| South Park Landfill | 2009 | 2017 | 2017 | 2017 | | 2014, 2016 |
| Whitehead Tye | 2016 | In progress | | | | 2017 |
| Lower Reach | | | | | | |
| Duwamish Shipyard | 2010 | May 2019 | In progress | | | |
| Glacier Northwest/Reichhold | 2009 | In progress | In progress | | | |
| Snopac Property | 2019 | In progress | In progress | In progress | | 2019 |

Table Notes: The following MTCA Cleanup Sites are not included in the schedule above; these are located in the LDW basin but are in the combined sewer area and not within the boundaries of a source control area: GE-Dawson Street Plant, East of 4th Site (Capital Industries, Art Brass Plating, Blaser Die Casting), and West of 4th Site (Burlington Environmental). The following EPA-lead sites are not included in the schedule above: Boeing Plant 2, Terminal 108, Terminal 117, Rhone-Poulenc, Rainier Commons, and Boeing Former EMF.

Company names are used only to designate source control area locations; source control area names are not intended to assign responsibility for contamination or to identify properties that may need remediation.

2.6 Additional Studies Relevant to Source Control

2.6.1 Green River Loading Studies (Ecology/USGS)

Ecology worked in cooperation with the United States Geological Survey (USGS) to quantify sediment and toxic chemical loads associated with upstream sources in the Green River to the LDW, including high flow/high turbidity events that may contribute more to the annual loading than average flow conditions.

Between August 2016 and March 2017, USGS collected representative samples of filtered and unfiltered water and suspended sediment at the Foster Links Golf Course sampling location. The samples were collected during 13 periods of differing flow conditions, and analyzed for metals, dioxins/furans, semivolatile organic compounds (SVOCs), butyltins, PCB congeners, and total and dissolved organic carbon. USGS published these results in 2018. The results of this study provide new data that can be used to estimate sediment and chemical loads transported by the Green River to the LDW (USGS 2018a [11274]).

Ecology also worked in cooperation with the USGS to better understand the amount of sediment transported by the river. The USGS collected discrete and time-series turbidity, discharge, suspended sediment concentration, and particle size data from February 2013 to January 2017 at the Foster Links Golf Course sampling location. The USGS quantified the timing and magnitude of suspended-sediment transported in the Duwamish River. To estimate 15 minute suspended-sediment concentrations, the USGS developed regression models between suspended sediment concentrations and turbidity, and between suspended sediment concentrations and discharge. Suspended sediment loads were calculated from the computed suspended sediment concentrations and time-series discharge data for every 15 minute interval during the study period. The estimate for the 3-year average (2014 through 2016) annual suspended sediment load was 117,246 tons. Most (97 percent) of the annual suspended sediment was transported during the wet season (October 16 through April 15), when brief periods of intense precipitation from storms, large releases from the Howard Hanson Dam, or a combination of both were more frequent. Streamflow and suspended-sediment concentrations were highest from October 16 to April 15 of each year (USGS 2018b [11301]).

2.6.2 Green-Duwamish Pollutant Loading Assessment (Ecology/EPA)

Ecology and EPA initiated a Pollutant Loading Assessment (PLA) for the Green-Duwamish River watershed in 2014. The purpose of the PLA is to identify upstream pollution sources to the LDW and to identify strategies to reduce those sources of pollution to the entire Green-Duwamish River watershed. To accomplish these goals, the PLA is developing watershed-based models to evaluate the cumulative effects of toxic pollution, assess the relative contribution of toxic pollution from source pathways in the watershed, and help prioritize efforts to control the release of pollutants in the watershed. The PLA models and future monitoring data will support source control decisions for the Green-Duwamish River watershed.

The PLA is being developed with the participation of a Technical Advisory Committee (TAC). The TAC is made up of technical staff from public agencies, quasi-governmental groups, and community. The Interested Parties Group also provides input and is composed of agencies, businesses, nonprofit groups, and the general public. EPA's contract with TetraTech to develop the watershed model expired in 2018. Ecology, in coordination with modelers from King County

and technical staff from the City of Seattle, started to lead the modelling effort in 2018. The PLA TAC met in June 2018 to discuss the watershed model modification and sediment calibration, and receiving water modeling approach. The PLA is a long-term project which will be phased over many years. Additional information related to this project is posted on Ecology's PLA website¹⁰.

2.6.3 Inventory of Lower Duwamish Waterway Slivers (Ecology)

Ecology tasked their contractor, Leidos, to identify and map slivers of upland property along the LDW where ownership may be unknown, undetermined, or different from the ownership of the adjacent upland parcel, and to summarize information about these slivers. Leidos completed this inventory and submitted a summary report to Ecology in May 2018 (Leidos 2018 [12004]).

Data gaps and planned actions were identified for six areas:

- RM 4.3-4.6 East (Boeing Developmental Center) – Not characterized; PCBs and benzyl alcohol in nearby sediment. If an Agreed Order is negotiated for this site, the data gap will likely be filled as part of the subsequent investigation.
- RM 1.2-1.3 West (Alaska Marine Lines) – Not characterized; metals, PCBs, PAHs, phthalates, and benzyl alcohol in nearby sediment. Sampling of this sliver may not be possible due to its location under permanent piers.
- RM 1.9-2.1 West (Terminal 115) – Not characterized; PAHs, phthalates, and other SVOCs in sediment. Ecology is negotiating an Agreed Order for this site, which will include investigation and cleanup and will likely fill this data gap.
- RM 2.3-2.7 West (Boyer Towing) –Partially characterized; zinc, PCBs, and benzyl alcohol in sediment. Sliver 91W (RM 2.3-2.5 West) is considered not sampleable due to the presence of a dock and vertical bulkhead. Bank soil sampling at RM 2.5-2.7 West was conducted by LDWG in 2018; no analytes exceeded screening levels (Windward 2019 [12109]).
- RM 2.7-2.9 West (Riverside Drive-Central) – Not characterized; mercury, PCBs, dioxins/furans, PAHs, phthalates, phenols, and other SVOCs in sediment.
- RM 3.4-3.9 West (South Park Marina/Terminal 117/Boeing South Park) – Partially characterized; zinc, PCBs, PAHs, phthalates, phenols, and other SVOCs in sediment. The habitat restoration project for Terminal 117 included sampling and soil removal at RM 3.4 to 3.7 West.

2.6.4 Green River PCB Equipment Blank Study (King County)

King County conducted a study to better understand the magnitude of equipment contamination bias associated with the Green River water sample PCB data, as well as to determine which equipment components contribute to the contamination. This study had two parts: field sampling and analysis of water samples from the Green River and analysis of laboratory collected equipment blank samples. This sampling was conducted to determine specific PCB congener

¹⁰ <https://ecology.wa.gov/Water-Shorelines/Water-quality/Water-improvement/Total-Maximum-Daily-Load-process/Directory-of-improvement-projects/Green-Duwamish-Watershed-PLA>

contamination from autosampler equipment and to evaluate the potential bias to middle and lower Green River surface water samples collected in previous King County Green River Watershed studies. King County completed the sampling and analysis for this study in 2017. King County presented the findings of this study in a 2018 data report (King County 2018a [11314]).

The field portion of this study consisted of autosampler composites and hand-grab composites collected concurrently at two Green River mainstem locations: Kanaskat-Palmer State Park and Foster Links Golf Course. The contribution of PCBs by the autosampler equipment was evaluated by comparing PCB results between the sample pairs for each event and location. PCB concentrations in samples collected with the autosampler were consistently higher than levels in the concurrently collected hand-grab composite samples. PCB congeners PCB-47, PCB-51, and PCB-68 were the most prominent congeners in each autosampler composite (86% of total PCB concentrations on average), but were rarely detected in the concurrently collected hand-grab composite samples (5% of the total PCB concentrations on average) (King County 2018a [11314]).

The laboratory equipment blank samples evaluated the potential contamination associated with different types of tubing used for sample collection and processing. The findings indicate that the use of standard silicone tubing results in significant contributions of PCBs to environmental samples, specifically congeners PCB-47, PCB-51, and PCB-68. However, the use of platinum-cured silicone tubing did not contribute to PCB contamination, while use of Teflon tubing had a negligible contribution of PCBs in environmental samples (King County 2018a [11314]).

This study indicates that platinum-cured silicone tubing and Teflon tubing are acceptable for use in collection and processing of samples for PCB analysis (King County 2018a [11314]).

King County subsequently revised the 2014 and 2015 Green River surface water study reports to address the equipment contamination bias. Total PCB concentrations in these reports were adjusted to exclude the three PCB congeners affected by the standard silicon tubing (King County 2018b [11315], King County 2018c [11318]).

2.7 Source Control Area-Specific Activities

Ecology conducted source control investigations for each of the 24 source control areas, including review of existing information, identification of data gaps, and preparation of a SCAP. The 24 source control areas are shown in Figure 1-2. The potential for sediment recontamination associated with each source control area is described in detail in the Data Gaps Reports and SCAPs. These documents are available on Ecology's LDW Source Control website.¹¹

Source control status reports describe source control activities that have been conducted since 2003, as follows:

- Report 1 – 2003 to June 2007 (Ecology 2007 [00021])
- Report 2 - July 2007 to March 2008 (Ecology 2008a [00065]),
- Report 3 - April to August 2008 (Ecology 2008d [00068]),

¹¹ <https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Cleanup-sites/Toxic-cleanup-sites/Lower-Duwamish-Waterway>

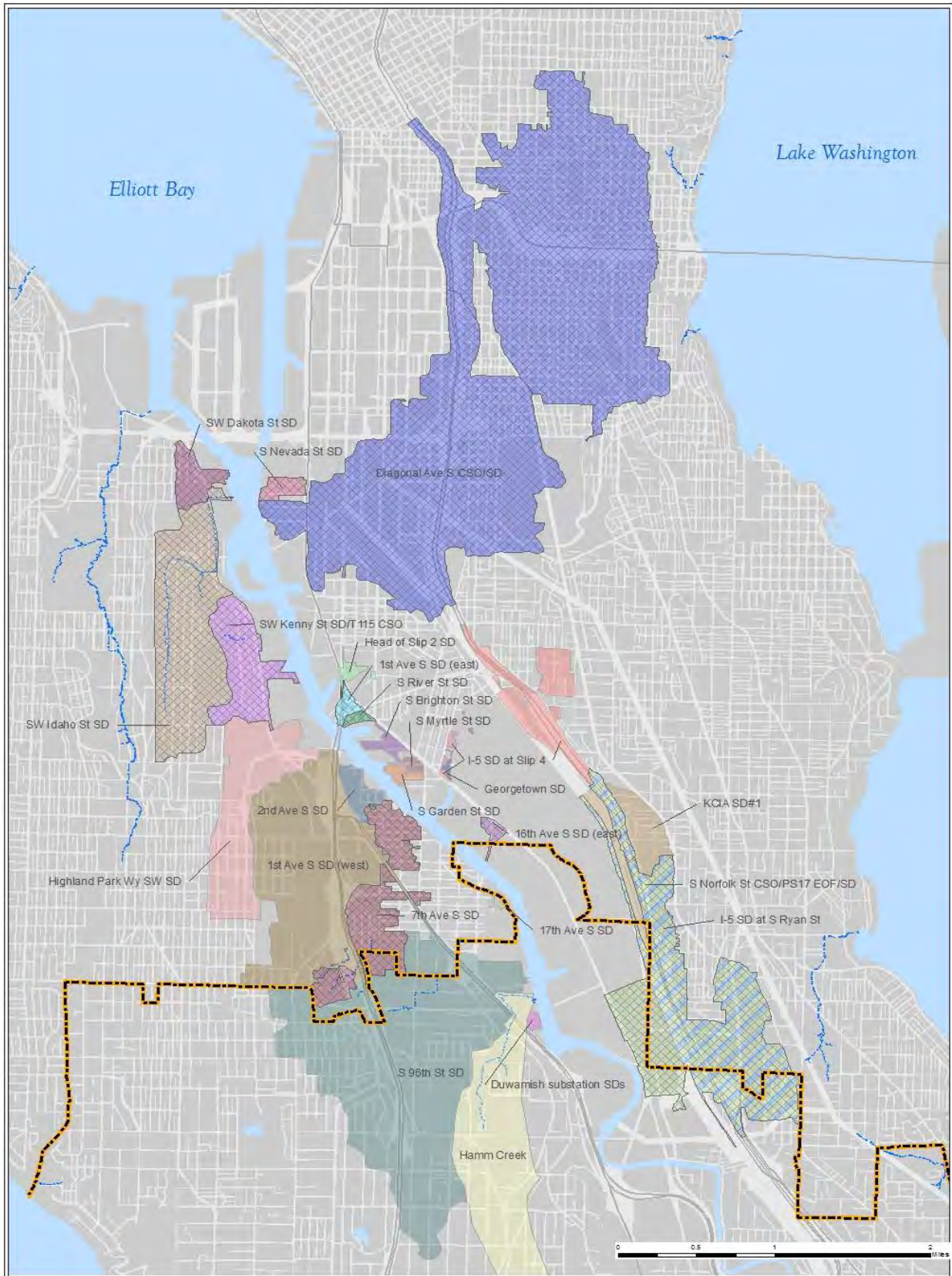
- Report 4 - September 2008 to June 2009 (Ecology 2009c [00090]),
- Report 5 - July 2009 to September 2010 (Ecology 2011c [00095]),
- Report 6 - October 2010 through December 2011 (Ecology 2012b [00098]),
- Report 7 - January through December 2012 (Ecology 2013 [10359]),
- Report 8 - January through December 2013 (Ecology 2014 [10620]), and
- Report 9 –January 2014 through December 2016 (Ecology 2018y [12005]).
- Report 10 – January through December 2017 (Ecology 2019a [12262]).

This current Source Control Status Report (Report 11) describes source control actions that were conducted from January through December 2018.

Appendix B, Table B-1, lists action items that were completed during this reporting period. Table B-2 lists action items that have not yet been completed, including new source control action items that have been added since initial publication of the SCAPs. Source control activities conducted from January through December 2018 are described in Sections 3 through 5:

- Section 3: Upper Reach
- Section 4: Middle Reach
- Section 5: Lower Reach

Properties for which no source control activities were conducted during the reporting period are not discussed in this report. Site maps are presented for each of the 24 source control areas in Appendix A. These maps are intended to help identify locations discussed in the text. Additional figures are available in the referenced reports.



Lower Duwamish Waterway

Figure 1 - MS4 Basins

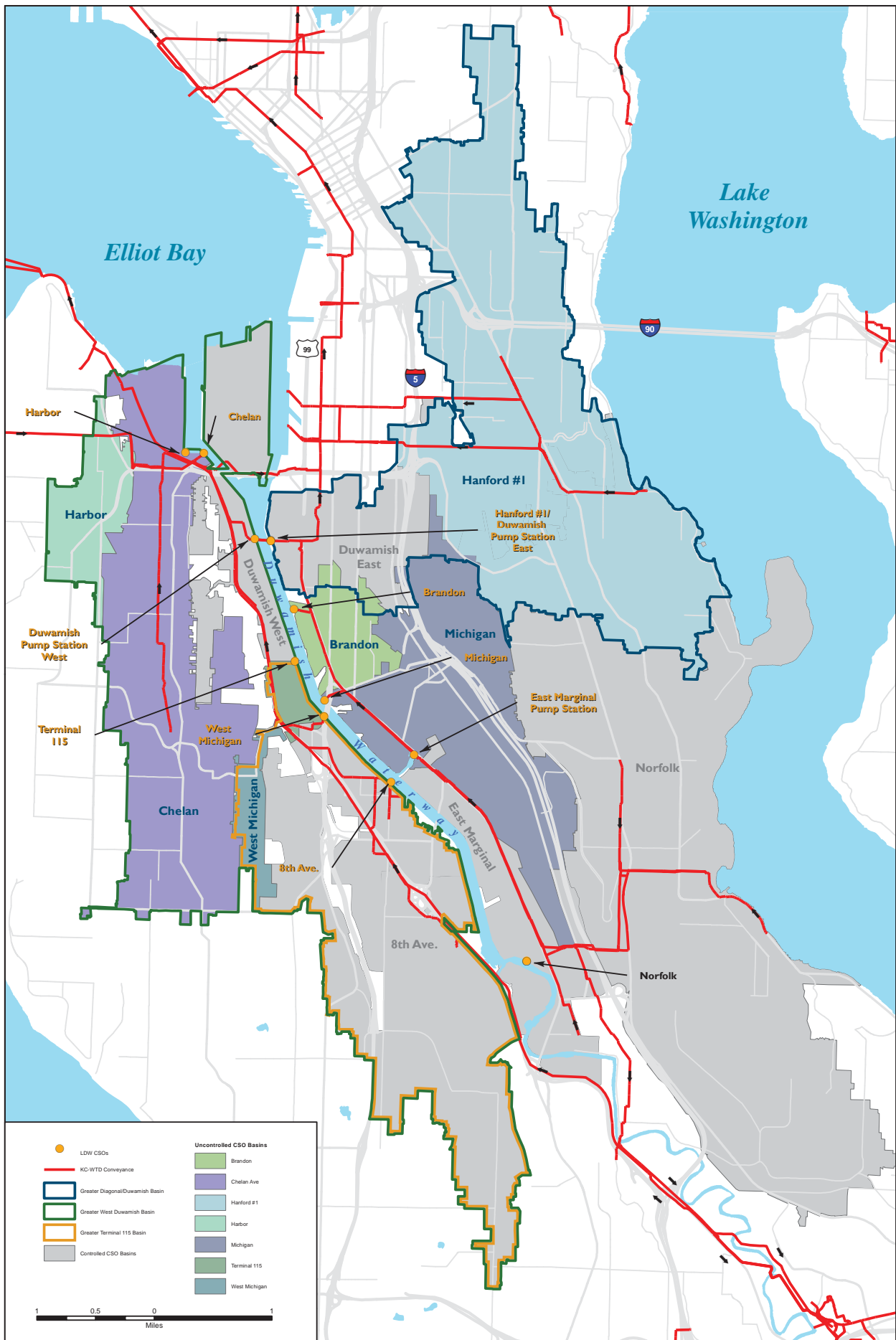
City of Seattle















Produced by Seattle Public Utilities. No guarantee of accuracy is made, including accuracy, completeness, or fitness for use. City of Seattle. All rights reserved.

| | | | | |
|--|---|---|--|---|
| <p>2017 SCIP Priority Basins</p> <ul style="list-style-type: none"> 10th Ave S SD (east) 1st Ave S SD (east) 7th Ave S SD Diagonal Ave S CSO/SD S Nevada St SD | <ul style="list-style-type: none"> S Norfolk St CSO/PS17 EOF/SD S River St SD SW Dakota St SD SW Idaho St SD SW Kenny St SD/T115 CSO <p>City of Seattle Storm Drain Basins</p> <ul style="list-style-type: none"> 16th Ave S SD (east) | <ul style="list-style-type: none"> 17th Ave S SD 1st Ave S SD (east) 1st Ave S SD (west) 2nd Ave S SD 7th Ave S SD Diagonal Ave S CSO/SD SW Kenny St SD/T115 CSO Duwamish substation SDs Georgetown SD | <ul style="list-style-type: none"> Hamm Creek Head of Slip 2 SD Highland Park Wy SW SD I-5 SD at S Ryan St I-5 SD at Slip 4 KC SD#1 Duwamish substation SDs S 96th St SD S Brighton St SD | <ul style="list-style-type: none"> S Garden St SD S Myrtle St SD S Nevada St SD S Norfolk St CSO/PS17 EOF/SD S River St SD SW Dakota St SD SW Idaho St SD SW Kenny St SD/T115 CSO |
|--|---|---|--|---|

G:\Regulations_and_Compliance\Drainage and Stormwater\GIS\sw_sd_basins.mxd

Figure 2-1. Seattle Storm Drain Basins in the Lower Duwamish Waterway



| | | | |
|---|---------------------------------|---|-------------------------|
|  | LDW CSOs |  | Uncontrolled CSO Basins |
|  | KC-WTD Conveyance |  | Brandon |
|  | Greater Diagonal/Duwamish Basin |  | Chelan Ave |
|  | Greater West Duwamish Basin |  | Hanford #1 |
|  | Greater Terminal 115 Basin |  | Harbor |
|  | Controlled CSO Basins |  | Michigan |
| | |  | Terminal 115 |
| | |  | West Michigan |

1 0.5 0 1
Miles

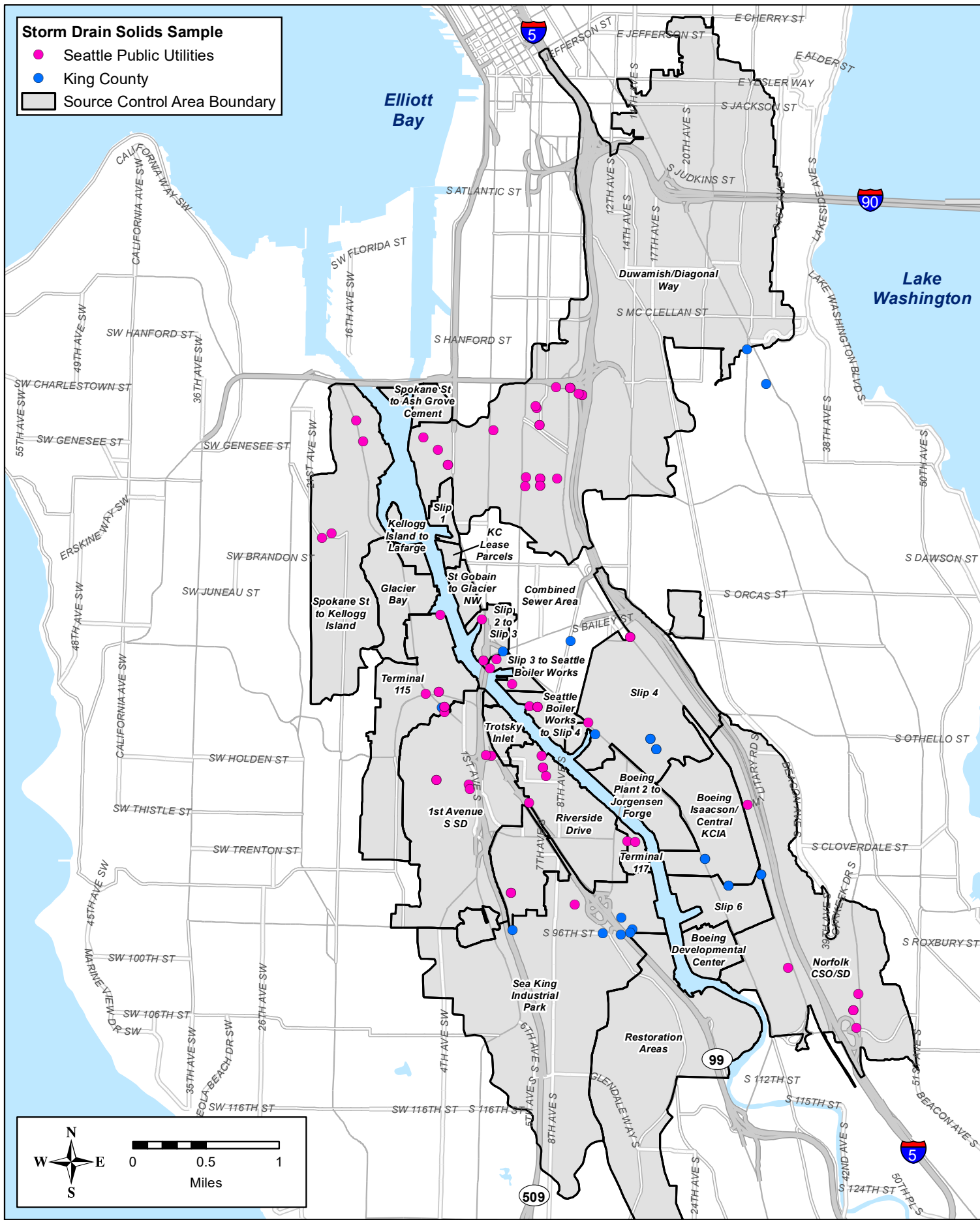


Figure 2-3. Source Tracing Sample Locations in the LDW Basin: 2018



3.0 Upper Reach Source Control Areas

The upper reach includes eight source control areas, including five on the east side of the LDW and three on the west side:

| East Side: | Report Section |
|--|-----------------------|
| RM 4.9 East (EAA-7: Norfolk CSO/SD) | 3.1 |
| RM 4.3-4.9 East (Boeing Developmental Center) | 3.2 |
| RM 3.9-4.3 East (Slip 6) | 3.3 |
| RM 3.7-3.9 East (EAA-6; Boeing Isaacson/Central KCIA) | 3.4 |
| RM 2.8-3.7 East (EAA-4: Boeing Plant 2 to Jorgensen Forge) | 3.5 |
| West Side: | |
| RM 4.2-5.8 West (Restoration Areas) | 3.6 |
| RM 3.8-4.2 West (Sea King Industrial Park) | 3.7 |
| RM 3.2-3.8 West (EAA-5: Terminal 117) | 3.8 |

Note: Company names are used only to designate source control area locations; source control area names are not intended to assign responsibility for contamination or to identify properties that may need remediation.

Source control activities specific to each source control area during the current reporting period are summarized in Section 3.1 through 3.8 below.

Several Ecology cleanup sites are located on the east side of the Upper Reach: Emerald Gateway (formerly Unified Grocers), Boeing Field Chevron, 8801 Site, Boeing Isaacson Thompson, and Jorgensen Forge. In addition, the former Rhone-Poulenc site, Boeing Plant 2, and the Jorgensen Forge sediment and outfall sites, which are under EPA oversight, are located within this source control area.

One cleanup site under Ecology oversight (South Park Marina) is located on the west side of the Upper Reach. The Terminal 117 Site, which is under EPA oversight, is also located on the west side of the Upper Reach.

3.1 RM 4.9 East (EAA-7: Norfolk CSO/SD)

The RM 4.9 East (EAA-7: Norfolk CSO/SD) source control area includes Boeing parcels adjacent to the LDW, the southern portion of KCIA, and upland properties in the Norfolk and I-5 (Ryan Street) SD basins (Appendix A). The Norfolk CSO/PS17 EOF/SD as well as the Henderson/MLK Wet Weather Treatment Station discharge to the LDW within this source control area.

3.1.1 Business Inspections

SPU conducted 19 inspections at 11 facilities in the Norfolk CSO/PS17 EOF/SD basin during the current reporting period, including 12 initial inspections and seven follow-up inspections (Appendix C).

Ecology conducted a stormwater compliance inspection at the Boeing Military Flight Center on April 4, 2018 (Ecology 2018p [11508]). Details about this inspection are provided in Appendix E, Table E-1.

Four source control inspections were conducted in the Norfolk CSO/PS17 EOF/SD basin and three were conducted in the combined sewer area (outside of the RM 4.9 East source control area boundary) as part of the Urban Waters Initiative (Appendix E, Table E-2).

In 2018, SPU cleaned approximately 11,500 linear feet of pipe in the Martin Luther King Jr Way sub-basin of the south S Norfolk CSO/PS17 EOF/SD system. SPU has identified and controlled several sources in the Norfolk system, but there continue to be elevated levels of PAHs in this system. The line was cleaned to facilitate future source tracing activities (SPU 2019 [11926]).

3.1.2 Source Tracing

During the current reporting period, SPU collected five storm drain solids samples in this drainage basin, including three sediment trap samples and two in-line solids samples.

Complete sample results for the current reporting period are presented in Appendix F. Screening level exceedances are summarized in Table 3-1 below. Sample locations are shown on Figures A-2 and A-3. BEHP exceeded the CSL in three of the five samples, with concentrations ranging from 0.35 to 13 mg/kg DW. Benzyl alcohol exceeded the CSL in three samples, with one sample (sediment trap NST1) at 1.9 mg/kg DW (more than 25 times the CSL of 0.073 mg/kg DW).

Table 3-1. RM 4.9 East: Screening Level Exceedances in SPU Source Tracing Samples

| Chemical Class | Chemical | Sediment Traps | In-line Solids |
|------------------------|------------------------------|----------------|----------------|
| Metals | Zinc | × | × |
| PCBs | PCBs, total | × | × |
| PAHs | Individual HPAH compounds | | ☒ |
| | Total cPAHs | | ☒ |
| Phthalates | BEHP | ☒ | ☒ |
| | Butylbenzyl phthalate | × | ☒ |
| Phenols | 4-Methylphenol | ☒ | |
| Other SVOCs | Benzyl alcohol | ☒ | ☒ |
| | Benzoic acid | ☒ | |
| Petroleum Hydrocarbons | Diesel range hydrocarbons | | ☒ |
| | Motor oil range hydrocarbons | ☒ | ☒ |

Storm drain screening levels are listed in Table 2-4. Several SVOCs reported high detection limits which exceeded screening levels. These are identified in Appendix F.

× = Exceedance of SCO (lower screening level) was observed during the current reporting period (2018).

☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2018).

3.1.3 Facility-Specific Source Control Actions

Boeing Developmental Center - South

The Boeing Developmental Center (BDC) property straddles three source control areas. BDC-South is located in the RM 4.9 East source control area and it is discussed below. BDC-Central is discussed in Section 3.2.3; BDC-North is discussed in Section 3.3.3.

Ecology WQ issued Administrative Order 14012 to BDC on February 8, 2017. Boeing appealed Administrative Order 14012 to the Pollution Control Hearings Board in March 2017 (Ecology 2017a [11457]).

- In January 2018, Ecology WQ and Boeing negotiated Agreed Order DE-15600 and settled Boeing's appeal of Administrative Order 14012 (PCHB 2018 [11254]). Agreed Order DE-15600 was signed on January 9, 2018 (Ecology 2018a [11246]). Under the Agreed Order, Boeing will conduct further evaluation of stormwater at BDC. Boeing must modify the Stormwater Pollution Prevention Plan (SWPPP) and conduct monthly monitoring of the majority of outfalls at the site for ISGP benchmark pollutants, total petroleum hydrocarbons (TPH) and PCBs. Additional requirements under the Agreed Order are described in Section 3.2.3 (BDC-Central).

Boeing performed a removal action in the LDW immediately offshore of the BDC south storm drain outfall (DC2) under Ecology's Voluntary Cleanup Program (VCP) in 2003. Boeing performs annual monitoring on a voluntary basis for PCBs in the backfill material installed during the 2003 sediment removal action and accumulated solids in the Vortechinics 9000 sediment trap unit upstream of outfall DC2. The monitoring data are used to evaluate the effectiveness of source control measures that have been implemented in the south storm drain system.

| | |
|------------------------------|---|
| Address | 9725 East Marginal Way S |
| Facility/Site ID | 2101 (Boeing A&M Developmental Center) |
| NPDES Permit | WAR000146 (Boeing Developmental Center) |
| Current Operations | Research and development |
| Historical Operations | Aircraft manufacturing |
| Chemicals of Concern | PCBs, metals, solvents, petroleum hydrocarbons, and SVOCs |
| Media Affected | Soil, groundwater, stormwater, and sediment |

- Sampling at outfall DC2 was conducted in 2016, 2017, and in January 2018. A portion of the sampling, focused on the south storm drain line, was conducted as part of a routine effort following the 2003 sediment removal action. Additional stormwater sampling was conducted to evaluation conditions in upgradient portions of the south storm drain line, specifically at the 9-101 Building.

PCB Aroclors were detected in the wipe, sediment, and water sample from the 9-101 building in February and April 2017. This indicated a source that may have contributed to PCBs in the stormwater conveyance system leading to the Vortechinics unit (OWS-2).

- One water sample was collected at OWS-2 in January 2018 for PCB Aroclor analysis. All PCB Aroclors were below the method reporting limit of 0.01 micrograms per liter ($\mu\text{g/L}$).

- The source tracing of the south storm drain included a wipe sample, water sample, and six sediment samples collected at the 9-101 building in February and April 2017. The results indicated potential PCB sources to the south storm drain from the roof solids as well as the drain pipe from AHU-9.
- Video inspection and a tracer study confirmed the connection of the AHU-9 drain system to the south storm drain. Boeing Facilities closed off the connection from AHU-9 to the south storm drain shortly after completing the source tracing monitoring.
- Boeing will continue to evaluate monthly monitoring of PCBs in stormwater discharges to evaluate the effectiveness of the Vortechincs sediment trap. Boeing will continue to sample solids within the Vortechincs unit to evaluate PCB concentration trends in accumulated solids (Calibre 2018 [11448]).
- Ecology HWTR identified Boeing as a potentially liable person (PLP) under MTCA for the release of hazardous substances at the BDC site in March 2018 (Ecology 20181 [11281]).

Boeing Military Flight Center

Boeing is conducting source control and cleanup work at the Military Flight Center (MFC) to address PCBs present in stormwater flowing offsite from the facility, in certain building materials, and in offsite soils. Stormwater discharges at the MFC are covered under the ISGP (WAR000150).

Source tracing samples collected in 2012 showed elevated concentrations of PCBs in storm drain solids; Boeing conducted cleanup activities of the storm drain system and surface soils in 2015 in

locations impacted by PCBs (Ecology 2017b [11449]). In 2015 and 2016, discharge samples also exceeded the ISGP benchmark values and chronic marine water quality criteria for zinc and copper. Despite frequent catch basin cleaning, elevated levels of copper, zinc, PCBs, and diesel-range hydrocarbons continue to be found in storm drain solids.

Ecology determined that the elevated pollutant levels in stormwater and storm drain solids in 2015 and 2016 strongly indicate that source control at the Boeing MFC is inadequate and may lead to the release of pollutants into the waters of the state. As a result, Ecology WQ issued an Administrative Order (No. 13932) on March 23, 2017. The Administrative Order directed Boeing to submit an engineering report for Ecology review and approval by June 15, 2017, and to install and have operational all final stormwater treatment systems by October 31, 2017.

- Boeing submitted an engineering report to Ecology on July 7, 2017. Ecology did not approve the engineering report, concluding that the engineering design did not

| | |
|------------------------------|--|
| Address | 10002 East Marginal Way S |
| Facility/Site ID | 14532 (Boeing Military Flight Center) |
| NPDES Permit | WAR000150 (Boeing Military Flight Center) |
| Current Operations | Flight line support, including aircraft storage, preparation for flight, general servicing, maintenance, and repair. |
| Historical Operations | Aircraft operations since 1958. Prior to 1958, the site was used for machinery salvage and farming, and as a department store. |
| Chemicals of Concern | Volatile organic compounds (VOCs), PCBs, PAHs, metals, and petroleum hydrocarbons |
| Media Affected | Stormwater, storm drain solids, soil |

demonstrate that the facility can meet the ISGP requirements. Boeing was required to address the issues identified by Ecology and to revise and resubmit the engineering report for Ecology review and approval. Implementation of stormwater treatment was due by October 31, 2017. Boeing submitted a revised engineering report on March 22, 2018.

- Ecology conducted a stormwater compliance inspection on April 4, 2018 (Ecology 2018p [11508]). Ecology concluded that the Boeing MFC facility was out of compliance. In May 2018 Ecology sent Boeing a warning letter (Ecology 2018u [11506]). The letter indicated that Boeing must comply with corrective actions, including the requirement to submit an engineering report that meets the requirements specified in Administrative Order 13932. As of April 2018, engineering report submittals received and reviewed by Ecology failed to meet engineering report requirements outlined in the administrative order and ISGP (Ecology 2018p [11508], Ecology 2018u [11506]).
- Boeing submitted a second revised engineering report to Ecology on August 14, 2018.
- In November 2018 Ecology sent Boeing MFC a warning letter. In the warning letter, Ecology noted that exceedance of total suspended solids (TSS) limits has been a problem for this facility. Ecology required that Boeing MFC address the root source of this problem to prevent future exceedances (Ecology 2018ao [11507]).
- Discharge monitoring in the second quarter of 2018 indicated exceedances of the copper and zinc benchmarks, which triggered a corrective action. In their 2018 Annual Report, Boeing stated that they performed an inspection to investigate potential causes of the exceedances, removed and replaced 190 feet of large diameter galvanized stormwater piping to eliminate an identified source of zinc, and they could not identify any source of copper present at the site that may have caused the exceedance. Ecology continues to work with Boeing to establish a clear path forward to meet ISGP requirements at this facility.

Unified Grocers

Unified Grocers has experienced historical exceedances of ISGP benchmarks for copper, zinc, and turbidity, requiring implementation of Level 3 best management practices (BMPs).

- Ecology conducted a site hazard assessment at Unified Grocers in January 2018. Ecology determined that this site was contaminated with gasoline-range hydrocarbons, benzene, toluene, ethylbenzene, and total xylenes (BTEX). Ecology assigned the site a hazard ranking of five, where a score of one represents the highest relative level of concern, and five represents the lowest (Ecology 2018i [11512], 2018j [11511]).

| | |
|------------------------------|--|
| Address | 3301 S Norfolk Street |
| Facility/Site ID | 73338176 (Unified Grocers 3301 Norfolk) |
| NPDES Permit | WAR002040 (Terminated 9/28/2018) |
| Current Operations | Wholesale distribution of food products and related non-food items to retail markets and stores |
| Historical Operations | Truck shop, gasoline service station |
| Chemicals of Concern | Copper, mercury, zinc, PCBs, PAHs, cPAHs, phthalates, dioxins/furans, and petroleum hydrocarbons |
| Media Affected | Stormwater and storm drain solids |

- In September 2018, Supervalu announced that the facility was closing operations at the Unified Grocers location (3301 Norfolk Street). They submitted a notice of termination form to Ecology for their ISGP (Supervalu 2018 [11454]). On September 28, 2018 Ecology terminated their coverage under the permit (Ecology 2018ar [11510]).
- The former Unified Grocers property at 3301 S Norfolk Street and the former Northwest Auto Wrecking property at 10230 East Marginal Way S have been purchased by Prologis-Exchange 3301 South Norfolk LLC, and the Site is now referred to as the Emerald Gateway Site.

Boeing Field Chevron

The Boeing Field Chevron site is located south of the RM 4.9 East source control area, but is discussed here because Ecology identifies this site as an LDW cleanup site.

In July 2015, Ecology, Chevron, the RPNP Corporation, and Rajbir and Pradeep Sandhu signed Agreed Order DE-10947 for upland cleanup at this site. This includes completion of an RI/FS and draft Cleanup Action Plan (CAP) (Ecology 2015d [12274]).

RI activities conducted in 2018 are described below:

| | |
|------------------------------|---|
| Address | 10805 Tukwila International Boulevard |
| Facility/Site ID | 2551 (Chevron Station 6009 3099) |
| NPDES Permit | None |
| Current Operations | Service station with underground gasoline storage |
| Historical Operations | Same as current (since 1940) |
| Chemicals of Concern | Petroleum hydrocarbons, VOCs |
| Media Affected | Soil and groundwater |

- In January 2018 G-Logics (on behalf of Chevron) installed, developed, and sampled four additional groundwater monitoring wells (MW-25D, MW-29S, MW-29D, and MW-30). Soil samples were collected from the borings. One soil sample contained a concentration of 0.23 mg/kg DW of xylenes (MTCA Method A cleanup level is 9 mg/kg). No other analytes were detected above the laboratory reporting limit.
- Groundwater was collected from the new and existing monitoring wells in January, May, and August 2018. The analytical results for groundwater collected from seven of the monitoring wells did not contain detectable concentrations of analyzed contaminants. Two soil-gas samples were also collected in January 2018 (G-Logics 2018a [11289], 2018b [11290], 2018c [11291], 2018d [11292], 2018e [11515]).
- Ecology approved an extension for the RI schedule of deliverables in June 2018. According to the revised schedule, field activities must be completed by January 31, 2019 and data validation must be completed by March 31, 2019 (Ecology 2018w [11288]).
- Ecology reviewed a draft Feasibility Pilot Study Work Plan in May 2018. G-Logics met with Ecology to discuss the comments on May 25, 2018. G-Logics revised the Draft Feasibility Pilot Study Work plan to address Ecology’s comments and submitted a revised draft Feasibility Pilot Study Work Plan to Ecology in August 2018 (G-Logics 2018f [11518]).

3.2 RM 4.3-4.9 East (Boeing Developmental Center)

The RM 4.3-4.9 East (Boeing Developmental Center) source control area is shown in Appendix A. This source control area consists of a single facility, the central portion of BDC, referred to as BDC-Central. The BDC-South is discussed in Section 3.1.3 (RM 4.9 East); BDC-North is discussed in Section 3.3.3 (RM 3.9-4.3 East).

3.2.1 Business Inspections

No inspections were conducted in this source control area during 2018.

3.2.2 Source Tracing

No source tracing activities were conducted at BDC during this reporting period, except as described in Section 3.2.3 below.

3.2.3 Facility-Specific Source Control Actions

Boeing Developmental Center - Central

On February 8, 2017, Ecology WQ issued Administrative Order 14012 to BDC. Boeing appealed Administrative Order 14012 to the Pollution Control Hearings Board in March 2017 (Ecology 2017a [11457]).

- Ecology WQ and Boeing negotiated Agreed Order DE-15600 and settled Boeing's appeal of Administrative Order 14012 in January 2018 (PCHB 2018 [11254]). Agreed Order DE-15600 was signed on January 9, 2018 (Ecology 2018a [11246]).
- Under Agreed Order DE-15600, Boeing agreed to modify the SWPPP and begin monitoring at least once in all months when discharge occurs during BDC regular business hours at 12 of the 19 drainage areas at BDC, including DC5, DC9, DC10, DC11, DC12, DC13, and DC19 within the RM 4.3-4.9 East source control area.

- Ecology required Boeing to monitor for ISGP benchmark pollutants, TSS, TPH, and PCBs, starting in January 2018. In addition, Ecology required accelerated consideration of advanced stormwater treatment if future benchmark exceedances meet the trigger conditions specified in the Order.

| | |
|------------------------------|---|
| Address | 9725 East Marginal Way S |
| Facility/Site ID | 2101 (Boeing A&M Developmental Center) |
| NPDES Permit | WAR000146 (Boeing Developmental Center) |
| Current Operations | Research and development |
| Historical Operations | Aircraft manufacturing |
| Chemicals of Concern | PCBs, metals, solvents, petroleum hydrocarbons, and SVOCs |
| Media Affected | Soil, groundwater, stormwater, and sediment |

- In the first and second quarters of 2018, BDC was out of compliance with their effluents limits. As a result, Ecology WQ sent a warning letter to Boeing in November 2018. Ecology required that Boeing address the root source of the TSS limit problem and

propose a solution designed to prevent future exceedances and submit the solution in writing (Ecology 2018aq [11494]).

- Due to the TSS effluent limit exceedance in the first quarter of 2018 at DC 11, the facility triggered the requirement to implement Phase 2 advanced treatment, which was a condition detailed in the Agreed Order.
 - The Phase 2 treatment required an engineering report within 90 days of triggering the advanced treatment requirement, a pilot study to prove that the selected treatment system will meet the benchmark requirement consistently, and installation of the approved advanced treatment system by fall of 2018.
 - BDC did not meet the 2018 treatment installation deadline; however Boeing submitted an engineering report to Ecology on September 28, 2018. Ecology determined that the information in the engineering report was incomplete.
 - Ecology required BDC to submit more information and the pilot study by December 20, 2018. Ecology continues to work with Boeing to establish a clear path forward to installing treatment and meeting the ISGP requirements at the facility.
- Ecology HWTR identified Boeing as a PLP under MTCA for the release of hazardous substances at the BDC site in March 2018 (Ecology 2018l [11281]).

Boeing has also continued cleanup activities under RCRA at the BDC property. Activities during the current reporting period are summarized below (Landau 2019 [11458]):

- **AOC-05:** Full-scale nitrate injections to stimulate biodegradation of petroleum hydrocarbons in groundwater began in 2008. Anaerobic bioremediation at AOC-05 is accomplished through stimulation of microorganisms present in the aquifer that can degrade petroleum hydrocarbons. The last nitrate injection occurred in December 2017.
 - Between May 2017 and February 2018 there were four quarterly monitoring events and two semiannual monitoring events to measure nitrate at downgradient wells (Landau 2018c [11920]). Monitoring results indicate that bioremediation at AOC-05 is nearing completion; monitoring is scheduled to continue.
 - Semiannual groundwater monitoring was conducted in August and November 2017, and in February and May 2018. In 2017 and 2018, gasoline-range hydrocarbons and BTEX concentrations remained below their proposed cleanup levels at previously impacted well BDC-104 and downgradient wells BDC-101 and BDC-102. Gasoline-range hydrocarbons and BTEX concentrations at BDC-103 were above their proposed cleanup levels in 2016, but have been below the cleanup levels since February 2017 (Landau 2018a [11922], 2018e [11921]).
- **SWMU-17:** Anaerobic bioremediation of tetrachloroethene (PCE) in groundwater was selected as the remedial approach for this unit. Full-scale electron donor injections began in 2011. As of August 2017, chlorinated solvent concentrations were below preliminary cleanup levels at all but three wells. Additional electron donor injections were implemented at five wells in November 2017.

- /2017, and in May 2018. In August and November 2017, PCE, trichloroethylene (TCE), cis-1,2-dichloroethene (cDCE) and vinyl chloride (VC) concentrations were below proposed cleanup levels at all wells, except for TCE at BDC-05-02 and BDC-05018 where the TCE concentrations were 3.6 µg/L and 1.7 µg/L, respectively.
- After the groundwater sampling in November 2017, a donor injection (molasses) was completed at five wells at SWMU-17 to enhance treatment of residual contaminant concentrations (Landau 2018a [11922], 2018b [11923]).
- The May 2018 groundwater monitoring results show that *in situ* anaerobic bioremediation continues to be enhanced following the November 2017 electron donor injection (Landau 2018e [11921]). In May 2018 PCE, TCE, cDCE and VC concentrations were below proposed cleanup levels at all wells, except for TCE at BDC-05-02 and VC at two wells (BDC-05-09 and BDC-05-18). In BDC-05-02, TCE was detected at a concentration of 3.75 µg/L (the proposed cleanup level is 1.4 µg/L). In BDC-05-09 and BDC-05-18, VC was detected at a concentrations of 3.3 µg/L and 3.4 µg/L respectively (the proposed cleanup level is 2.4 µg/L) (Landau 2018e [11921]).
- **SWMU-20:** Actions at this unit include groundwater pump and treat followed by bioremediation for PCE and TCE in groundwater. A groundwater treatment system was in place between 1993 and 2001; a series of bioremediation injection events was performed between 2004 and 2015.
 - Semiannual groundwater monitoring was conducted in May and November 2017, and in May 2018. The November 2017 and May 2018 groundwater monitoring results indicate that concentrations of PCE, TCE, and breakdown products were below the proposed cleanup levels at all of the SWMU-20 monitoring wells (with the exception of VC at MW-17A) (Landau 2018a [11922], 2018e [11921]).

3.3 RM 3.9-4.3 East (Slip 6)

The RM 3.9-4.3 East (Slip 6) source control area includes several properties adjacent to the LDW: the 8801 Site (also known as the former PACCAR Site, currently occupied by Insurance Auto Auctions), the former Rhone-Poulenc Site, parcels owned by the Museum of Flight, and the northern portion of BDC (BDC-North). In addition, it includes stormwater drainage from the south-central portion of KCIA, which discharges to the LDW through KCIA SD#1. The RM 3.9-4.3 East source control area is shown in Appendix A.

3.3.1 Business Inspections

Ecology performed a source control inspection at Insurance Auto Auctions on April 24, 2018 (Appendix E).

3.3.2 Source Tracing

SPU collected a grab inline solids sample at one location within the KCIA SD#1 storm drain basin in October 2018 (Figure A-3). No CSL (upper screening level) exceedances were identified

in this sample, although butylbenzyl phthalate and benzyl alcohol were present at concentrations above the SCO (lower screening level) (Appendix F).

In July 2018, King County collected annual inline sediment trap and storm drain solids grab samples from location KCIA1A, on the KCIA SD#1 storm drain line (Figure A-5). In addition, King County collected storm drain solids grab samples in February and April 2018 from a location at the upgradient boundary of the KCIA SD#1 basin along Perimeter Road S to evaluate the potential for offsite inputs to the KCIA drainage system.

King County sampling results are provided in Appendix G; screening level exceedances are summarized in Table 3-2 below. These data may suggest that the higher concentrations of zinc and PAHs observed in the KCIA1A sediment trap sample could be related to offsite inputs. King County will continue to sample the upgradient location as part of its sampling program (King County 2019 [11925]).

Table 3-2. RM 3.9-4.3 East: Screening Level Exceedances in King County Source Tracing Samples

| Chemical Class | Chemical | Sediment Trap | In-line Solids | Upgradient Solids |
|------------------------|------------------------------|---------------|----------------|-------------------|
| Metals | Arsenic | ☒ | | |
| | Lead | × | | |
| | Zinc | ☒ | × | ☒ |
| PCBs | PCBs, total | | | |
| PAHs | Individual LPAH compounds | ☒ | | ☒ |
| | Total LPAHs | | | ☒ |
| | Individual HPAH compounds | ☒ | | ☒ |
| | Total HPAHs | ☒ | | ☒ |
| Phthalates | BEHP | × | | |
| Petroleum Hydrocarbons | Motor oil range hydrocarbons | | | ☒ |

Storm drain screening levels are listed in Table 2-4. Several SVOCs reported high detection limits which exceeded screening levels. These are identified in Appendix G.

× = Exceedance of SCO (lower screening level) was observed during the current reporting period (2018).

☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2018).

3.3.3 Facility-Specific Source Control Actions

8801 Site (Former Kenworth Truck / PACCAR)

In July 2006, PACCAR and Ecology signed Agreed Order No. DE-3599 to evaluate shoreline and nearshore sediments, seeps, and stormwater at the site. In November 2008, Ecology, PACCAR, and Merrill Creek Holdings (the property owner at that time) signed Agreed Order DE-6069 for upland cleanup, which includes completion of an RI/FS and Interim Action Work Plan (Ecology 2008c [06418]). Centerpoint Properties purchased the property from Merrill Creek holdings in 2015, and Agreed Order DE-6069 was amended to update the property owner in

August 2017 (Ecology 2017c [11459]). The site is currently leased by Insurance Auto Auctions (IAA).

- The PLPs submitted a revised draft of the Feasibility Study to Ecology in March 2018. Ecology provided review comments in November 2018.
- The PLPs submitted a revised draft of the Interim Action Work Plan to Ecology in March 2018. Ecology provided review comments to the PLPs in November 2018.
- In 2018, IAA submitted discharge monitoring reports to Ecology that indicated that the facility was out of compliance with effluent limits in the 4th quarter of 2017. Ecology WQ sent IAA a warning letter in November 2018 requiring IAA to comply with the NPDES permit requirements (Ecology 2018ap [11503]).

| | |
|------------------------------|---|
| Address | 8801 East Marginal Way S |
| Facility/Site ID | 2072 (8801 E Marginal Way S) |
| NPDES Permit | WAR008681 (Insurance Auto Auctions Tukwila) |
| Current Operations | Damaged vehicle storage |
| Historical Operations | Truck manufacturing |
| Chemicals of Concern | PCBs, PAHs, VOCs, phenols, phthalates, petroleum hydrocarbons, metals |
| Media Affected | Soil, groundwater, stormwater, and sediment |

King County International Airport – South Central

The south-central area of KCIA is located within the RM 3.9 to 4.3 East source control area. The north-central portion of KCIA is discussed in Section 3.4.3. The north area is discussed in Section 4.1.3.

- King County continues to collect annual sediment trap and inline solids samples at location KCIA1A in the storm drain line discharging to the LDW at KCIA SD#1 (see Section 3.3.2).

| | |
|------------------------------|---|
| Address | 7277 Perimeter Road S (main terminal); various tenant addresses |
| Facility/Site ID | 2387398 (King Cnty International Airport) |
| NPDES Permit | WAR000343 (King County Int Airport); Tenant: WAR127177 (Charles Air Hangar Starbucks) |
| Current Operations | General aviation airport and related activities |
| Historical Operations | Military airport operations; general aviation |
| Chemicals of Concern | PAHs, phthalates, copper, zinc, petroleum hydrocarbons, and PCBs |
| Media Affected | Stormwater and, groundwater |

Boeing Developmental Center - North

The BDC property straddles three source control areas. BDC-North is located in the RM 3.9-4.3 East source control area and it is discussed below. BDC-South is discussed in Section 3.1.3; BDC-Central is discussed in Section 3.2.3.

On February 8, 2017, Ecology WQ issued Administrative Order 14012 to BDC. Boeing appealed Administrative Order 14012 to the Pollution Control Hearings Board in March 2017 (Ecology 2017a [11457]).

- In January 2018, Ecology WQ and Boeing negotiated Agreed Order DE-15600 and settled Boeing's appeal of Administrative Order 14012 in January 2018 (PCHB 2018 [11254]). Agreed Order DE-15600 was signed on January 9, 2018 (Ecology 2018a [11246]).
- Ecology HWTR identified Boeing as a PLP under MTCA for the release of hazardous substances at the BDC site in March 2018 (Ecology 2018l [11281]).

3.4 RM 3.7-3.9 East (EAA-6: Boeing Isaacson / Central KCIA)

The RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA) source control area includes the Boeing Thompson and Isaacson properties adjacent to the LDW and the north-central portion of KCIA, which is within the drainage basin for KCIA SD#2/PS45 emergency overflow (EOF) (Appendix A). King County refers to this drainage as the KCIA central drainage basin (King County 2019 [11925]).

3.4.1 Business Inspections

KCIA performs annual tenant inspections in accordance with its ISGP and municipal permit requirements. No other business inspections were conducted during the current reporting period.

3.4.2 Source Tracing

KCIA collected annual an inline sediment trap sample at location KCIA2, a manhole east of East Marginal Way S, and grab storm drain samples at locations KCIA2 and KC-SPS, the South Pump Station inlet vault, in July 2018 (Figure A-6). No screening level exceedances were observed in samples collected KCIA2. At KC-SPS, up-gradient of KCIA2, no samples exceeded the CSL, however arsenic and zinc were present at concentrations above the SCO. Sampling results are provided in Appendix G.

3.4.3 Facility-Specific Source Control Actions

Boeing Isaacson / Thompson

In April 2010, Boeing and Ecology entered into Agreed Order DE-7088 to conduct an RI/FS and prepare a draft CAP (Ecology 2010a [06812]). Boeing submitted an RI Report to Ecology in April.

- Boeing submitted a draft Feasibility Study to Ecology in July 2018.

| | |
|------------------------------|--|
| Address | 8625-8811 East Marginal Way S, Tukwila |
| Facility/Site ID | Facility Site ID: 2218 Cleanup Site ID: 1944 |
| Current Operations | Storage of surplus vehicles |
| Historical Operations | Steel melting, forging, and fabricating, lumber |
| Chemicals of Concern | Antimony, arsenic, barium, cadmium, chromium, lead, mercury, nickel, zinc, PCBs, PAHs, |
| Media Affected | Soil, groundwater, stormwater |

King County International Airport – North Central

This area of KCIA includes Drainage Basin #2, which discharges to the LDW through the KCIA

SD#2 outfall (Appendix A). The City of Tukwila’s East Marginal Way stormwater drainage also discharges to this outfall. Stormwater discharges at KCIA are covered under the ISGP. Several tenants within KCIA are also covered by an ISGP and comply separately with Ecology requirements.

King County continues to collect an annual inline sediment trap solids sample at location KCIA2 (a manhole east of East Marginal Way S) and grab storm drain samples at locations KCIA2 and KC-SPS (the South Pump Station inlet vault) (see Section 3.4.2).

| | |
|------------------------------|--|
| Address | 7277 Perimeter Road S (main terminal); various tenant addresses |
| Facility/Site ID | 2387398 (King Cnty International Airport) |
| NPDES Permit | WAR000343 (King County Int Airport); Tenants: WAR002830 (Ameriflight Inc Hangar 5), WAR000607 (Landmark Aviation/Signature Aviation), WAR000434 (UPS Boeing Field) |
| Current Operations | General aviation airport and related activities |
| Historical Operations | Military airport operations; general aviation |
| Chemicals of Concern | PAHs, phthalates, copper, zinc, petroleum hydrocarbons, and PCBs |
| Media Affected | Stormwater and groundwater |

KCIA inspects all tenant and airport common areas monthly to ensure that BMPs are properly maintained, and to ensure that there are no illicit discharges or connections. Treatment BMPs such as oil water separators, water quality vaults, and StormFilter systems were installed and are being maintained (King County 2019 [11925]). KCIA performs stormwater line cleaning in accordance with the ISGP; line inspection and cleaning in the western portion of KCIA was completed in 2017.

3.5 RM 2.8-3.7 East (EAA-4: Boeing Plant 2 to Jorgensen Forge)

The RM 2.8-3.7 East (EAA-4: Boeing Plant 2 to Jorgensen Forge) source control area consists of two facilities, Boeing Plant 2¹² and Jorgensen Forge, as shown in Appendix A. In addition, the 16th Avenue S (East) SD discharges to the LDW within this source control area.

3.5.1 Business Inspections

Ecology conducted a stormwater compliance inspection at Jorgensen Forge on January 24, 2018 (Ecology 2018h [11505]) (see Appendix E).

3.5.2 Source Tracing

No source tracing samples were collected in the RM 2.8-3.7 East source control area during 2018.

¹² The northern portion of Boeing Plant 2, where stormwater discharges to Slip 4, is in the RM 2.8 East (EAA-3: Slip 4) source control area (Section 4.1).

3.5.3 Facility-Specific Source Control Actions

Boeing Plant 2

Boeing is conducting RCRA corrective actions at Boeing Plant 2 under an Administrative Order on Consent, issued by EPA to Boeing in 1994. This included corrective actions for both the upland area and the sediment/bank areas. Cleanup elements associated with PCBs are concurrently subject to various written approvals under TSCA. In August 2011, EPA issued its Final Decision and Response to Comments for Plant 2 Sediments, containing the final remedy for the Duwamish Sediment Other Area, Southwest Bank and other Plant 2 sediment areas.

| | |
|------------------------------|--|
| Address | 7755 East Marginal Way S |
| Facility/Site ID | 2100 (Boeing Plant 2) |
| NPDES Permit | WAR000482 |
| Current Operations | Airplane parts manufacturing |
| Historical Operations | Same |
| Chemicals of Concern | VOCs, PCBs, PAHs, metals, and petroleum hydrocarbons |
| Media Affected | Groundwater, stormwater, soil, and sediment |

- The in-water work is complete. Boeing continues to monitor the quality of sediment at the site.
- A proposed final cleanup plan (or Statement of Basis) for the upland areas of the site is expected to be published by EPA in 2019.

Jorgensen Forge

The Jorgensen Forge site is divided into an upland portion and a sediment portion. Ecology is the lead agency for the upland cleanup and EPA is the lead for the sediment cleanup.

- Ecology's WQ program conducted a compliance inspection at the Jorgensen Forge facility on January 24, 2018 to assess compliance with the NPDES ISGP. The majority of the stormwater at the facility flows to a vault which feeds an advanced stormwater treatment system that incorporates polymer/sand filtration.
- On May 17, 2018 Jorgensen Forge submitted a Modification of Coverage Form to Ecology, requesting a Level 2 Waiver for the corrective action related to copper exceedances. They based their request on a mechanical failure of their stormwater treatment system that led to a media replacement. Follow-up sampling indicated copper concentrations were below the benchmark. Ecology granted the waiver on August 27, 2018, subject to a number of conditions.

| | |
|------------------------------|--|
| Address | 8531 East Marginal Way S |
| Facility/Site ID | 2382 (Jorgensen Forge Corp) |
| NPDES Permit | WAR003231 (Jorgensen Forge Corp) |
| Current Operations | Fabrication of specialized large-scale metal parts |
| Historical Operations | Fabrication of structural steel, tractor and road equipment; manufacture of Navy vessels; steel distribution |
| Chemicals of Concern | PCBs, VOCs, petroleum hydrocarbons, metals |
| Media Affected | Soil and groundwater |

- On April 18, 2018 Jorgensen Forge announced that it will end operations at this location in 2018 (Jorgensen Forge 2018 [11521]).

Upland Cleanup

In March 2015, Ecology issued Enforcement Order DE-11167 requiring Jorgensen Forge to complete an RI/FS and to prepare a draft CAP for the upland portion of the site (Ecology 2015c [12172]). Jorgensen Forge declared bankruptcy in 2016.

- Ecology reviewed and commented on the first Draft RI Work Plan for Jorgensen in July 2018. A revised RI Work Plan was due to Ecology in January 2019.

Sediment Cleanup

An underground 24-inch pipe adjacent to the Boeing Plant 2 facility released PCBs to the LDW. The pipe and contaminated soil were excavated under CERCLA removal authorities in phases; Phase 1 was completed in 2015.

- Phase 2 of the Jorgensen Forge Outfall Site Removal Action was completed in 2017 (Floyd|Snider 2018a [11437]). EPA approved the removal action in May 2018 (EPA 2018a [11524]).

Under a separate CERCLA removal action order, PCB-contaminated sediment and bank soils at the property were largely removed in 2014. Samples collected after the excavation indicated that some sediments were still contaminated.

- Jorgensen agreed to evaluate the need for additional cleanup work to address the remaining sediment contamination under an amendment to the order (effective August 2017). Sampling took place in December 2018 and January 2019.¹³

3.6 RM 4.2-5.8 West (Restoration Areas)

The RM 4.2-5.8 West (Restoration Areas) source control area includes a mixture of restored habitats and industrial properties along the LDW shoreline (Appendix A). Industrial properties adjacent to the LDW, including the city of Seattle's Duwamish substation and associated outfalls, and upland properties in the Hamm Creek basin are located within the RM 4.2-5.8 West source control area.

3.6.1 Business Inspections

Ecology conducted four Urban Waters source control inspections in this source control area during 2018 (Appendix E-2).

3.6.2 Source Tracing

No source tracing samples were collected in the RM 4.2-5.8 West source control area during 2018.

¹³ <https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.cleanup&id=1002020>

3.6.3 Facility-Specific Source Control Actions

Duwamish Substation

- Ecology conducted an initial investigation at the Seattle City Light Substation in January 2018. This property includes a Seattle City Light substation surrounded by vacant land to the north and south. The property has previously used dredged river sediments as fill. It is unclear what the contamination status of the sediments was when they were used as fill (Ecology 2018b [11497]).
- Ecology added this facility to the confirmed and suspected contaminated sites list in March 2018 (Ecology 2018m [11496]).

| | |
|------------------------------|---|
| Address | 10000 West Marginal Place S Tukwila |
| Facility/Site ID | Facility Site ID: 17593/Cleanup Site ID: 14452 |
| Current Operations | Seattle City Light substation |
| Historical Operations | Dredged river sediments were used as fill on this property. |
| Chemicals of Concern | PAHs |
| Media Affected | Soil |

3.7 RM 3.8-4.2 West (Sea King Industrial Park)

The RM 3.8-4.2 West (Sea King Industrial Park) source control area includes a small portion of LDW shoreline and upland facilities within the S 96th Street SD basin (Appendix A).

3.7.1 Business Inspections

SPU conducted nine inspections at six facilities in the RM 3.8-4.2 West source control area during the current reporting period, including four initial inspections and five follow-up inspections (Appendix C).

King County's Stormwater Services conducted 28 inspections at 11 facilities in this source control area during the current reporting period (Appendix D, Table D-2).

Ecology conducted one stormwater compliance inspection, at Gary Merlino Construction, during the current reporting period (Appendix E, Table E-1). In addition, Ecology conducted two hazardous waste inspections and three Urban Waters source control inspections in this source control area (Tables E-2 and E-3).

3.7.2 Source Tracing

SPU collected one grab storm drain solids sample in July 2018 from MH41, a maintenance hole along 10th Avenue S, between S Barton and S Cambridge Street (Figure A-9 in the S 96th Street SD system. Chromium, benzoic acid, and benzyl alcohol were detected at concentrations above the CSL (Appendix F).

King County collected three sediment trap samples and four grab storm drain solids samples in the S 96th Street SD basin in March 2018 (Figure A-9). The grab samples were collected at

locations upgradient of location 96-ST1 to source trace for zinc and PAHs (King County 2019 [11925]).

- In sediment trap 96-ST1, BEHP and three PAHs exceeded the CSL (upper screening level). No additional source tracing actions are planned for BEHP (King County 2019 [11925]).
- Grab samples were collected from four catch basins upgradient of location 96-ST1. No CSL (upper screening level) exceedances were observed, and only zinc exceeded the SCO in one sample.
- BEHP exceeded the CSL (upper screening level) in sediment trap 96-ST2.

King County sample results are provided in Appendix G; screening level exceedances are summarized in Table 3-3 below.

Table 3-3. RM 3.8-4.2 West: Screening Level Exceedances in King County Source Tracing Samples (S 96th Street SD)

| Chemical Class | Chemical | Sediment Traps | Grab Samples |
|----------------|---------------------------|----------------|--------------|
| Metals | Zinc | x | x |
| PAHs | Individual LPAH compounds | ☒ | |
| | Individual HPAH compounds | ☒ | |
| | Total HPAHs | x | |
| Phthalates | BEHP | ☒ | |
| | Butylbenzyl phthalate | x | |

Storm drain screening levels are listed in Table 2-4.

x = Exceedance of SCO (lower screening level) was observed during the current reporting period (2018).

☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2018).

3.7.3 Facility-Specific Source Control Actions

Glen Acres Golf & Country Club

The Glen Acres Golf & Country Club, was developed in 1924. The site entered the VCP on July 12, 2013 under VCP No. NW2759. Contamination at the site is associated with a former gasoline underground storage tank (UST).

| | |
|------------------------------|---------------------------------|
| Address | 1000 S 112 th Street |
| Facility/Site ID | 18369741 |
| NPDES Permit | None |
| Current Operations | Golf Course & Country Club |
| Historical Operations | Undeveloped land |
| Chemicals of Concern | BTEX, petroleum hydrocarbons |
| Media Affected | Soil and groundwater |

- In January 2018 Ecology requested that Glen Acres Golf and Country Club send Ecology information on the status of the remedial actions that were conducted in 2017 (Ecology 2018g [11502]).

- Quarterly groundwater samples collected in February 2018 contained lead concentrations that were below the MTCA Method A cleanup levels in samples collected from all four groundwater monitoring wells. Petroleum hydrocarbon concentrations were above the MTCA Method A cleanup levels in samples collected from MW3 (gasoline-range hydrocarbons) and MW4 (gasoline-range hydrocarbons and benzene) (Aerotech 2018a [11455]).
- Quarterly groundwater samples collected in August 2018 contained lead and BTEX concentrations that were below the MTCA Method A Cleanup levels in samples collected from all four groundwater monitoring wells. Petroleum hydrocarbon concentrations were above MTCA Method A cleanup levels in the sample collected from MW3 (Aerotech 2018b [11492]).

3.8 RM 3.4-3.8 West (EAA-5: Terminal 117)

The RM 3.4-3.8 West (EAA-5: Terminal 117) source control area includes Port of Seattle's Terminal 117, South Park Marina, and most of Boeing's South Park facility (Appendix A). It also includes the new 17th Avenue S SD system that was constructed as part of the Terminal 117 early action cleanup.

3.8.1 Business Inspections

King County Stormwater Services conducted an inspection at Terminal 117 in January 2018, and subsequently removed the site from their source control schedule (Appendix D, Table D-2).

Ecology conducted a source control inspection at Tire Factory Seattle in February 2018 (Appendix E, Table E-2).

3.8.2 Source Tracing

SPU collected solids samples from two right-of-way catch basins in the 17th Avenue S SD in December 2018 (Figure A-10). Results are provided in Appendix F, and screening level exceedances are summarized in Table 3-4 below. Samples contained BEHP at 13 to 89 mg/kg DW, significantly above the CSL of 1.9 mg/kg DW. Benzoic acid and benzyl alcohol were also substantially above their respective CSLs.

Table 3-4. RM 3.4-3.8 West: Screening Level Exceedances in SPU Source Tracing Samples

| Chemical Class | Chemical | Right-of-Way CB Solids (SPU) |
|------------------------|------------------------------|------------------------------|
| Metals | Zinc | × |
| PCBs | Total PCBs | × |
| PAHs | Chrysene | × |
| Phthalates | BEHP | ☒ |
| | Butylbenzyl phthalate | ☒ |
| | Dimethyl phthalate | ☒ |
| Other SVOCs | Benzoic acid | ☒ |
| | Benzyl alcohol | ☒ |
| | Phenol | × |
| Petroleum Hydrocarbons | Motor oil range hydrocarbons | ☒ |

Storm drain screening levels are listed in Table 2-4.

× = Exceedance of SCO (lower screening level) was observed during the current reporting period (2018).

☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2018).

In 2017 SPU installed two sediment traps at the last maintenance hole before the outfall in the new 17th Avenue S SD. SPU retrieved the trap in June 2018, but there was insufficient material for analysis (SPU 2019 [11926]). It was immediately redeployed for another year.

3.8.3 Facility-Specific Source Control Actions

South Park Marina

South Park Marina is located on the west bank of the LDW, north of the Port of Seattle's Terminal 117. The A&B Barrel Co. conducted drum reconditioning at this location between the mid-1950s and 1961. South Park Marina has been operating at this location since 1970.

| | |
|------------------------------|--|
| Address | 8604 Dallas Avenue S |
| Facility/Site ID | 44653368 |
| NPDES Permit | WAG030045 (Boatyard General Permit) |
| Current Operations | Marina with boat storage and repair |
| Historical Operations | Resort and marina; drum reconditioning |
| Chemicals of Concern | PCBs, PAHs, VOCs, dioxins/furans, phthalates, pesticides, petroleum hydrocarbons, metals |
| Media Affected | Stormwater and storm drain solids |

- Ecology continued negotiating an Agreed Order to perform a Remedial Investigation and study the environmental conditions of the South Park Marina Site through 2018. The PLPs for this site are South Park Marina Limited Partnership, the City of Seattle, and the Port of Seattle. Ecology held a comment period for the Agreed Order and the Public Participation Plan from December 10, 2018 through January 23, 2019. Ecology plans to review the comments and finalize the Agreed Order in early 2019 (Ecology 2018av [11303], 2018as [11905], 2018aw [11304]).

Terminal 117 and Adjacent Streets

EPA signed an Administrative Settlement Agreement and Order on Consent with the Port of Seattle and the City of Seattle to implement cleanup actions at Terminal 117 in June 2011. The Order required the Port of Seattle and the City to implement EPA's cleanup decision for the Terminal 117 EAA.

The cleanup includes the marine sediments adjacent to Terminal 117, the former industrial facility on terminal property, and 10 acres of soil in the nearby streets and residential area. The cleanup was completed in 2016.

SPU installed a green stormwater system that was constructed as part of the Adjacent Streets and Stormwater Infrastructure project for the Terminal 117 EAA in 2017. The new drainage system routes stormwater from a 2.9-acre basin through nine bioretention cells and four Filtterra™ tree box units. The bioretention cells are designed to infiltrate. Underdrains from the Filtterra™ units, and overflows from the bioretention cells are discharged to the LDW via a new 18-inch outfall.

- SPU retrieved the end-of-pipe trap installed in the 17th Avenue S storm drain in June 2018, but there was insufficient material for analysis. Grab samples (RCB76 and RCB85) were collected from the pre-settling cells on bioretention cells C and D in 2018; PCBs were 0.063 mg/kg DW and 0.46 mg/kg DW, respectively. SPU will attempt to sample the sediment trap again in 2019. SPU also collected samples of treated stormwater flowing out of the bottom of Bioretention Cell B and Filtterra™ unit D to assess the condition of the filter media (SPU 2019 [11926]). PCBs were not detected at 0.01 µg/L in any of the five samples collected from each location.
- The Port of Seattle and the city of Seattle submitted a draft final Joint Long-Term Monitoring and Maintenance Plan to EPA in June 2018. EPA approved the plan in July 2018 (Peterson 2018 [11522]); it was finalized in September 2018 (Integral 2018b [11520]). The plan addresses inspections of the upland area (bank and cap), monitoring of the offshore sediment and storm drain solids, and maintenance of the City's drainage/stormwater treatment system in the adjacent streets, post cleanup.

| | |
|------------------------------|--|
| Address | 8700 Dallas Avenue S |
| Facility/Site ID | 37657495 (Malarkey Asphalt Company) |
| NPDES Permit | None |
| Current Operations | Port of Seattle operations (International Inspection, Construction Services) |
| Historical Operations | Asphalt manufacturing; untreated lumber storage |
| Chemicals of Concern | PCBs |
| Media Affected | Soil, groundwater, and sediment |

4.0 Middle Reach Source Control Areas

The middle reach includes eight source control areas, including four on the east side of the LDW and four on the west side:

| East Side: | Report Section |
|--|-----------------------|
| RM 2.8 East (EAA-3: Slip 4) | 4.1 |
| RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | 4.2 |
| RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) | 4.3 |
| RM 1.7-2.0 East (Slip 2 to Slip 3) | 4.4 |
| West Side: | |
| RM 2.2-3.4 West (Riverside Drive) | 4.5 |
| RM 2.1-2.2 West (EAA-2: Trotsky Inlet) | 4.6 |
| RM 2.1 West (1 st Avenue S Storm Drain) | 4.7 |
| RM 1.6-2.1 West (Terminal 115) | 4.8 |

Note: Company names are used only to designate source control area locations; source control area names are not intended to assign responsibility for contamination or to identify properties that may need remediation.

Source control activities specific to each source control area during the current reporting period are summarized in Sections 4.1 through 4.8 below.

Several Ecology cleanup sites are located on the east side of the Middle Reach: North Boeing Field-Georgetown Steam Plant (NBF-GTSP), Crowley Marine Services 8th Avenue S, Whitehead Tyee, Fox Avenue Building, and Duwamish Marine Center. In addition, the former Boeing EMF, which is under EPA oversight, is located within this source control area.

Four cleanup sites under Ecology oversight are located on the west side of the Middle Reach: South Park Landfill, North Terminal 115, Industrial Container Services (ICS), and Douglas Management Dock.

Slip 4 is a cleanup site under EPA oversight within the Middle Reach.

4.1 RM 2.8 East (EAA-3: Slip 4)

The RM 2.8 East (EAA-3: Slip 4) source control area includes several properties adjacent to the LDW (Crowley Marine Services 8th Avenue S, Cedar Grove Composting, and the northern portion of Boeing Plant 2), the NBF-GTSP site, the northern portion of KCIA, and areas with stormwater drainage to the Georgetown and Interstate 5 (I-5) Slip 4 storm drains (Appendix A). Stormwater drainage from KCIA-North and most of the NBF-GTSP site discharges to Slip 4 via King County's KCIA SD#3. King County's East Marginal CSO Pump Station is also located at the head of Slip 4.

The City of Seattle completed a non-time critical removal action to address contaminated sediment at the Slip 4 EAA in 2012. This included the removal of contaminated bottom sediment and bank soil; creosote-treated timbers and piles; and a concrete pier structure.

The City completed Year 5 monitoring in July 2017; results were published during the current reporting period (Windward 2018a [11255]). Activities included a storm flow monitoring

review; a visual inspection; an aerial survey; a hydrographic survey; sediment sampling from slope and waterway cap sampling locations; an institutional control update; and a review of source control activities and investigations performed by other parties. Physical conditions observed during Year 5 were similar to those noted previously. The monitoring results indicated that the sediment cap remains structurally sound, and sediment continues to accumulate on top of the cap. At least one analyte (BEHP, butylbenzyl phthalate, PCBs, benzyl alcohol, or zinc) was detected at concentrations above SMS criteria at six of the eight sampling locations. The average TOC and BEHP concentrations have increased since the cap was placed; the average total PCB concentration increased between 2013 and 2015 and decreased in 2017.

Monitoring was not scheduled for 2018. Long-term monitoring is scheduled to take place in 2019 (Windward 2018a [11255]).

4.1.1 Business Inspections

SPU conducted a follow-up inspection at Cedar Grove Composting during 2018 (Appendix C). No other SPU inspections were conducted in this source control area during 2018.

KCIW inspects the Waste Management 8th Avenue S/Reload Facility (Crowley property) at least annually, since it is classified as a SIU and is regulated under a waste discharge permit. The facility was inspected in June and October 2018.

Ecology conducted a stormwater compliance inspection at the Duwamish Reload Facility (former Crowley Marine Services site) in December 2018. Many compliance issues were identified, as described in more detail in Appendix E, Table E-1. In addition, one hazardous waste inspection and five Urban Waters source control inspections were conducted in the RM 2.8 East source control area during 2018 (Appendix E, Tables E-2 and E-3).

4.1.2 Source Tracing

Boeing, SPU, and/or KCIA have been sampling sediment traps in the storm drains discharging to Slip 4 since 2005 (Table 4-1). In 2011, Boeing installed a long-term stormwater treatment (LTST) system at NBF, which treats most of the stormwater discharging to Slip 4 from NBF and KCIA-North. The sediment traps are generally located upstream of the LTST system. Boeing discontinued sediment trap sampling at NBF in 2017. KCIA and SPU collected samples from some of the sediment traps in 2018.

In July 2018, KCIA collected sediment trap and grab samples from portions of the south-central and south subdrainage areas that are upgradient of the NBF Site (Appendix G). Beginning in 2019, KCIA will also sample the upgradient portions of the north and north-central subdrainage areas; these locations had been previously sampled by Boeing (King County 2019 [11925]). (It should be noted that King County collects samples upgradient of the NBF site. These samples do not represent inputs to the lateral lines from the NBF facility).

T3A (upstream of NBF on the south-central lateral SD): Several HPAH compounds exceeded screening levels in the sediment trap sample. Copper (1,200 mg/kg) and mercury (0.90 mg/kg) exceeded the CSL in the grab sample collected at this location.

T2A (upstream of NBF on the south lateral SD): A sediment trap sample collected at this location contained zinc at 3,400 mg/kg (above the CSL). Total PCBs (0.61 mg/kg DW) exceeded

the SCO. There was insufficient sample material to analyze for SVOCs, or to collect an inline grab sample at this location.

SPU collected three samples in the RM 2.8 East source control area in 2018, including one sediment trap sample and an inline grab sample at T6 along the I-5 SD, and one grab sample on the Georgetown SD (Figure A-11). The I-5 SD and Georgetown SD discharge to Slip 4.

Phthalates, benzoic acid, and benzyl alcohol exceeded the CSL (upper screening level) in the sediment trap sample at T6. The concentration of butylbenzyl phthalate in the trap sample was 22 mg/kg DW, significantly above the CSL (upper screening level) of 0.9 mg/kg DW (Appendix F). However, butylbenzyl phthalate was not detected in the inline grab sample at this location. Dibutyl phthalate in this sample was present at 3.5 mg/kg DW, well above the CSL upper screening level of 1.4 mg/kg DW.

The Georgetown SD sample contained PAHs, phthalates, benzoic acid, and benzyl alcohol at concentrations above the CSL (upper screening level). The total HPAH concentration was 23 mg/kg DW; the BEHP concentration was 7.0 mg/kg DW, well above the CSL upper screening level of 1.9 mg/kg DW. The motor oil-range hydrocarbon was 2,400 mg/kg DW, exceeding the storm drain screening level of 2,000 mg/kg DW. (Appendix F).

The most recent PCB concentrations in all sediment traps except T6 remain at concentrations above the SCO (lower screening level) (0.13 mg/kg DW). The 2017 concentration of PCBs at T5 (4.2 mg/kg DW) was above the CS (upper screening level) (1.0 mg/kg DW); this sediment trap was not sampled in 2018. While not representative of discharges to Slip 4, these data help to inform source tracing efforts at the NBF-GTSP site.

Table 4-1. RM 2.8 East: PCB Concentrations in Slip 4 Sediment Traps

| Sediment Trap Location | Range of All PCB Conc'ns, 2005-2018 (mg/kg DW) | 2017 Samples (mg/kg DW) | 2018 Samples (mg/kg DW) |
|---|--|-------------------------|-------------------------|
| T1 (Downstream end of north and north-central lateral SD) | 0.62 – 420 | 0.93 | ns |
| T2 (Downstream end of south lateral SD) | 0.010 – 1.5 | 0.48 | ns |
| T2A (Upstream of NBF on the south lateral SD) | <0.0061 – 1.0 | 0.61 | 0.61 |
| T3 (Downstream end of south-central lateral SD) | 0.026 – 1.8 | 0.30 | ns |
| T3A (Upstream of NBF on the south-central lateral SD) | <0.02 – 0.73 | <0.19 | <0.19 |
| T4 (Downstream end of north-central lateral SD) | 0.24 – 2.8 | 0.89 | ns |
| T4A (Upstream of NBF on the north-central lateral SD) | <0.011 – 5.6 | 0.18 | ns |
| T5 (Downstream end of north lateral SD) | 2.1 – 800 | 4.2 | ns |
| T5A/T5A(2)/T5B (Upstream of NBF on the north lateral SD, now shifted to King County bypass line*) | 0.086 – 0.67* | 0.46 | ns |
| T6 (I-5 SD at Slip 4) | <0.019 – 7.8 | 0.010 | 0.089 |

ns = not sampled

* Samples collected at T5A(2) are grab samples. King County currently refers to location T5A(2) as T5B.

Screening level exceedances in King County and SPU source tracing samples are summarized in Table 4-2 below. Complete results are provided in Appendix F and G.

Table 4-2. RM 2.8 East: Screening Level Exceedances in SPU and King County Source Tracing Samples

| Chemical Class | Chemical | Sediment Traps | Inline Samples |
|------------------------|------------------------------|----------------|----------------|
| Metals | Arsenic | x | x |
| | Copper | | ☒ |
| | Mercury | | ☒ |
| | Zinc | ☒ | x |
| PCBs | PCBs, total | x | x |
| PAHs | Individual LPAH compounds | | ☒ |
| | Individual HPAH compounds | ☒ | ☒ |
| | Total HPAHs | x | ☒ |
| | Total cPAHs | | ☒ |
| Phthalates | BEHP | ☒ | ☒ |
| | Butylbenzyl phthalate | ☒ | x |
| | Dibutyl phthalate | ☒ | |
| | Dimethyl phthalate | | x |
| Other SVOCs | Benzoic acid | ☒ | ☒ |
| | Benzyl alcohol | ☒ | ☒ |
| Petroleum Hydrocarbons | Motor oil range hydrocarbons | | ☒ |

Table does not include storm drain solids samples collected as part of ongoing investigations at the NBF-GTSP site. Storm drain screening levels are listed in Table 2-4.

x = Exceedance of SCO (lower screening level) was observed during the current reporting period (2018).

☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2018).

4.1.3 Facility-Specific Source Control Actions

Crowley Marine Services 8th Avenue S

DeNovo Seattle LLC (DeNovo) purchased this property in April 2014; the property is currently leased to Waste Management, which operates the Duwamish Reload Facility. This facility is being used as a transfer facility for sediment offloading in support of sediment cleanup in the LDW and other regional sediment remediation projects. Contaminated uplands soils, predominantly petroleum-contaminated soils, are also transloaded at the facility.

| | |
|------------------------------|---|
| Address | 7400 8 th Avenue S, Seattle 98108 |
| Facility/Site ID | 1940187 (Crowley Marine Services, Inc. 8 th Avenue S) 63123962 (Alaska Logistics LLC) |
| NPDES Permit | WAR302034 (ISGP) |
| Current Operations | Transloading |
| Historical Operations | Manufacture of pipe, chain, hydraulic equipment, and concrete; machinery and scrap iron storage; sawmill, lumber distribution; creosote treatment |
| Chemicals of Concern | Metals, PAHs |
| Media Affected | Sediment, soil, groundwater, and stormwater storm drain solids |

Ecology and 8th Avenue Terminals negotiated Agreed Order DE-6721 in 2009 to conduct an RI/FS, implement interim actions if needed, and prepare a draft CAP (Ecology 2009d [06804]).

The property owner, DeNovo Seattle, stopped work at the site due to financial difficulties in 2017. The property was placed in the hands of a court-appointed receiver.

- In December 2017, 8th Avenue Terminals agreed to take over work on the Agreed Order by addressing Ecology’s comments on the August 2016 Draft Remedial Investigation Report. 8th Avenue Terminals submitted a revised draft Remedial Investigation Report to Ecology in June 2018.

Ecology WQ issued an Immediate Action Order #12830 to Waste Management on September 3, 2015 to comply with the NPDES ISGP. The Immediate Action Order required Duwamish Reload Facility to submit an Engineering Report for stormwater treatment. Duwamish Reload Facility submitted a Phase I Engineering Report to Ecology that described using CleanWay catch basin filter insert system as the proposed treatment system. Ecology approved the Phase I treatment on August 1, 2016.

- Ecology received a Phase II Engineering Report describing a new stormwater conveyance system that would deliver the facility’s stormwater runoff to one centralized Chitosan Enhanced Sand Filtration system for treatment on August 4, 2017. The facility pursued the required permits during Ecology’s review of the Engineering Report. Ecology approved the Phase II Engineering Report on August 6, 2018.
- The Duwamish Reload Facility triggered copper, zinc, and turbidity benchmark exceedances in their stormwater samples collected from most of their outfalls during monitoring events in Quarters 1, 2, and 4 of 2018. In addition, the sample from outfall 5 in Quarter 2 of 2018 exceeded the effluent limit for TSS.

As a result, Ecology’s WQ Program issued a Warning Letter to the facility on November 15, 2018. Ecology requested that the facility determine the root cause of the TSS problem and propose a solution to prevent further exceedances.

- The facility responded to the warning letter in writing on December 13, 2018, noting that they planned to install the Chitosan-Enhanced Stormwater Filtration to treat the stormwater that was approved by Ecology in August 2018. The Advanced Treatment system was expected to be installed in early 2019.

North Boeing Field / Georgetown Steam Plant Site

Agreed Order DE-5685 for the NBF-GTSP site was signed by the PLPs (Boeing, City of Seattle, and King County) and Ecology, effective August 14, 2008 (Ecology 2008b [03425]), and was amended in February 2015 (Ecology 2015a [10933]). Under the terms of the Amended Agreed Order, the PLPs will complete an RI/FS and conduct interim actions, as appropriate.

| | |
|------------------------------|---|
| Current Operations | Aircraft finishing and testing; aircraft research and development |
| Historical Operations | Electrical power generation; aircraft manufacturing, maintenance, and research |
| Address | GTSP: 6700 13 th Avenue S, Seattle 98108 NBF: 7500 East Marginal Way S, Seattle 98108 |
| Facility/Site ID | 2050 (NBF-GTSP) |
| Chemicals of Concern | PCBs, PAHs, petroleum hydrocarbons, VOCs, SVOCs, metals |
| Media Affected | Soil, groundwater, stormwater, and soil vapor |

- Boeing and Seattle City Light (SCL) conducted several groundwater sampling events at North Boeing Field and the Georgetown Steam Plant during 2018. This work was conducted as part of the Phase 3 supplemental groundwater investigation for the NBF-GTSP Remedial Investigation. One of the events involved sampling groundwater for PCB congeners at the NBF property boundary along East Marginal Way S. PCB congeners were detected at concentrations above the proposed cleanup level protective of LDW surface water (Landau 2018d [11312]).
- Boeing and SCL completed off-property soil vapor and groundwater sampling along Ellis Avenue in April and May 2018. Sampling was prompted by concerns that TCE and VC in groundwater could pose a vapor intrusion risk to businesses and residents in the area. The investigation showed no indication of a risk for vapor intrusion.

King County International Airport - North

Portions of KCIA are located within four separate source control areas. KCIA-North is included in the RM 2.8 East source control area and is discussed here.

This area of KCIA includes Drainage Basin #1, which discharges to the LDW through the KCIA SD#3 outfall. Stormwater discharges at KCIA are covered under the ISGP. Several tenants within KCIA are also covered by an ISGP and comply separately with Ecology requirements.

| | |
|------------------------------|---|
| Address | 7277 Perimeter Road S (main terminal); various tenant addresses |
| Facility/Site ID | 2387398 (King Cnty International Airport)2051 (KCIA Maintenance Shop) |
| NPDES Permit | WAR000343 (King County Int Airport); Tenant: WAR010792 (KC WTD Georgetown Yard), WAR000226 (North Boeing Field) |
| Current Operations | General aviation airport and related activities |
| Historical Operations | Military airport operations; general aviation |
| Chemicals of Concern | PAHs, phthalates, copper, zinc, petroleum hydrocarbons, and PCBs |
| Media Affected | Stormwater and groundwater |

KCIA inspects all tenant and airport common areas monthly to ensure that BMPs are properly maintained, and to ensure that there are no illicit discharges or connections. Treatment BMPs such as oil water separators, water quality vaults, and StormFilter systems have been installed and are being maintained. KCIA performs stormwater line cleaning in accordance with the ISGP (King County 2019 [11925]).

KCIA performed data gap sampling of stormwater structures upgradient of the NBF-GTSP site in fall 2014. The sampling results identified elevated concentrations of PAH compounds, BEHP, and zinc. In 2018, KCIA developed a source tracing plan for Slip 4 to determine potential sources of contamination. KCIA will implement this source tracing plan in 2019 (King County 2019 [11925]).

4.2 RM 2.3-2.8 East (Seattle Boiler Works to Slip 4)

The RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) source control area (Appendix A) includes several properties adjacent to the LDW (Dawn Foods, Seattle Boiler Works, Seattle Iron & Metals (SIM), Pioneer Distribution, and Recology CleanScapes). In addition, it includes the S

Myrtle Street and S Garden Street SD basins. Upland cleanup sites in this source control area include the Fox Avenue Building and Whitehead Tyee sites.

4.2.1 Business Inspections

SPU conducted four inspections at three facilities, including SIM, during 2018 (Appendix C).

Ecology conducted three stormwater compliance inspections at two facilities in 2018 (Appendix E, Table E-1). This includes two inspections at SIM, and a follow-up inspection at the SIM Truck Parking site (also referred to as the Whitehead Tyee site).

4.2.2 Source Tracing

SPU collected one grab storm drain solids sample in the S Myrtle Street SD during 2018 (Figure A-12). In addition, SPU collected and analyzed three sediment trap samples associated with their sediment trap pilot testing, described in Section 2.3.1 above. Sampling results are provided in Appendix F, and screening level exceedances are summarized below. PCB concentrations ranged from 1.0 to 2.9 mg/kg DW.

Table 4-3. RM 2.3-2.8 East: Screening Level Exceedances in SPU Source Tracing Samples

| Chemical Class | Chemical | Sediment Traps | Inline Sample |
|------------------------|------------------------------|----------------|---------------|
| Metals | Cadmium | ☒ | |
| | Chromium | ☒ | |
| | Copper | ☒ | ☒ |
| | Lead | ☒ | × |
| | Mercury | | ☒ |
| | Zinc | ☒ | ☒ |
| PCBs | PCBs, total | ☒ | × |
| PAHs | Individual HPAH compounds | ☒ | |
| | Total cPAHs | ☒ | |
| Phthalates | BEHP | | ☒ |
| | Butylbenzyl phthalate | | ☒ |
| | Dimethyl phthalate | | ☒ |
| Other SVOCs | n-Nitrosodiphenylamine | | ☒ |
| Petroleum Hydrocarbons | Motor oil range hydrocarbons | | ☒ |

Storm drain screening levels are listed in Table 2-4.

× = Exceedance of SCO (lower screening level) was observed during the current reporting period (2018).

☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2018).

S Myrtle Street Sweeping and Catch Basin Inspections

In 2018, SPU conducted weekly sweeping at S Myrtle Street as part of the Street Sweeping for Water Quality Program. The city of Seattle Department of Transportation swept S Myrtle Street 43 times in 2018. SPU also conducted quarterly inspections of catch basins and mainline maintenance holes from 2011 through 2018. The evaluation determined that the catch basins on S Myrtle Street accumulate solids or require maintenance similar to those in the rest of the LDW

basins. SPU will continue quarterly inspections of catch basins and mainline maintenance holes (SPU 2019 [11926]).

4.2.3 Facility-Specific Source Control Actions

Fox Avenue Building

On June 18, 2012, Ecology and Fox Avenue Building LLC signed Agreed Order DE-8985 to conduct cleanup actions at the site (Ecology 2012a [09837]).

Cleanup actions at the site include thermal treatment of the chlorinated VOC compounds, followed by bio-polishing, until remediation levels are met.

| | |
|------------------------------|--|
| Address | 6900 Fox Avenue |
| Facility/Site ID | 2282 |
| NPDES Permit | None |
| Current Operations | Chemical distribution |
| Historical Operations | Chain manufacturing; chemical and petroleum repackaging and distribution |
| Chemicals of Concern | VOCs, dioxins/furans, petroleum hydrocarbons |
| Media Affected | Soil, groundwater, and stormwater |

- In April 2018 the PLPs submitted an annual report to document the cleanup activities and monitoring that occurred in 2017 at the Fox Avenue Site. Soluble sugar substrate was injected in selected wells in 2017, and performance monitoring was conducted in areas that had previously been injected with soluble sugar or edible oil.
- Concentrations of chlorinated VOCs in most wells were less than the reporting limit of 250 µg/L by the end of 2017. The primary constituents are the daughter products of reductive dechlorination. Additional substrate injections and a site-wide groundwater monitoring event were performed in 2018 (Floyd|Snider 2018b [11915]).

Whitehead Tye Site

The Whitehead Tye site is the location of the former Tye Lumber facility. SIM and 730 Myrtle LLC have been identified as PLPs for this site. The site is also known as SIM Truck Parking. Ecology and SIM entered into Agreed Order DE-13458 in August 2016. The Order requires that the current property owner/operator complete a data summary report and interim action, conduct an RI/FS, and prepare a draft CAP (Ecology 2016c [11068]).

| | |
|------------------------------|---|
| Address | 730 S Myrtle Street |
| Facility/Site ID | 9809 (Seattle Iron & Metals Corp Truck Parking) |
| NPDES Permit | WAR125002 (Seattle Iron & Metals Corp Truck Parking) |
| Current Operations | Metal recycling |
| Historical Operations | Lumber finishing, refuse burning, wood treating |
| Chemicals of Concern | PCBs, PAHs, VOCs, pentachlorophenol, petroleum hydrocarbons, metals |
| Media Affected | Soil and groundwater |

- SIM concluded an interim action that addressed limited areas of known soil contamination during installation of a stormwater conveyance and treatment system that is intended to reduce the transport of contaminants from the site to the LDW. SIM

submitted a draft Interim Action Completion Report to Ecology in August 2018. This document was in Ecology’s review process through the end of 2018.

- Ecology identified the following additional PLPs for this site in July 2018: the Fox Avenue Building, the Whitehead Company, Roberston-Ceco II Corporation and RCH Newco II, the City of Seattle, and the Reliable Transfer and Storage Company (Ecology 2018ab [11305], 2018ac [11306], 2018ad [11307], 2018ae [11308], and 2018af [11309]).
- Under a WQ Administrative Order (DE-13739), SIM was required to complete Phase 1 site improvements by September 30, 2017; Ecology subsequently extended the due date to November 30, 2017. The majority of Phase 1 improvements were completed in conjunction with the interim action in December 2017; final completion was in May 2018 (SIM 2018 [11523]).
- A revised Phase 2 Engineering Report, was submitted to Ecology on June 30, 2018. Ecology approved the report on July 20, 2018.
- In October 2018, SIM installed a Stormcapture Modular Wetland Treatment System, which is a passive filtration-enhanced treatment BMP. SIM amended their sampling point location and started monitoring stormwater from a single new sample point which is post treatment system effluent.
- Upon commissioning of the treatment system, stormwater was not making it through the system to the point of discharge. Troubleshooting identified a leak in the system at the pre-treatment unit. As a result, no stormwater was discharged from the system in 2018. Repair work continued into early 2019.

Seattle Iron & Metals

Ecology issued an industrial NPDES individual permit for SIM in September 2013. The individual permit was modified and reissued in 2014. The permit was modified again in March 2015 to add water quality based effluent limits for ammonia and to correct the analytical testing protocol for PCBs (Ecology 2015b [12205]).

Ecology and the city of Seattle conducted an unannounced inspection of SIM during a stormwater event on November 28, 2017. SIM violated several conditions of their NPDES individual permit, including the requirement to treat stormwater prior to discharge into the LDW (Ecology 2018c [11142]).

| | |
|------------------------------|--|
| Address | 601 S Myrtle Street |
| Facility/Site ID | 94727791 (SIM) |
| NPDES Permit | WA0031968 (Individual) |
| Current Operations | Metals recycling |
| Historical Operations | Dangerous waste transport, construction, and machine shop |
| Chemicals of Concern | Metals (copper, lead, mercury, and zinc), petroleum hydrocarbons, and PCBs |
| Media Affected | Stormwater |

- Ecology issued an Immediate Action Order (Administrative Order Docket No. 15573) on January 10, 2018 in response to the violations that were observed by Ecology at the November 2017 inspection. The immediate action order requires SIM to comply with their individual NPDES Permit.

- SIM must monitor and maintain treatment system efficiency,
 - Cease all industrial activities on the South Dock,
 - Prevent sheet flow of stormwater to the LDW,
 - Cease all industrial activities on the North Dock, and
 - Submit an updated permit-compliant SWPPP (Ecology 2018c [11142]).
- SIM's consultant submitted a memorandum to Ecology on January 26, 2018 which stated that SIM had ceased using the South Dock and focused on interim upgrades on the North Dock.
 - A barge that was delivering junk cars and other items to SIM caught fire while tied to the North Dock on the night of June 26, 2018. Fire suppression water discharged from the barge into the LDW and discharged from SIM's dock area into its wastewater storage/treatment system.

After the fire, Ecology performed an inspection on June 27, 2018 to inspect the barge and docks, and to discuss the discharge of firefighting water contained in holding tanks at SIM. Ecology's WQ and Spills Programs assessed the barge and dock area, and found a spill containment boom was properly deployed around the barge, and minimal residual sheen was contained within the boom (Ecology 2018x [11538]).

The fire was a result of a punctured liquid propane tank on a truck that was being unloaded from a barge owned by ABC Recycling. On August 21, 2018 Ecology issued a Notice of Violation to ABC Recycling Nanaimo for violating provisions of Revised Code of Washington (RCW) 90.48 and the unlawful discharge to the LDW during the barge fire.

- SIM updated their SWPPP on August 20, 2018.
- At an Ecology/SIM meeting held on October 1, 2018, Ecology requested a summary of all activities completed by SIM to address the violations. SIM's consultant submitted a memorandum to Ecology to address Ecology's request on October 29, 2018. At that time, SIM had completed all of the corrective actions required by Ecology in in the Immediate Action Order, with the exception of improvements to the South Dock.
- SIM's efforts in 2018 continued to be directed at improving the North and South Dock integrity and improving the performances of the stormwater treatment system in order to comply with the Immediate Action Order and the NPDES permit.
- Throughout 2018, stormwater samples collected at SIM's discharge monitoring locations exceeded permissible limits for a range of parameters, including lead, copper, zinc, TSS and TPH. Ecology issued a Warning Letter to SIM on October 4, 2018 (and ultimately a Notice of Penalty on February 11, 2019) for exceedances of the lead, copper, zinc effluent limits in samples collected during various quarterly monitoring periods in 2018.
- To minimize TPH and TSS in the treated effluent, SIM installed Polishing Absorptive Media filtration, optimizing the chemical dosing in the treatment tank, and more frequent backwashing of the filter units in 2018.

4.3 RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works)

The RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) source control area includes properties adjacent to the LDW and Slip 3 (SCS Refrigerated Services, Seattle Distribution Center, and Seatac Marine Services), as well as upland properties in the S River Street and S Brighton Street SD basins (Appendix A).

The S Brighton Street CSO formerly discharged at this location; SPU blocked this CSO in 2012 and it is no longer in use.

4.3.1 Business Inspections

SPU conducted six inspections at five facilities in the RM 2.0-2.3 East source control area during 2018, including five initial inspections and one follow-up inspection (Appendix C). Ecology conducted one Urban Waters source control inspection within this source control area during the current reporting period (Appendix E).

4.3.2 Source Tracing

SPU collected two storm drain solids samples and one surface debris sample in this source control area during the current reporting period, including two locations in the S River Street SD and one in the S Brighton Street SD (Figure A-13). Results are presented in Appendix F; screening level exceedances are summarized below.

Table 4-4. RM 2.0-2.3 East: Screening Level Exceedances in SPU Source Tracing Samples

| Chemical Class | Chemical | Inline Samples | Surface Debris Sample |
|------------------------|------------------------------|----------------|-----------------------|
| Metals | Zinc | ☒ | ☒ |
| PCBs | PCBs, total | × | |
| PAHs | Individual LPAH compounds | | ☒ |
| | Total LPAHs | | ☒ |
| | Individual HPAH compounds | | ☒ |
| | Total HPAHs | | ☒ |
| | Total cPAHs | | ☒ |
| Phthalates | BEHP | ☒ | ☒ |
| | Butylbenzyl phthalate | × | ☒ |
| | Dibutyl phthalate | ☒ | |
| | Dimethyl phthalate | × | ☒ |
| Other SVOCs | Benzoic acid | | ☒ |
| | Dibenzofuran | | ☒ |
| | Phenol | | ☒ |
| Petroleum Hydrocarbons | Diesel range hydrocarbons | | ☒ |
| | Motor oil range hydrocarbons | ☒ | ☒ |

Storm drain screening levels are listed in Table 2-4.

× = Exceedance of SCO (lower screening level) was observed during the current reporting period (2018).

☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2018).

SPU intends to collect additional samples in the S Brighton Street SD in 2019 to determine whether there are active sources of PCBs in this basin (SPU 2019 [11926]).

4.3.3 Facility-Specific Source Control Actions

No facility-specific source control updates were identified during this reporting period.

4.4 RM 1.7-2.0 East (Slip 2 to Slip 3)

The RM 1.7-2.0 East (Slip 2 to Slip 3) source control area includes properties adjacent to the LDW and Slip 2, including Glacier Northwest, General Biodiesel, Samson Tug & Barge, and Duwamish Marine Center, and upland facilities in the 1st Avenue S (East) and Head of Slip 2 SD basins (Appendix A). In addition, King County's Michigan CSO (also referred to as the South Michigan CSO) discharges to the LDW at approximately RM 1.9; upland facilities associated with the Michigan combined sewer basin are included with this source control area.

4.4.1 Business Inspections

SPU conducted four inspections at two facilities (General Biodiesel and Samson Tug and Barge) in this source control area during 2018 (Appendix C).

4.4.2 Source Tracing

SPU collected one sample from a private maintenance hole in the Head of Slip 2 SD, and two samples (including one field duplicate) from a location under the northbound lanes of the 1st Avenue S bridge, within the 1st Avenue S (East) SD (Figure A-14). In the Head of Slip 2 SD, no results exceeded the CSL (upper screening level). In the 1st Avenue S (East) SD, zinc, BEHP, n-nitrosodiphenylamine, and motor oil-range hydrocarbons exceeded the CSL (upper screening level) (Appendix F).

King County collected sediment trap samples from two locations within the S Michigan combined sewer basin for another King County project in July 2018, after an approximately 1-year deployment period. Sampling locations were at Corson Ave S and S Eddy Street, and at the S Michigan Regulator Station (King County 2019 [11925]) (Figure A-15). Mercury, BEHP, benzoic acid, pentachlorophenol, and 3,4-methylphenol exceeded the CSL (upper screening level) in at least one of the samples within the S Michigan basin (Appendix G).

King County does not plan to conduct additional source tracing efforts for phthalates near the S Michigan CSO outfall at this time, but is planning to evaluate potential sources for mercury in this area (King County 2019 [11925]). The Georgetown Wet Weather Treatment Station is currently under construction and will control S Michigan CSO discharges; this is expected to greatly reduce solids discharges from the CSO and thus address phthalate and other contaminants within the discharge.

SPU and King County source tracing results are presented in Appendix F and G; screening level exceedances are summarized in Table 4-5 below.

Table 4-5. RM 1.7-2.0 East: Screening Level Exceedances in SPU and King County Source Tracing Samples

| Chemical Class | Chemical | Head of Slip 2 SD | 1 st Avenue S (East) SD | S. Michigan CSO Basin |
|------------------------|------------------------------|-------------------|------------------------------------|-----------------------|
| Metals | Mercury | | | ☒ |
| | Zinc | | ☒ | × |
| PCBs | Total PCBs | | × | × |
| Phthalates | BEHP | | ☒ | ☒ |
| | Butylbenzyl phthalate | | × | |
| Other SVOCs | 1,2-Dichlorobenzene | × | | |
| | 3,4-Methylphenol | | | ☒ |
| | Benzoic acid | | | ☒ |
| | n-Nitrosodiphenylamine | | ☒ | |
| | Pentachlorophenol | | | ☒ |
| Petroleum Hydrocarbons | Motor oil range hydrocarbons | | ☒ | |

Storm drain screening levels are listed in Table 2-4.

SD = storm drain

CS = combined sewer

× = Exceedance of the SCO (lower screening level) was observed during the current reporting period (2018).

☒ = Exceedance of CSL (upper screening level) was observed during the current reporting period (2018).

4.4.3 Facility-Specific Source Control Actions

Duwamish Marine Center

Ecology and the property owner entered into Agreed Order DE-8072 on September 2, 2011 (Ecology 2011d [07731]). The Order requires that the property owner/operator conduct an RI/FS to define the nature and extent of contamination in soil, groundwater, surface water, and sediments, and to evaluate cleanup alternatives. In addition, the property owner/operator is required to prepare a draft CAP that identifies the preferred cleanup action and develops a schedule to remediate the contamination.

| | |
|------------------------------|--|
| Address | 16 S Michigan Street; 6365 1 st Avenue S |
| Facility/Site ID | 21945598 (Duwamish Marine Center) 71371939 (Duwamish Marine Center, Inc.) 1020256 (Samson Tug & Barge) |
| NPDES Permit | WAR011484 (ISGP) |
| Current Operations | Tug and barge operations; metal fabrication |
| Historical Operations | Repair and maintenance of floating vessels; junk dealer; construction services; barge shipping terminal |
| Chemicals of Concern | PCBs, PAHs, petroleum hydrocarbons, metals |
| Media Affected | Soil and groundwater |

- Duwamish Marine Center submitted a Draft RI Report in January 2018. Ecology reviewed the report and provided comments on March 21, 2018. Duwamish Marine Center revised the report and submitted a second draft to Ecology on May 4, 2018.

Georgetown Wet Weather Treatment Station

King County is developing four parcels as the site of the Georgetown Wet Weather Treatment Station.

Previously, this property was referred to as Winters Investment LP/Riveretz's Auto Care. The Georgetown Wet Weather Treatment Station is currently under construction. Onsite work started in April 2017 and construction is expected to be completed in 2022. This project involves a significant dewatering and soil excavation project.

| | |
|------------------------------|---|
| Address | 6185 4 th Avenue S |
| Facility/Site ID | 55698119 (Riveretz's Auto Care) Cleanup Site ID: 14744 |
| NPDES Permit | None |
| Current Operations | Wet Weather Treatment Station |
| Historical Operations | Restaurants, retail and warehouse space, auto repair, and service station |
| Chemicals of Concern | Metals, VOCs, petroleum hydrocarbons |
| Media Affected | Soil and groundwater |

King County designed the Georgetown Wet Weather Treatment Station to reduce the discharge of pollutants to the LDW by controlling combined sewer overflows from outfalls located at the ends of S Michigan Street and S Brandon Street. Between 2014 and 2018, these outfalls discharged an average of more than 140 million gallons per year of untreated combined sewage. Once completed, the facility will use a combination of storage and treatment to reduce the frequency of untreated CSOs to less than one per year, on a 20-year moving average.

The project includes the construction of the Wet Weather Treatment Station at the corner of 4th Avenue S and S Michigan Street. The project also includes modifying the combined sewer conveyance pipe network in the area and will install a new outfall structure adjacent to the 1st Avenue S Bridge to release the treated water into the LDW.

The approved design will treat up to 70 million gallons of combined sewage per day that would otherwise have discharged directly into the LDW without treatment during storm events. King County estimates that the project will result in a 95% reduction in the discharge of untreated combined sewage into the LDW from the Brandon and South Michigan Outfalls.

- Deconstruction of the existing site building and site preparation construction work began at the Georgetown Wet Weather Treatment Station in 2018. Work started on the construction on the new outfall structure in the summer of 2018. In the fall of 2018, preparation work started on constructing the conveyance pipeline, which will connect the treatment station to the outfall.
- In 2017 King County encountered contaminated soil and groundwater during the closure and removal of three USTs at the site. Ecology conducted an initial investigation at this site in August 2018. King County plans to conduct groundwater monitoring following the completion of the Treatment Station to test for contaminants identified during the UST removal work (Ecology 2018ai [11501]).
- Ecology added this facility to the confirmed and suspected contaminated sites list in September 2018 (Ecology 2018al [11900]).
- King County will likely enter into the VCP (Ecology 2018ai [11501]).

Consolidated Freightways

Prologis, Inc. is the current owner of the Consolidated Freightways site. In January 2017, the site was enrolled in the VCP (NW3050). Development of the property for the construction of a 590,000-square foot industrial warehouse began in June 2017.

Consolidated Freightways conducted a cleanup action as an independent remedial action under the VCP in 2017.

| | |
|------------------------------|---|
| Address | 6050 East Marginal Way S |
| Facility/Site ID | 54757868 |
| NPDES Permit | None |
| Current Operations | Warehouse (to be completed 2018) |
| Historical Operations | Truck transport and motor freight |
| Chemicals of Concern | Naphthalene, VOCs, petroleum hydrocarbons |
| Media Affected | Soil and groundwater |

- Consolidated Freightways submitted a Cleanup Action Closure Report to Ecology in July 2018 (Farallon 2018e [11513]).

In October 2018, Ecology determined that upon completion of the proposed cleanup, no further remedial action will likely be necessary to cleanup contamination at the site (Ecology 2018am [11495]).

Kelly Moore Paint Company

Kelly Moore Paint Company operated at this site from 1994 to 2008. Kelly Moore entered the VCP (NW2305) in 2010 and completed an RI/FS in 2011. The southern portion of the site was sold to JST Georgetown, LLC in 2011. The northern portion of the site was sold to NCD GeorgeTown, LLC in 2014. NCD GeorgeTown, LLC demolished the buildings and warehouses on the northern portion of the property in 2015.

| | |
|------------------------------|---|
| Address | 5410 Airport Way S |
| Facility/Site ID | 2163 |
| NPDES Permit | None |
| Current Operations | Brewery |
| Historical Operations | Paint manufacturing plant, auto garage and wrecking yard, service station |
| Chemicals of Concern | PCBs, metals, SVOCs, VOCs, petroleum hydrocarbons |
| Media Affected | Soil and groundwater |

Kelly Moore submitted an RI/FS and Disproportionate Cost Analysis to Ecology in March 2017. Kelly Moore requested an opinion from Ecology on their proposed independent cleanup.

- In February 2018 Ecology determined that upon completion of the proposed cleanup, further remedial action will likely be necessary to cleanup contamination at the site. Ecology stated that:
 - Additional site characterization is required to fully delineate the horizontal and vertical extent for each contaminant in site soil and groundwater,
 - A planned indoor air evaluation needs to be incorporated into the site characterization, and

- Additional work is required to locate and decommission two monitoring wells (KMW-03 and KMW-05) which were destroyed during property redevelopment.
- Ecology determined that the incomplete site characterization does not allow for a determination as to whether the cleanup action selected for the site meets MTCA requirements. An appropriate cleanup action can be selected only after the site is fully characterized and cleanup levels have been developed (Ecology 2018k [11498]).
- Kelly Moore conducted dry and wet season groundwater sampling events in September 2017, January 2018, and August 2018.
- In 2018 a soil vapor extraction system was installed and started operating. An air sparge system was installed and was expected to become operational in 2019. Kelly Moore planned to collect indoor air samples to assess baseline conditions prior to starting up the sparge system, and to compare soil vapor concentrations against results from baseline samples collected for the soil vapor extraction system.
- Kelly Moore developed cleanup levels based on the suggestions presented by Ecology in a meeting on May 8, 2018 (Wood 2018a [11491], 2019 [11927]).

Scougal Rubber

Scougal Rubber entered Ecology’s VCP (NW1707) and developed a Remedial Action Plan to address chlorinated solvents in soil and groundwater on this site. A remedial excavation was performed at the site in April 2017 to remove residual TCE contamination in soil. An oxidation infiltration system was installed in the excavation to address the remaining TCE contamination in soil and residual chlorinated solvent (e.g., TCE, DCE, and vinyl chloride) contamination in groundwater.

| | |
|------------------------------|----------------------|
| Address | 6239 Corson Avenue |
| Facility/Site ID | 93637295 |
| NPDES Permit | None |
| Current Operations | Rubber manufacturing |
| Historical Operations | Same |
| Chemicals of Concern | Chlorinated solvents |
| Media Affected | Soil and groundwater |

- Supplemental groundwater characterization was conducted in April, June, and August of 2018. Samples were collected from five monitoring wells on the Scougal Rubber property and the adjacent Ewing property. TCE was detected at 31 µg/L in April 2018 (PGG 2019 [11994]).
- Oxidation infiltration events were conducted in January, April, and June 2018, with four quarters of performance monitoring planned following completion of the oxidation treatment. An additional infiltration event was scheduled for February 2019.

Emerald Tool

The Emerald Tool Site was used for electroplating, aluminum anodizing, metals grinding, and small parts manufacturing between 1968 and 1985. The site is awaiting cleanup; confirmed soil contamination includes metals and halogenated organics.

| | |
|------------------------------|---|
| Address | 6332 6 th Avenue S |
| Facility/Site ID | 2084 |
| Cleanup Site ID | 1305 |
| Current Operations | Electroplating, aluminum anodizing, metals grinding |
| Historical Operations | Manufacture and distribution of cutting tools |
| Chemicals of Concern | Metals, halogenated organics |
| Media Affected | Soil and groundwater |

- In 2018, a Phase II Limited & Targeted Subsurface Investigation was conducted at an adjoining property located at 6346 6th Avenue S (Aerotech 2018c [12394]). Soil and groundwater samples were collected from six boring locations along the boundary between the two properties. One soil sample, from 3.5 to 4 feet below ground surface, contained TCE at a concentration of 0.16 mg/kg, above the MTCA Method A cleanup level of 0.03 mg/kg. One groundwater sample contained VC at 12 µg/L, above the MTCA Method A groundwater cleanup level of 0.2 µg/L.
- Ecology conducted an Initial Investigation and determined that the release of chlorinated VOCs observed on the northern portion of the property likely migrated from the Emerald Tool Site. Ecology issued a No Further Action Memorandum for the 6346 6th Avenue Site (Ecology 2018aa [12397]).

4.5 RM 2.2-3.4 West (Riverside Drive)

The RM 2.2-3.4 West (Riverside Drive) source control area includes the 7th Avenue S SD basin and most of the 8th Avenue combined sewer basin (Appendix A). Facilities adjacent to the LDW include Pacific Pile & Marine and Independent Metals Plant 2 (now closed), and United Site Services. The city of Seattle's 7th Avenue S SD and King County's 8th Avenue CSO discharge to the LDW within this source control area. The 8th Avenue CSO is controlled to no more than one untreated discharge event per year, on average.

4.5.1 Business Inspections

SPU conducted a total of 35 inspections at 22 facilities during the current reporting period, including 22 initial inspections, and 13 follow-up inspections (Appendix C).

Ecology conducted two stormwater compliance inspections (Pacific Pile & Marine Main Yard and United Site Services of Nevada) during 2018. In addition, Ecology conducted one hazardous waste inspection and 13 Urban Waters source control inspections in this source control area during 2018 (Appendix E). One other Urban Waters inspection was conducted within the 8th Avenue combined sewer basin (outside the source control area boundaries).

4.5.2 Source Tracing

SPU collected three sediment trap samples, two inline grab samples, one onsite catch basin sample, and one surface debris sample in the 7th Avenue S SD during 2018 (Figure A-16).

Results are provided in Appendix F; screening level exceedances are summarized in Table 4-6 below.

Table 4-6. RM 2.2-3.4 West: Screening Level Exceedances in SPU Source Tracing Samples

| Chemical Class | Chemical | Sediment Traps | In-line Solids | On-site CB Solids | Surface Debris |
|------------------------|------------------------------|----------------|----------------|-------------------|----------------|
| Metals | Copper | | | ☒ | |
| | Zinc | × | | × | |
| PCBs | PCBs, total | × | | ☒ | |
| Phthalates | BEHP | ☒ | | ☒ | |
| | Butylbenzyl phthalate | × | | × | |
| | Dimethyl phthalate | | | × | |
| Other SVOCs | 4-Methylphenol | ☒ | | | |
| | Benzoic acid | ☒ | ☒ | | |
| | Benzyl alcohol | ☒ | ☒ | ☒ | |
| Petroleum Hydrocarbons | Diesel range hydrocarbons | | | ☒ | |
| | Motor oil range hydrocarbons | ☒ | | ☒ | |

Storm drain screening levels are listed in Table 2-4.

× = Exceedance of SCO (lower screening level) was observed during the current reporting period (2018).

☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2018).

4.5.3 Facility-Specific Source Control Actions

Independent Metals Plant 1

Ecology sent an Early Notice Letter to Independent Metals in February 2014. Independent Metals subsequently filed for bankruptcy and ceased operations in 2014. All Service Moving occupies this property and uses the site for storage and administrative operations.

- Partner Engineering conducted A Phase I Environmental Site Assessment at the Plant 1 location on behalf of First Citizens Bank. This assessment revealed evidence of environmental conditions connected with the property. Partner recommended that the property owner should follow all regulatory directives until regulatory closure is achieved for the Hazardous Sites List (Partner 2018 [11924]).

| | |
|------------------------------|--|
| Address | 747 S Monroe Street (Plant 1) 703 S Monroe Street (Storage Lot) |
| Facility/Site ID | 9309618 (Plant 1) 21489 (Storage Lot) |
| NPDES Permit | None |
| Historical Operations | Scrap metals sorting, recycling, and processing. |
| Chemicals of Concern | PCBs, PAHs, phthalates, metals |
| Media Affected | Stormwater, soil, groundwater |

4.6 RM 2.1-2.2 West (EAA-2: Trotsky Inlet)

The RM 2.1-2.2 West (EAA-2: Trotsky Inlet) source control area includes facilities adjacent to the Trotsky Inlet (Douglas Management Company and ICS), and numerous parcels owned by Boyer Towing along the LDW shoreline (Appendix A). In addition, it includes facilities within the 2nd Avenue S SD basin.

4.6.1 Business Inspections

SPU conducted a total of 11 inspections at five facilities in this source control area in 2018, including five initial inspections and six follow-up inspections (Appendix C)

Ecology conducted one stormwater compliance inspection (Boyer Logistics) during the current reporting period (Appendix E, Table E-1). In addition, one hazardous waste inspection and one Urban Waters source control inspection were conducted in 2018 (Appendix E, Tables E-2 and E-3).

4.6.2 Source Tracing

No source tracing samples were collected in this source control area during the current reporting period.

4.6.3 Facility-Specific Source Control Actions

Industrial Container Services / Trotsky Property / Former Northwest Cooperaage

Ecology entered into Agreed Order DE-6720 with Herman and Jacqueline Trotsky (owners) and ICS (operator) on May 18, 2010 (Ecology 2010b [06806]). The Agreed Order requires that the PLPs conduct an RI/FS to define the nature and extent of contamination in soil, groundwater, surface water, and sediments, and to prepare a draft CAP that identifies the preferred cleanup action and develops a schedule to remediate the contamination.

| | |
|------------------------------|--|
| Address | 7152 1 st Avenue S |
| Facility/Site ID | 2154 (Industrial Container Services – WA, LLC) |
| NPDES Permit | None |
| Current Operations | Drum reconditioning |
| Historical Operations | Same as current operations |
| Chemicals of Concern | PCBs, PAHs, VOCs, pesticides, petroleum hydrocarbons, metals |
| Media Affected | Soil, groundwater, and sediment |

- ICS submitted a revised draft RI Report in April 2018. Ecology provided comments to the PLPs in July 2018. The PLPs revised and resubmitted the report in October 2018.

Douglas Management Dock / Alaska Marine Lines

Ecology entered into Agreed Order DE-8258 with 7100 1st Avenue S, Seattle, LLC (owner) on May 6, 2011. The Agreed Order requires that the owner conduct an RI/FS to define the nature and extent of contamination in soil, groundwater, surface water, and sediments, and to prepare a draft CAP that identifies the preferred cleanup action and develops a schedule to remediate the contamination (Ecology 2011b [06425]).

| | |
|------------------------------|---|
| Current Operations | Shipping container and equipment storage |
| Historical Operations | Sand and gravel batch plant; school bus parking and maintenance |
| Address | 7100 1 st Avenue S |
| Facility/Site ID | 97573251 (Douglas Management Dock) |
| NPDES Permit | WAR127039 (Alaska Marine Lines) |
| Chemicals of Concern | PCBs, petroleum hydrocarbons, metals |
| Media Affected | Soil and groundwater |

- Ecology provided comments on Douglas Management Dock's 2017 draft RI Report in January 2018. The PLPs submitted a revised draft report to Ecology in August 2018.

4.7 RM 2.1 West (1st Avenue S Storm Drain)

The RM 2.1 West (1st Avenue S Storm Drain) source control area includes upland facilities within the 1st Avenue S SD basin (Appendix A). There are no properties adjacent to the LDW in this source control area.

4.7.1 Business Inspections

SPU conducted a total of 13 inspections at eight facilities in the 1st Avenue S storm drain basin during the current reporting period (Appendix C), including six initial inspections and seven follow-up inspections.

Ecology conducted three Urban Waters source control inspections within this source control area during 2018 (Appendix E, Table E-2).

4.7.2 Source Tracing

SPU collected three sediment trap samples, one in-line solids sample, and two onsite samples in the 1st Avenue S storm drain basin during 2018 (Figure A-18). Results are provided in Appendix F; screening level exceedances are summarized in Table 4-7 below.

Table 4-7. RM 2.1 West: Screening Level Exceedances in SPU Source Tracing Samples

| Chemical Class | Chemical | Sediment Traps | In-line Solids | On-site CB Solids |
|----------------|-----------------------|----------------|----------------|-------------------|
| Metals | Zinc | ☒ | | × |
| PCBs | PCBs, total | × | | |
| PAHs | Benzo(g,h,i)perylene | ☒ | | |
| Phthalates | BEHP | ☒ | | ☒ |
| | Butylbenzyl phthalate | | | ☒ |
| | Dimethyl phthalate | | | ☒ |
| Other SVOCs | 4-Methylphenol | ☒ | | ☒ |

| Chemical Class | Chemical | Sediment Traps | In-line Solids | On-site CB Solids |
|------------------------|------------------------------|----------------|----------------|-------------------|
| | Benzoic acid | ☒ | | ☒ |
| | Benzyl alcohol | ☒ | | |
| | n-Nitrosodiphenylamine | | | ☒ |
| Petroleum Hydrocarbons | Motor oil range hydrocarbons | ☒ | | ☒ |

Storm drain screening levels are listed in Table 2-4.

× = Exceedance of SCO (lower screening level) was observed during the current reporting period (2018).

☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2018).

4.7.3 Facility-Specific Source Control Actions

Former South Park Landfill

Ecology, the City of Seattle, and South Park Property Development entered into Agreed Order DE-6706 in May 2009 to conduct an RI/FS at the former South Park Landfill property and to prepare a CAP for this site (Ecology 2009a [06677]).

On February 1, 2016, Ecology and the City of Seattle signed an amendment to the Agreed Order to conduct an interim action at this site (Ecology 2016a [12280]).

- Ecology issued a Final CAP for this site in March 2018. The CAP describes the cleanup action approved by Ecology for the “Settlement Area” portion of this site. The cleanup action for this portion of the site consists of a landfill cap/cover, landfill gas controls, stormwater controls, long-term monitoring of groundwater, long-term monitoring of the cap/cover, the landfill gas controls, and the groundwater, and environmental covenants (Ecology 2018n [11904]).
- Ecology finalized the Public Participation Plan for this site in May 2018 (Ecology 2018v [11302]).

| | |
|------------------------------|--|
| Address | 8200 2 nd Avenue S |
| Facility/Site ID | 2180 |
| NPDES Permit | None |
| Current Operations | Solid waste transfer station, school bus parking |
| Historical Operations | Landfill, auto wrecking yard |
| Chemicals of Concern | VOCs, landfill gas, petroleum hydrocarbons, metals |
| Media Affected | Soil and groundwater |

The landfill cap and stormwater control elements of the Interim Action were constructed between April 2014 and April 2015.

- In April 2018 the PLPs submitted an annual inspection progress report to Ecology describing the results of the landfill cap annual inspections conducted in 2017. There were no penetrations of the asphaltic concrete low-permeable cap, erosion of soil on the property, or damage to the stormwater management facilities during the 2017 inspections.
- On September 6, 2017, the wellhead for H-19 was raised approximately 3 inches to meet with existing asphalt grade.
- The landfill cap and stormwater elements of the interim action were inspected on a quarterly basis in 2018 to monitor conditions of these systems and to make repairs as necessary (Farallon 2018b [11913]).

The landfill gas collection and control system was installed between June and December 2014.

- In April 2018 the PLPs submitted a technical memorandum describing the operation of the interim action landfill gas collection and control system during 2017. The landfill gas collection and control system operated continuously at a low extraction rate of approximately 10 standard cubic feet per minute for the whole system in 2017.
- Monitoring indicated that residual nitrogen tends to rise in landfill gas collected when the landfill gas collection and control system extraction rate is high, and methane concentrations tend to rise in perimeter probes when the extraction rate is low.
- Horizontal and vertical landfill gas collector extraction flow rates were adjusted periodically to control methane at the perimeter probes without over-extraction of landfill gas and to achieve compliance monitoring criteria.
- During 2018, the landfill gas collection and control system was monitored quarterly and operated to maintain compliance with compliance monitoring criteria, with a continued focus on maximizing methane control along 5th Avenue S, and on the northwestern portion of the interim action area. This will be documented in the 2018 summary report which was scheduled to be completed in the first quarter of 2019 (Farallon 2018c [11914]).

4.8 RM 1.6-2.1 West (Terminal 115)

The RM 1.6-2.1 West (Terminal 115) source control area includes facilities associated with the Port of Seattle's Terminal 115, including Northland Services and Lineage Seafreeze (Appendix A). In addition, it includes properties located within the Highland Park Way SW SD basin and portions of the SW Kenny Street CSO/SD basin. The Terminal 115 CSO and West Michigan CSO discharge to the LDW within this source control area.

4.8.1 Business Inspections

SPU conducted three inspections at two facilities (Emswiler Construction and Gene Summy Lumber) in this source control area during the current reporting period (Appendix C).

Ecology conducted one hazardous waste inspection within this source control area during the current reporting period (Appendix E-3).

4.8.2 Source Tracing

SPU collected two sediment trap samples, two in-line solids grab samples, and one right-of-way catch basin sample in the Highland Park Way SW basin during the current reporting period. In the SW Kenny Street SD basin, SPU collected one sediment trap sample during 2018.

King County's T-115 CSO (which is within this source control area) is controlled by an overflow weir, not a regulator station. Because King County could obtain no access at or just upstream of this weir, a sediment trap sample was collected from a maintenance hole just north of the West Marginal Pump Station to represent potential discharges from the West Duwamish Interceptor at T-115 CSO. BEHP and mercury were above the CSL at this location (see Appendix G).

Results are presented in Appendix F, and screening level exceedances are summarized in Table 4-8 below.

Table 4-8. RM 1.6-2.1 West: Screening Level Exceedances in SPU Source Tracing Samples

| Chemical Class | Chemical | Highland Park Way SW SD | | | SW Kenny Street CSO/SD |
|------------------------|------------------------------|-------------------------|----------------|---------------|------------------------|
| | | Sediment Traps | In-line Solids | ROW CB Solids | Sediment Trap |
| Metals | Zinc | x | x | x | |
| PCBs | PCBs, total | x | x | x | x |
| Phthalates | BEHP | ☒ | ☒ | ☒ | ☒ |
| | Butylbenzyl phthalate | x | x | ☒ | |
| | Dimethyl phthalate | | ☒ | x | |
| Other SVOCs | 4-Methylphenol | | | | |
| | Benzoic acid | | ☒ | | |
| | Benzyl alcohol | ☒ | ☒ | ☒ | ☒ |
| Petroleum Hydrocarbons | Motor oil range hydrocarbons | ☒ | ☒ | ☒ | |

Storm drain screening levels are listed in Table 2-4.

x = Exceedance of SCO (lower screening level) was observed during the current reporting period (2018).

☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2018).

4.8.3 Facility-Specific Source Control Actions

North Terminal 115 (Former MRI Corporation)

Ecology and the Port of Seattle entered into an Agreed Order on March 2, 2011. Under Agreed Order DE-8099, the Port of Seattle is conducting an RI/FS and will prepare a draft CAP at this site (Ecology 2011a [06472]). The Port of Seattle submitted the first draft of the RI Report for the site in late 2017.

| | |
|------------------------------|---|
| Address | 6000 West Marginal Way SW |
| Facility/Site ID | 2177 |
| Current Operations | Lumber distribution, vehicle storage |
| Historical Operations | Tin reclamation |
| Chemicals of Concern | PAHs, SVOCs, petroleum hydrocarbons, metals, PCBs |
| Media Affected | Soil and groundwater |

- Ecology provided comments on the Draft RI in December 2018. Ecology required the Port of Seattle to submit a second Draft RI in 2020.

This page intentionally left blank.

5.0 Lower Reach Source Control Areas

This Lower Reach includes eight source control areas; five areas are located on the east side of the LDW, and three on the west side:

| East Side: | Report Section |
|--|-----------------------|
| RM 1.2-1.7 East (Saint Gobain to Glacier Northwest) | 5.1 |
| RM 1.0-1.2 East (King County Lease Parcels) | 5.2 |
| RM 0.9-1.0 East (Slip 1) | 5.3 |
| RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) | 5.4 |
| RM 0.0-0.1 East (Spokane Street to Ash Grove Cement) | 5.5 |
| West Side: | |
| RM 1.3-1.6 West (Glacier Bay) | 5.6 |
| RM 1.0-1.3 West (Kellogg Island to Lafarge Cement) | 5.7 |
| RM 0.0-1.0 West (Spokane Street to Kellogg Island) | 5.8 |

Note: Company names are used only to designate source control area locations; source control area names are not intended to assign responsibility for contamination or to identify properties that may need remediation.

The east side of the Lower Reach includes one Ecology TCP cleanup site (Snopac Property) and several Ecology HWTR cleanup sites within the Brandon CSO drainage basin: GE Aviation Division, West of 4th Site (Art Brass Plating, Blaser Die Casting, Capital Industries, and Burlington Environmental), and the Burlington Environmental/East of 4th Site. These sites are in the greater LDW source area although not within a source control area boundary; they are discussed with the RM 1.0-1.2 East source control area (Section 5.2). In addition, the Rainier Commons site is an EPA-lead cleanup site under TSCA.

The west side of the Lower Reach includes two Ecology TCP cleanup sites: Glacier Northwest/Reichhold Chemical and Duwamish Shipyard.

5.1 RM 1.2-1.7 East (Saint Gobain to Glacier Northwest)

The RM 1.2-1.7 East (Saint Gobain to Glacier Northwest) source control area includes three facilities adjacent to the LDW: Ardagh Glass (formerly Saint Gobain Containers), Longview Fibre, and CertainTeed Gypsum (Appendix A). Many upland facilities near this source control area are in the Brandon CSO basin; the Brandon CSO and the upland facilities within the combined sewer basin are discussed in Section 5.2 (RM 1.0-1.2 East).

5.1.1 Business Inspections

King County conducts annual inspections at Ardagh Glass. The September 2018 inspection of the Ardagh facility found six catch basins and two cisterns in need of cleaning and one catch basin required repair. This work was completed in December 2018 (King County 2019 [11925]).

Ecology conducted stormwater compliance inspections at CertainTeed Gypsum (December 2018) and Ardagh Glass (November 2018) during the current reporting period. Inspection findings are presented in Appendix E, Table E-1.

5.1.2 Source Tracing

No source tracing samples were collected in this source control area during the current reporting period.

5.1.3 Facility-Specific Source Control Actions

No facility specific source control updates were identified during this reporting period.

5.2 RM 1.0-1.2 East (King County Lease Parcels)

The RM 1.0-1.2 East (King County Lease Parcels) source control area includes three facilities adjacent to the LDW (Cadman Seattle, United Western Supply, and J.A. Jack & Sons) (Appendix A). In addition, the Brandon CSO discharges to the LDW within this source control area. Groundwater contamination associated with facilities in the Brandon CSO basin has migrated off the properties and into the RM 1.2-1.7 East source control area (Section 5.1) and the RM 1.7-2.0 East source control area (Section 4.4).

5.2.1 Business Inspections

King County conducts annual inspections at the Lehigh-Cadman facility. Six catch basins, two pipes, and a sediment vault needed cleaning, which was accomplished in September 2018 (King County 2019 [11925]). King County also inspected the J.A. Jacks facility and identified two catch basins that required cleaning. This work was performed in October 2018 (King County 2019 [11925]).

Ecology conducted three hazardous waste inspections and three Urban Waters source control inspections in this source control area (including in the Brandon CSO drainage basin which discharges to the LDW within this source control area) during the current reporting period (Appendix E, Tables E-2 and E-3).

5.2.2 Source Tracing

No source tracing samples were collected within this source control area during 2018.

5.2.3 Facility-Specific Source Control Actions

East of 4th Site (Burlington Environmental / PSC Georgetown / Stericycle Georgetown)

Burlington Environmental operated a hazardous/dangerous waste treatment facility at this location until 2003. Soil and groundwater were contaminated by releases from past operations at the facility. Groundwater contamination has been detected on property to the east and north owned by the Union Pacific Railroad, and downgradient

| | |
|------------------------------|---|
| Address | 734 S Lucile Street |
| Facility/Site ID | 47779679 |
| NPDES Permit | None |
| Current Operations | Storage area for corrective actions in progress at the facility |
| Historical Operations | Hazardous waste treatment and storage |
| Chemicals of Concern | Chlorinated VOCs, 1,4-dioxane, other SVOCs, PCBs, metals |
| Media Affected | Soil and groundwater |

to the west and southwest, toward the LDW. The site is also known as PSC Georgetown (PSC is the parent company) and Stericycle Georgetown (Stericycle Environmental Solutions acquired PSC Holdings in April 2014).

In 2005, this site was administratively divided into two units. The cleanup of the eastern portion of the site, located east of 4th Avenue S, is governed by Agreed Order DE-7347 (May 2010; amended July 2015) and its attached CAP.

The area to the west of 4th Avenue S has been investigated by three additional PLPs: Art Brass Plating, Blaser Die Casting, and Capital Industries, under separate 2008 Orders. The 2018 updates below relate to the East of 4th section of the PSC Georgetown site. Information about the West of 4th Site is provided in the next section.

- Stericycle monitored two studies designed to evaluate the reduction of 1,4-dioxane in groundwater in 2018. Both studies utilized underground methods of treatment.
 - The in-situ chemical oxidation (ISCO) study utilized oxidant-containing wax “candles” inserted into three wells, which slowly released persulfate and permanganate into the contaminated groundwater. In the fall of 2018, Ecology and Stericycle concluded that the oxidant-containing wax “candles” did not offer improvements over the direct injection of oxidant.
 - The bioaugmentation study introduced 2.5 gallons of non-native microorganisms known to degrade 1,4-dioxane into groundwater through an existing monitoring well. By mid-year it was apparent that the new microorganisms were not thriving and 1,4-dioxane was not being significantly biodegraded.
- Stericycle proceeded to prepare a Conceptual Design for a full-scale 1,4-dioxane ISCO-based cleanup action using injections in 2018. Additional sampling and bench-scale tests were then performed to optimize the design of the remedy (ISOTEC 2018 [11997]).
- Throughout 2018 Stericycle continued work on the draft 95% Remedial Design and Remedial Action Work Plan (engineering design report), due to Ecology in early 2019 (Ecology 2018an [11989]).
- A multi-year bioremediation project, started in April 2016, targets chlorinated VOCs in groundwater within the area enclosed by the facility’s barrier wall (installed in 2004). This involves semi-annual injections of anaerobic-biodegradation enhancements followed by short intervals of recirculation to distribute the enhancement material. Two injection/recirculation events occurred in 2018. The last event is scheduled for May 2020.
- Ecology approved a Tier 5 Well Installation Work Plan in August 2018 (Ecology 2018ak [11903], Pioneer 2018 [11998]).
- In November 2018, Stericycle installed four new water table monitoring wells. The wells will be sampled for several seasonal monitoring rounds to determine how high TCE and other VOC groundwater concentrations remain in localized areas near the previously mitigated buildings. The monitoring data will be used to assess whether there is still the potential for unacceptable vapor intrusion impacts to indoor air.
- In 2018 Stericycle modified their facility’s RCRA permit to include by reference the West of 4th Agreed Order Amendment (see below).

West of 4th Site (Burlington Environmental, Art Brass Plating, Blaser Die Casting, Capital Industries)

Groundwater contamination from the PSC Georgetown facility has migrated offsite toward the LDW. Three additional companies have also released chlorinated solvents in this area: Art Brass Plating, Blaser Die Casting, and Capital Industries.

Soils are contaminated at all of these facilities; in addition, groundwater contamination has been detected at each of the

| | |
|---------------------------------|---|
| Facilities and Addresses | Art Brass Plating (5516 3rd Avenue S) Blaser Die Casting (5700 3rd Avenue S) Capital Industries (5801 3rd Avenue S) PSC Georgetown (734 S Lucile Street) |
| Facility/Site IDs | 88531932 (Art Brass Plating), 7118747 (Blaser Die Casting), 11598755 (Capital Industries), 47779679 (Burlington Environmental LLC Georgetown) |
| Historical Operations | Plating, die casting, metal fabrication |
| Chemicals of Concern | Chlorinated solvents, 1,4-dioxane, arsenic, cadmium, copper, nickel, and zinc |
| Media Affected | Soil, groundwater, and surface water |

properties and downgradient to the west and southwest, toward the LDW. Cleanup activities have been underway at these facilities since 2008. The FS stage of the West of 4th site cleanup is governed by Agreed Order DE-10402 (April 2014; amended November 2017).

- In January 2018, Ecology approved two pilot-study work plans: the In Situ Metals Immobilization Pilot Testing Work Plan and the CVOC Pilot Study Work Plan. PLPs subsequently started preliminary pilot study work (Ecology 2018d [11906], Ecology 2018e [11908]).
- Ecology approved a revised Metals Immobilization Pilot Study Field Implementation Work Plan in August 2018 (Aspect 2018g [11809], Ecology 2018aj [11907]).
 - The field stage of the metals immobilization study was performed in mid-September 2018. Sodium bicarbonate was gravity-fed into two injection wells and performance monitoring was initiated.
 - The first groundwater monitoring results were submitted to Ecology on November 30, 2018. They indicated that groundwater geochemistry changed immediately following the injections, but the pH shift was not as high as expected.
- Ecology commented on the CVOC Pilot Study Work Plan in April 2018 (Aspect 2018d [11774], Ecology 2018q [11909]).
 - Prior to beginning the injection-phase of the CVOC study, the PLPs measured methane levels in soil gas within the project area. Elevated methane levels were detected at one location. Soil gas methane monitoring was added to the project's post-injection monitoring program (Aspect 2018f [11775]).
 - Ecology approved the revised CVOC pilot study field investigation work plan in September 2018 (Ecology 2018z [11910]).
 - Treatment reagent was injected into groundwater in October 2018, monitoring commenced immediately thereafter. The PLPs intend to submit the first group of monitoring results in late February of 2019.

In 2017 the PLP Group submitted an interim action work plan for remediating contaminated soils and shallow groundwater beneath Capital Industries’ Plant 4. Contaminants in this area include elevated levels of PCE and associated degradation products.

- Ecology approved the interim action work plan in January 2018 (Ecology 2018f [11895]).
- An interim action Field Implementation Work Plan, proposing the use of potassium permanganate as the ISCO oxidant, was subsequently submitted and its first-phase proposals were approved in May 2018 (Aspect 2018b [11642], Aspect 2018e [11656], Farallon 2018a [11911], Farallon 2018d [11912], Ecology 2018o [11898], Ecology 2018t [11897]).
- In mid-August 2018 a potassium permanganate solution was injected into five first-phase locations below the Plant 4 slab.
- Soil and groundwater sampling was conducted to evaluate the effectiveness of the first-phase injections in August and September 2018.
 - Ecology and the PLPs concluded from this information that the oxidant had not been uniformly or predictably distributed in the vadose zone.
 - Rather than proceed to the second phase of ISCO, in October, the PLPs proposed to submit a draft “Stage 1 report” for Ecology’s review.
 - The report would compile the performance monitoring results and consider whether an optional cleanup technology (such as soil vapor extraction) should be tested before completing the interim action. The report was not submitted by the end of 2018.
- In November 2018, the PLP Group collected direct-push groundwater samples in close proximity to vapor intrusion-mitigated homes located along Orcas Street (in Site Unit 2). They installed two new water table monitoring wells near homes located one block south and west. In both areas the objective is to determine the current levels of groundwater TCE concentrations and to determine whether there is still the potential for unacceptable vapor intrusion impacts to indoor air.

GE Aviation

Ecology approved a Focused Feasibility Study in 2009. A 2014 Final Consent Decree requires conducting remedial actions; these include installation of multi-phased in-situ groundwater treatment, a hydraulic control system and a vapor intrusion mitigation system to meet soil, groundwater and indoor air cleanup levels.

| | |
|------------------------------|---|
| Address | 220 S Dawson Street |
| Facility/Site ID | 2522 |
| Current Operations | Warehouse |
| Historical Operations | Manufacture and repair of aircraft parts |
| Chemicals of Concern | TCE; PCE; 1,1,1-trichloroethane; fuels; and oil |
| Media Affected | Soil and groundwater |

- GE completed Phase I of the ISCO remedy in March 2018. The ISCO remedy included injection of sodium persulfate into the shallow and intermediate groundwater, continued operation of the hydraulic control system, continued operation of the vapor intrusion mitigation system, and institutional controls. Post injection groundwater monitoring indicated the method did not adequately destroy the TCE and other groundwater contaminants (AECOM 2018a [11282]).
- GE applied a different cleanup method, releasing persulfate from slow diffusion bags into several groundwater wells on the property (General Electric 2018 [11996], AECOM 2018b [11123]). This method was also incapable of destroying the TCE and other groundwater contaminants. Groundwater contaminants still exceed Ecology cleanup levels.
- GE relocated one of the groundwater extraction wells (RW-3) to a new location (RW-4) in summer 2018. This requirement of the Ecology CAP and final cleanup engineering design report was expected to further minimize the amount of groundwater contaminated with TCE leaving the source property at 220 S Dawson Street (AECOM 2018c [11979]).
- GE continues to operate the groundwater hydraulic control system, and the vapor intrusion mitigation system which are requirements of the Ecology CAP and final cleanup engineering design report (Ecology 2018ag [11286], Ecology 2018ah [11287]).
- In December 2018, Ecology approved an indoor air quality monitoring plan for GE to collect indoor air samples to verify indoor air quality for the south side of McKinstry's 5005 3rd Avenue building (AECOM 2018d [11208], Ecology 2018at [11899], Ecology 2018au [11285]).

Bob's Texaco

Residual soil contamination was left in place after a 1995 removal of USTs at this property.

- A Phase 1 Environmental Site Assessment was completed in January 2017; it concluded that soil and groundwater contamination are suspected to remain at the property (Partner 2017 [12391]).
- A supplemental site investigation was performed by Ecology in 2017 to provide current environmental data for the property; a draft report was published in May 2018 (Kennedy/Jenks 2018 [12392]). The investigation identified several data gaps, including insufficient information regarding the lateral extent of subsurface soil and groundwater contamination, and the lack of data to evaluate the vapor intrusion pathway. Additional investigation was recommended.

| | |
|------------------------------|---------------------------------------|
| Address | 5304 1 st Avenue S |
| Facility/Site ID | 47157762 |
| Cleanup Site ID | 9354 |
| Current Operations | Office, truck garage, warehouse |
| Historical Operations | Service station, fast food restaurant |
| Chemicals of Concern | Petroleum hydrocarbons, BTEX |
| Media Affected | Soil and groundwater |

5.3 RM 0.9-1.0 East (Slip 1)

The RM 0.9-1.0 East (Slip 1) source control area includes three properties adjacent to Slip 1: a portion of Federal Center South, the former Snopac Products property, and the northern part of Manson Construction (Appendix A). No public storm drain outfalls are located within RM 0.9-1.0 East.

5.3.1 Business Inspections

King County conducts annual inspections at the Manson Construction property; this parcel was found to be compliant at the September 2018 inspection (King County 2019 [11925])

5.3.2 Source Tracing

No source tracing samples have been collected in this source control area.

5.3.3 Facility-Specific Source Control Actions

Snopac Property

The Snopac property was identified as a potential source of contaminants to the LDW. Sediment samples collected in Slip 1 near the Snopac property contained PAHs, PCBs, and metals above screening levels. A seep near the southwest corner of Slip 1 contained metals, including arsenic, copper, lead, mercury, and zinc, at concentrations above the marine chronic water quality standard. The current owner of the property (5055 Properties LLC) is planning to demolish the warehouse building and remove contaminated soil containing sandblast grit. Between 2015 and 2018, 5055 Properties LLC conducted a remedial investigation at the Site.

| | |
|------------------------------|--|
| Address | 5053-5055 East Marginal Way S |
| Facility/Site ID | 1523145, 3967301 |
| Cleanup Site ID | 12463 |
| Current Operations | Construction equipment warehouse |
| Historical Operations | Disposal of spent sandblast grit, fish packing, marine equipment storage |
| Chemicals of Concern | Metals, PAHs, PCBs, petroleum hydrocarbons |
| Media Affected | Soil, groundwater, sediment |

- Soil and groundwater characterization was conducted during 2017 and 2018, including sampling of 26 soil borings, 15 test pits, and 12 groundwater monitoring wells .
- In-water subsurface sediment samples were collected in 2018 due to the limited LDW RI/FS data available at the head of Slip 1. These samples were intended to support design of the LDW remedial action.
- An RI Report was expected to be completed in 2019; results will be summarized in the next Source Control Status Report.
- Ecology planned to negotiate an Agreed Order with 5055 Properties LLC during 2019.

GSA Federal Center South

This property is currently undergoing an independent cleanup by the U.S. General Services Administration. Soil and groundwater are contaminated with petroleum hydrocarbons and chlorinated solvents. A pilot groundwater remediation study was completed in 2012 to assess the potential effectiveness of enhanced bioremediation in reducing concentrations of VC in groundwater. In 2012, all structures on the central and northwestern portion of the property were removed and a new office building was constructed.

| | |
|------------------------------|---|
| Address | 4735 East Marginal Way S |
| Facility/Site ID | 10233917 |
| Cleanup Site ID | 5512 |
| Current Operations | Federal offices |
| Historical Operations | Automobile assembly and showroom; US Army general depot, missile production, motor pool |
| Chemicals of Concern | Petroleum hydrocarbons, benzene, non-halogenated solvents |
| Media Affected | Soil and groundwater |

A site characterization was conducted in 2015 to address areas of concern identified by Ecology (EHSI 2015 [12389]). Results indicated three areas on the Site where MTCA cleanup levels are exceeded in soil. In groundwater, several areas were identified with petroleum hydrocarbons and VOCs in comingled plumes with concentrations above MTCA Method A cleanup levels. TCE in groundwater exceeded cleanup levels in the north center portion of the Site; VC in groundwater exceeded cleanup levels on the east side of the Site. Based on results of the site characterization, Ecology identified numerous data gaps and determined that an RI report that summarizes all previous investigations is required (Ecology 2015e [12390]).

- An Environmental Summary and Data Gap Analysis was prepared for the northern portion of the property in 2018 (Kane 2018, document not available). This report recommended redevelopment of all available groundwater monitoring wells followed by sampling and chemical analysis for TPH and VOCs. These data will be used to develop a plan for further investigation of soil and groundwater at the Site.
- A site reconnaissance visit was conducted by Kane Environmental in July 2018, and sampling was scheduled for April/May 2019 (Kane 2019 [12388]).

5.4 RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way)

The RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) source control area includes Port of Seattle Terminals 106 and 108, and the northern portion of Federal Center South (Appendix A). In addition, it includes facilities within the Diagonal Avenue S and S Nevada Street SD basins. The Diagonal Avenue S CSO/SD outfall (which includes discharges from city and county CSOs) and King County's Duwamish East/Hanford #1 combined sewer pump station are located within this source control area.

5.4.1 Business Inspections

SPU conducted a total of 111 business inspections at 71 facilities in the Diagonal Avenue S CSO/SD and S Nevada Street drainage basins during the current reporting period (Appendix C).

Ecology conducted stormwater compliance inspections at five facilities within this source control area in 2018 (Appendix E, Table E-1). In addition, Ecology conducted 11 source control inspections and three hazardous waste inspections within the RM 0.1-0.9 East source control in 2018 (Appendix E, Tables E-2 and E-3). Two source control inspections were conducted within the Hanford #1 combined sewer area.

In 2018, SPU cleaned approximately 500 linear feet of pipe in the Diagonal Avenue S CSO/SD system. The short segment in the Diagonal Avenue S CSO/SD was cleaned to remove PCB and arsenic-contaminated material that was found during routine source tracing sampling. This work was conducted to remove solids that have accumulated in the MS4 in order to prevent them from discharging into the LDW and to facilitate source tracing efforts (SPU 2019 [11926]).

5.4.2 Source Tracing

SPU has collected hundreds of source tracing samples in the Diagonal Avenue S CSO/SD basin, including sediment trap samples, in-line solids samples, on-site catch basin samples, and right-of-way catch basin samples. During the current reporting period, six sediment trap samples; six in-line solids samples (including two field duplicates); six on-site catch basin samples (including one field duplicate); one right-of-way catch basin sample; and one surface debris sample were collected in this drainage basin (Figure A-25). In addition, four sediment trap samples were collected as part of SPU’s sediment trap pilot study (see Section 2.3.1).

One right-of-way catch basin sample was collected in the S Nevada Street SD in May 2018.

Total PCBs were detected in catch basin sample at MH18, located at 6th Avenue S and S Snoqualmie Street, at 46 mg/kg DW, over 350 times the lower screening level of 0.13 mg/kg DW. Complete sample results for the current reporting period are presented in Appendix F; screening level exceedances are summarized in Table 5-1 below.

King County collected sediment trap samples at two locations within the Hanford #1 CSO drainage basin. The two locations sampled were: the area of South Hanford Street & MLK Way South and the area of Rainier Ave South and South Estelle Street. BEHP and mercury were above the CSL at each location (see Appendix G).

Table 5-1. RM 0.1-0.9 East: Screening Level Exceedances in SPU Source Tracing Samples

| Chemical Class | Chemical | Sediment Traps | In-line Solids | On-site CB Solids* | Right-of-Way CB Solids |
|----------------|---------------------------|----------------|----------------|--------------------|------------------------|
| Metals | Arsenic | | ☒ | ☒ | |
| | Lead | | | x | |
| | Mercury | | ☒ | | |
| | Zinc | x | ☒ | ☒ | ☒ |
| PCBs | Total PCBs | x | ☒ | x | x |
| PAHs | Individual LPAH compounds | ☒ | ☒ | ☒ | ☒ |
| | Total LPAHs | | | ** | |
| | Individual HPAH compounds | | ☒ | ☒ | ☒ |
| | Total HPAHs | | ☒ | ** | ☒ |
| | Total cPAHs | | ☒ | ** | ☒ |
| Phthalates | BEHP | ☒ | ☒ | ☒ | ☒ |

| Chemical Class | Chemical | Sediment Traps | In-line Solids | On-site CB Solids* | Right-of-Way CB Solids |
|------------------------|------------------------------|----------------|----------------|--------------------|------------------------|
| | Butylbenzyl phthalate | x | ☒ | x | x |
| | Dimethyl phthalate | | x | ☒ | x |
| Other SVOCs | 1,2-Dichlorobenzene | | ☒ | | |
| | 1,4-Dichlorobenzene | | ☒ | | |
| | 4-Methylphenol | ☒ | | ☒ | ☒ |
| | Benzoic acid | ☒ | ☒ | ☒ | ☒ |
| | Benzyl alcohol | ☒ | x | ☒ | ☒ |
| | Dibenzofuran | | | ☒ | |
| | n-Nitrosodiphenylamine | ☒ | | ☒ | ☒ |
| | Phenol | x | | | x |
| Petroleum hydrocarbons | Motor oil range hydrocarbons | ☒ | ☒ | ☒ | ☒ |

Storm drain screening levels are listed in Table 2-4.

* Includes surface debris sample.

** Not calculated because several results were rejected during validation.

x = Exceedance of SCO (lower screening level) was observed during the current reporting period (2018).

☒ = Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2018).

5.4.3 Facility-Specific Source Control Actions

Port of Seattle Terminals 106 and 108

ConGlobal Industries, Ash Grove Cement, and Arctic Commercial Refrigeration operate on portions of the Port of Seattle’s Terminal 106. Terminal 108 is currently occupied by ConGlobal Industries.

| | |
|------------------------------|---|
| Address | 1 S Idaho Street |
| Facility/Site ID | 54918197 |
| NPDES Permit | ConGlobal: WAR010569 (ISGP); Port of Seattle: WAR044701 (Municipal SW Phase 1 GP) |
| Current Operations | Shipping container and truck chassis storage and repair |
| Historical Operations | Same as current |
| Chemicals of Concern | Metals, PCBs, phthalates, PAHs, other SVOCs, and petroleum hydrocarbons |
| Media Affected | Soil, groundwater, stormwater, and storm drain solids |

- EPA and the Port of Seattle signed an Administrative Settlement Agreement and Order on Consent for Removal Action, Preliminary Assessment and Site Investigation at Terminal 108 on April 5, 2018.
- The Preliminary Assessment report was submitted to EPA in December 2018.

Rainier Commons / Former Rainier Brewery Property

The former Rainier Brewery property is currently known as Rainier Commons, a complex of 27 buildings. In 2004/2005, elevated concentrations of PCBs in a nearby catch basin led to the discovery of PCB-contaminated paint at this facility. The cleanup is being performed under EPA oversight.

Rainier Commons prepared a general work plan for removal of paint from building exterior surfaces, sampling of some substrates, and complete removal of paint from the interior stairwell

area in 2013. A Phase II work plan was submitted to EPA in April 2015. Abatement was completed for Phases I and IIa, which include the west side of Buildings 10 and 11, all of Building 13, and the south side of Building 15.

- A Phase IIb application was submitted to EPA in 2017. The application covers abatement of Building West, Building 7 West and South, Building 8 and 9 elevator shaft and parapet walls, Building 10 South and the catwalk. No information on the status of this effort was available at the time this Source Control Status Report was prepared.

| | |
|------------------------------|---|
| Address | 3100 Airport Way S |
| Facility/Site ID | 9192461 |
| Current Operations | Coffee roasting and storage, artist loft, and two restaurants |
| Historical Operations | Brewery |
| Chemicals of Concern | PCBs |
| Media Affected | Stormwater |

- When the south side of Building 15 was abated, additional catch basin monitoring took place before, during, and after Phase IIa work. A completion report for this work from Rainier is forthcoming.

Mount Baker Properties

The Mount Baker Housing Association (MBHA) plans to redevelop the cluster of lots where S McClellan Street intersects with Martin Luther King Jr Way S. This is located one block from Sound Transit's Mount Baker Link light rail station. MBHA plans to build 166 affordable housing units with street level retail.

| | |
|------------------------------|--|
| Address | 2800 MLK Jr. Way S, 2864 S McClellan Street, 2810 S McClellan Street, 2806 S McClellan Street, and 2802 S McClellan Street |
| Facility/Site ID | Facility Site ID: 96127971 / Cleanup Site ID: 13054 |
| NPDES Permit | None |
| Current Operations | Housing Development |
| Historical Operations | Dry Cleaners, Gas Station, Auto Repair |
| Chemicals of Concern | Chlorinated solvents, petroleum hydrocarbons |
| Media Affected | Soil, groundwater, soil vapor |

Ecology entered into a Prospective Purchaser Consent Decree with MBHA in 2016 which was amended and filed February 24, 2017. The consent decree requires MBHA to complete an RI and FS for the site.

- In 2017 MBHA conducted RI drilling to refine the conceptual site model.
 - Field work consisted of direct-push and hollow-stem auger drilling, monitoring well installation, monitoring well development, and soil, groundwater and soil vapor sampling.
 - Ten monitoring wells were installed, seven soil vapor samples were obtained, and an additional 11 borings were completed (Aspect 2018c [11739]).
- MBHA started preparing the RI report in late 2017 (Aspect 2018a [11723]).
- In early 2018 MBHA continued to evaluate chemical analytical results of soil, groundwater, and soil vapor samples that were obtained during the RI drilling to refine

the conceptual site model. They also discussed the next steps with Ecology (Aspect 2018c [11739]).

- MBHA plans to conduct a soil vapor investigation to determine whether the soil vapor intrusion pathway is complete for petroleum and chlorinated solvents. MBHA submitted a soil vapor investigation work plan to Ecology in September 2018. The results of the soil vapor investigation will be submitted to Ecology as a technical memo and included as part of the RI report for this site (GHD 2018 [11916]).

Grand Street Commons

Grand Street Commons (GSC) plans to redevelop several properties in southeast Seattle for a mix of affordable and market-rate housing project. GSC is a partnership between MBHA, Lake Union Partners, and HAL Real Estate. This project is expected to be completed by 2023 when the new East Link light rail station is scheduled to open nearby. As part of the project, they plan to clean up about 3.2 acres of contaminated property.

| | |
|------------------------------|--|
| Address | 1750 22 nd Avenue S Seattle |
| Facility/Site ID | Facility Site ID: 97763114/Cleanup Site ID: 3018 |
| NPDES Permit | None |
| Current Operations | Housing development |
| Historical Operations | Manufacturing, welding, foundry, commercial dry cleaning, vehicle repair, service station |
| Chemicals of Concern | Petroleum hydrocarbons, benzene, xylenes, cadmium, lead, naphthalene, chlorinated solvents |
| Media Affected | Soil, groundwater |

- Ecology entered into Prospective Purchaser Consent Decrees with GSC and MBHA. The consent decrees require GSC and MBHA to complete an RI and FS to evaluate the extent of the contaminated area and to develop cleanup options.
- Ecology held a comment period on the draft consent decrees and on the Public Participation Plan from April 20 through May 19, 2018 (Ecology 2018r [11901], 2018s [11902]).
- The Prospective Purchaser Consent Decrees were initially signed in May 2018, amended in July 2018, and finalized in early September 2018 (King County Superior Court 2018a [11919], 2018b [11917], and 2018c [11918]).
- The PLPs started preparing an RI work plan for this site in the fall of 2018 (Aspect 2018h [11722]).

5.5 RM 0.0-0.1 East (Spokane Street to Ash Grove Cement)

The RM 0.0-0.1 East (Spokane Street to Ash Grove Cement) source control area includes properties adjacent to the LDW, including Ash Grove Cement, the Port of Seattle’s Terminal 104, and Terminal 102 (Harbor Marina Corporate Center) on the southern end of Harbor Island (Appendix A).

5.5.1 Business Inspections

No business inspections were conducted in this source control area during 2018.

5.5.2 Source Tracing

No source tracing samples have been collected in this source control area.

5.5.3 Facility-Specific Source Control Actions

No facility-specific source control updates were identified during this reporting period.

5.6 RM 1.3-1.6 West (Glacier Bay)

The RM 1.3-1.6 West (Glacier Bay) source control area includes properties adjacent to the LDW (Alaska Marine Lines, Duwamish Shipyard, Glacier Northwest/West Marginal Way Site), and portions of the SW Kenny Street SD basin (Appendix A). The SW Kenny Street SD discharges to the LDW within the RM 1.6-2.1 West (Terminal 115) source control area, and is discussed in Section 4.8.

5.6.1 Business Inspections

No inspections were conducted in this source control area during 2018.

5.6.2 Source Tracing

No source tracing samples were collected in this source control area during the current reporting period.

5.6.3 Facility-Specific Source Control Actions

Duwamish Shipyard

Duwamish Shipyard entered into Agreed Order DE-6735 with Ecology on September 13, 2010, to conduct an RI/FS at the site (Ecology 2010c [06819]). Stormwater from this property is currently treated and discharged at the Alaska Marine Lines outfall under NPDES Permit WAR001365.

- Duwamish Shipyard continued revisions to the RI report during 2018. A revised RI report was expected to be completed in 2019.

| | |
|------------------------------|--|
| Address | 5658 West Marginal Way SW |
| Facility/Site ID | 2071 (DSI) |
| NPDES Permit | WAR001365 (ISGP, Alaska Marine Lines) |
| Current Operations | Equipment and container storage; truck access |
| Historical Operations | Repair and maintenance of floating vessels and equipment |
| Chemicals of Concern | PCBs, PAHs, SVOCs, tributyltin, dioxins/furans, petroleum hydrocarbons, metals |
| Media Affected | Soil, groundwater, stormwater, and sediment |

Glacier Northwest

Glacier-Reichhold entered into Agreed Order DE-6000 with Ecology on July 28, 2009 to conduct an RI/FS at the site (Ecology 2009b [06908]).

RI field investigations were completed between March 2009 and August 2014. Glacier Northwest submitted a draft RI report to Ecology in May 2015.

- Ecology provided Glacier Northwest with review comments of the draft RI in January 2018.

Glacier Northwest submitted a data gaps work plan to Ecology in July 2018, and a treatability testing work plan in October 2018.

| | |
|------------------------------|--|
| Address | 5900-5902 West Marginal Way SW |
| Facility/Site ID | 23881883 (Glacier Northwest Seattle Terminal) 67234947 (Glacier Northwest Marginal Way Truck Shop) 89139472 (Glacier Northwest, Inc. and Reichhold MTCA) |
| NPDES Permit | WAG503378 (Sand & Gravel GP) |
| Current Operations | Cement storage and distribution |
| Historical Operations | Manufacture of activated charcoal, resins, glues, pentachlorophenol |
| Chemicals of Concern | Pentachlorophenol, dioxins/furans, metals |
| Media Affected | Soil, groundwater, surface water, and sediment |

5.7 RM 1.0-1.3 West (Kellogg Island to Lafarge Cement)

The RM 1.0-1.3 West (Kellogg Island to Lafarge Cement) source control area consists of a single property, Lafarge Cement (Appendix A). There are no public storm drains that discharge to the LDW within this source control area.

5.7.1 Business Inspections

KCIW inspects the Lafarge Cement facility at least annually, since it is classified as a SIU and is regulated under a waste discharge permit. The facility was inspected on May 23, 2018.

5.7.2 Source Tracing

No source tracing samples were collected during this reporting period.

5.7.3 Facility-Specific Source Control Actions

Lafarge Cement

Lafarge is authorized under an individual permit to discharge stormwater to the LDW via outfall 008. This outfall drains the entire facility except for a small area around the truck wash and certain areas used periodically for material transloading or other activities. All other process wastewater is hauled offsite for disposal.

- On September 19, 2018 Lafarge violated the conditions of their NPDES permit when they dropped a super sack containing 21,300 pounds of soil predominantly contaminated with diesel and metals during transloading activities. Some of the contaminated soil fell into the LDW. Lafarge's contractor recovered approximately 4,000 pounds of the estimated 4,020 pounds of soil that spilled into the LDW.

- Ecology sent Lafarge a letter on September 19, 2018 requiring Lafarge to clean up the dock and barge to minimize the contaminated soil that could enter the storm drain or the waterway, and to update BMPs for transloading super sacks. Lafarge responded to Ecology on October 18, 2018.
- Ecology issued a Notice of Penalty for Lafarge on February 6, 2019 for violating the permit and RCW.

| | |
|------------------------------|--|
| Address | 5400 West Marginal Way SW |
| Facility/Site ID | 2132 |
| NPDES Permit | WA0002232 (Industrial NPDES IP) |
| Current Operations | Cement operations, blending and shipping of cementitious products, and transloading of non-hazardous materials |
| Historical Operations | Cement clinker production (wet kiln) |
| Chemicals of Concern | Total PCBs, copper, phenol, phthalate, and petroleum hydrocarbons |
| Media Affected | Stormwater |

5.8 RM 0.0-1.0 West (Spokane Street to Kellogg Island)

The RM 0.0-1.0 West (Spokane Street to Kellogg Island) source control area includes Port of Seattle Terminals 103, 105 and 107; General Recycling of Washington; and Herring’s House Park (Appendix A). In addition, it includes properties in the SW Dakota Street and SW Idaho Street SD basins. The Duwamish West CSO pump station is located within this source control area.

5.8.1 Business Inspections

SPU conducted initial and follow-up inspections at three Global Diving and Salvage Inc. facility locations within this source control area in 2018 (Appendix C).

5.8.2 Source Tracing

SPU collected three sediment trap samples in the SW Idaho Street SD basin and one inline grab sample in the SW Dakota Street SD during the current reporting period (Figure A-29). Sample results are presented in Appendix F; screening level exceedances are summarized in Table 5-2 below.

Table 5-2. RM 0.0-1.0 West: Screening Level Exceedances in SPU Source Tracing Samples

| Chemical Class | Chemical | Sediment Traps | In-line Solids |
|----------------|-----------------------|----------------|----------------|
| Metals | Zinc | ☒ | × |
| PCBs | PCBs, total | × | × |
| Phthalates | BEHP | ☒ | ☒ |
| | Butylbenzyl phthalate | × | |
| Other SVOCs | 4-Methylphenol | ☒ | |
| | Benzoic acid | ☒ | ☒ |
| | Benzyl alcohol | ☒ | ☒ |
| | Phenol | × | |

| Chemical Class | Chemical | Sediment Traps | In-line Solids |
|------------------------|------------------------------|----------------|-------------------------------------|
| Petroleum Hydrocarbons | Motor oil range hydrocarbons | | <input checked="" type="checkbox"/> |

Storm drain screening levels are listed in Table 2-4.

× = Exceedance of SCO (lower screening level) was observed during the current reporting period (2018).

= Exceedance of CSL/RAL/Method A (upper screening level) was observed during the current reporting period (2018).

5.8.3 Facility-Specific Source Control Actions

No facility-specific source control activities were identified during the current reporting period.

6.0 References

- AECOM. 2012. Final Feasibility Study, Lower Duwamish Waterway, Seattle, Washington. Prepared for the Lower Duwamish Waterway Group. October 31, 2012. [00099]
- AECOM. 2018a. Letter from Tom Antonoff (General Electric) to Dean Yasuda (Ecology) Re: Quarterly Progress Report for the former General Electric South Dawson Street Site January through March 2018 Reporting Period. April 16, 2018. [11282]
- AECOM. 2018b. Memorandum to Dean Yasuda, Washington State Department of Ecology, Re: Contingent Remedy Evaluation, GE South Dawson Street. June 22, 2018. [11123]
- AECOM. 2018c. Draft Recovery Well 4 Installation Completion Report, GE S Dawson Street, Former GE Aviation Division Facility, 220 S Dawson Street, Seattle, Washington. Prepared by AECOM for General Electric. October 10, 2018. [11979]
- AECOM. 2018d. 5005 3rd Avenue Building Indoor Air Quality Monitoring Plan, Former GE Aviation Division Facility, 220 S Dawson Street, Seattle, WA. December 21, 2018. [11208]
- Aerotech (Aerotech Environmental Consulting). 2018a. Groundwater Monitoring Report, Third Sampling Event, February 2018, Glen Acres Golf and Country Club (VCPNW2759). February 13, 2018. [11455]
- Aerotech. 2018b. Groundwater Monitoring Report, Fourth Sampling Event, August 2018, Glen Acres Golf and Country Club (VCPNW2759). August 16, 2018. [11492]
- Aerotech. 2018c. Phase II Limited & Targeted Subsurface Investigation, Dziejewczynski Property, 6346 6th Avenue South. Prepared by Aerotech Environmental Consulting for Corvid General Contractors, LLC. May 18, 2018. [12394]
- AMEC (Amec Foster Wheeler). 2015. Lower Duwamish Waterway Group, Narrative Design Report, Enhanced Natural Recovery/Activated Carbon Pilot Study, Lower Duwamish Waterway. December 2015. [11213]
- AMEC. 2018a. Year 0 Data Package, Enhanced Natural Recovery/Activated Carbon Pilot Study, Lower Duwamish Waterway. Prepared by Amec Foster Wheeler Environment & Infrastructure, Inc., Dalton, Olmsted & Fuglevand, Inc., Ramboll Environ, Floyd|Snider, and Geosyntec Consultants for the Lower Duwamish Waterway Group. January 31, 2018. [11284]
- AMEC. 2018b. Quality Assurance Project Plan Addendum 3, Enhanced Natural Recovery/Activated Carbon Pilot Study, Lower Duwamish Waterway, Analytical Methods for Carbon Analysis and Sieving of Gravelly Sand ENR Substrate. Prepared by Amec Foster Wheeler Environment & Infrastructure, Inc., Dalton, Olmsted & Fuglevand, Inc., Ramboll, Floyd|Snider, and Geosyntec Consultants for the Lower Duwamish Waterway Group. January 31, 2018. [11493]
- AMEC. 2018c. Construction Report, Enhanced Natural Recovery/Activated Carbon Pilot Study, Lower Duwamish Waterway. Prepared by Amec Foster Wheeler Environment & Infrastructure, Inc., Dalton, Olmsted & Fuglevand, Inc., Ramboll, Floyd|Snider, and Geosyntec Consultants for the Lower Duwamish Waterway Group. June 2018. [11441]

- Aspect Consulting. 2018a. Letter from Jessica Smith and Dave Cook (Aspect Consulting) to Ching-Pi Wang (Ecology) Re: Progress Report No. 11 Mount Baker Housing Association. January 10, 2018. [11723]
- Aspect Consulting. 2018b. Letter from Dana Cannon (Aspect Consulting) to Ed Jones (Ecology) Re: West of 4th Site Agreed Order #DE10402 and Amendment #DE15344, Draft Capital Industries Plant 4 Field Implementation Work Plan. March 8, 2018. [11642]
- Aspect Consulting. 2018c. Letter from Jessica Smith and Dave Cook (Aspect Consulting) to Ching-Pi Wang (Ecology) Re: Progress Report No. 13 Mount Baker Housing Association. March 14, 2018. [11739]
- Aspect Consulting. 2018d. CVOC Pilot Study Field Implementation Work Plan, W4 Group – Site 1. Agency Review Prepared by Aspect Consulting for the West of 4th Group. April 4, 2018. [11774]
- Aspect Consulting. 2018e. Letter from Dana Cannon (Aspect Consulting) to Ed Jones (Ecology) Re: West of 4th Site Agreed Order #DE10402 and Amendment #DE15344, Revised Capital Industries Plant 4 Field Implementation Work Plan. May 10, 2018. [11656]
- Aspect Consulting. 2018f. Letter from Dana Cannon (Aspect Consulting) to Ed Jones (Ecology) Re: West of 4th Site Agreed Order #DE10402 and Amendment #DE15344, Draft Work Plan for Monitoring Methane in Soil Gas (Addendum to the CVOC Pilot Study Field Implementation Work Plan), Site Unit 1. June 15, 2018. [11775]
- Aspect Consulting. 2018g. In Situ Immobilization – Pilot Study Field Implementation Work Plan, West of 4th Site – Site Unit 1. Prepared by Aspect Consulting for the West of 4th Group. June 15, 2018. [11809]
- Aspect Consulting. 2018h. Letter from Dave Cook and Fasih Khan (Aspect Consulting) to Ching-Pi Wang (Ecology) Re: Progress Report No. 4 Grand Street Commons Project – October 2018, Mt. Baker Housing Association. November 12, 2018. [11722]
- Calibre (Calibre Systems). 2018. 2016 and 2017 Annual Sampling Report, South Storm Drain System and Source Tracing Within the Boeing Developmental Center. Prepared by Calibre Systems for The Boeing Company. February 2018. [11448]
- Ecology (Washington State Department of Ecology). 2007. Lower Duwamish Waterway Source Control Status Report, 2003 to June 2007. Publication No. 07-09-064. Toxics Cleanup Program, Washington State Department of Ecology, and Science Applications International Corporation. July 2007. [00021]
- Ecology. 2008a. Lower Duwamish Waterway Source Control Status Report, July 2007 to March 2008. Publication No. 08-09-063. Toxics Cleanup Program, Washington State Department of Ecology, and Science Applications International Corporation. May 2008. [00065]
- Ecology. 2008b. Agreed Order No. DE-5685. North Boeing Field/Georgetown Steam Plant. Effective August 14, 2008. [03425]
- Ecology. 2008c. Agreed Order No. DE-6069. PACCAR, Inc. and Merrill Creek Holdings, LLC. Effective September 15, 2008. [06418]

- Ecology. 2008d. Lower Duwamish Waterway Source Control Status Report, April 2008 through August 2008. Publication No. 08-09-068. Toxics Cleanup Program, Washington State Department of Ecology, and Science Applications International Corporation. October 2008. [00068]
- Ecology. 2009a. Agreed Order No. DE-6706. South Park Landfill (City of Seattle and South Park Property Development, LLC). Effective May 4, 2009. [06677]
- Ecology. 2009b. Agreed Order No. DE-6000. Glacier Northwest, Inc. and Reichhold Chemical, Inc. Effective May 14, 2009. [06908]
- Ecology. 2009c. Lower Duwamish Waterway Source Control Status Report, September 2008 through June 2009. Publication No. 09-09-183. Toxics Cleanup Program, Washington State Department of Ecology, and Science Applications International Corporation. August 2009. [00090]
- Ecology. 2009d. Agreed Order No. DE-6721. 8th Avenue Terminals, Inc. (Crowley Marine Services). Effective October 12, 2009. [06804]
- Ecology. 2010a. Agreed Order No. DE-7088. Boeing Isaacson Thompson Site, 8625-8811 E. Marginal Way S., Tukwila, Washington. Effective April 23, 2010. [06812]
- Ecology. 2010b. Agreed Order No. DE-6720. Herman and Jacqueline Trotsky and Industrial Container Services – WA, LLC. Effective May 18, 2010. [06806]
- Ecology. 2010c. Agreed Order No. DE-6735. Duwamish Shipyard, Inc. Effective September 13, 2010. [06819]
- Ecology. 2011a. Agreed Order No. DE-8099. Port of Seattle North Terminal 115. Effective March 2, 2011. [6472]
- Ecology. 2011b. Agreed Order No. DE-8258. 7100 First Avenue South, Seattle – WA, LLC. Effective May 6, 2011. [06425]
- Ecology. 2011c. Lower Duwamish Waterway Source Control Status Report, July 2009 through September 2010. Publication No. 11-09-169. Toxics Cleanup Program, Washington State Department of Ecology, and Science Applications International Corporation. August 2011. [00095]
- Ecology. 2011d. Agreed Order No. DE-8072. James D. Gilmur and Jacqueline H. Gilmur, as Trustees of the James D. and Jacqueline H. Gilmur Living Trust; Duwamish Marine Center Site. Effective September 2, 2011. [07731]
- Ecology. 2012a. Agreed Order No. DE-8985. Fox Avenue Building, LLC. Effective June 18, 2012. [09837]
- Ecology. 2012b. Lower Duwamish Waterway Source Control Status Report, October 2010 through December 2011. Publication No. 12-09-131. Publication No. 13-09-136. Toxics Cleanup Program, Washington State Department of Ecology, and Science Applications International Corporation. July 2012. [00098]
- Ecology. 2013. Lower Duwamish Waterway Source Control Status Report, January 2012 through December 2012. Publication No. 13-09-136. Toxics Cleanup Program,

- Washington State Department of Ecology, and Science Applications International Corporation. June 2013. [10359]
- Ecology. 2014. Lower Duwamish Waterway Source Control Status Report January through December 2013. Publication No. 14-09-337. Toxics Cleanup Program, Washington State Department of Ecology, and Leidos. June 2014. [10620]
- Ecology. 2015a. First Amendment to North Boeing Field/Georgetown Steam Plant Agreed Order No. DE-5685, in the matter of Remedial Action by The Boeing Company, King County, and the City of Seattle. February 6, 2015. [10933]
- Ecology. 2015b. National Pollutant Discharge Elimination System Waste Discharge Permit No. WA0031968 Modification No. 2. Issued to Seattle Iron and Metals Corporation. March 12, 2015. [12205]
- Ecology. 2015c. Enforcement Order No. DE-11167, in the matter of Remedial Action by Jorgensen Forge Corporation. March 16, 2015. [12172]
- Ecology. 2015d. Agreed Order No. DE-10947. Mr. Rajbir Sandhu and Ms. Pradeep Sandhu, RPNP Corporation, and Chevron Environmental Management Company. Effective July 13, 2015. [12274]
- Ecology. 2015e. Letter from Heather Vick, Ecology, to Kurt Easthouse, EHS-International, Re: Opinion Pursuant to WAC 173-340-515(5) on Proposed Remedial Action for US GSA Federal Center S, 4735 E Marginal Way, Seattle, WA 98134. August 4, 2015. [12390]
- Ecology. 2016a. Second Amendment to South Park Landfill Agreed Order No. DE-6706, in the matter of Remedial Action by and South Park Property Development, LLC. February 1, 2016. [12280]
- Ecology. 2016b. Lower Duwamish Waterway Source Control Strategy. Prepared by Northwest Regional Office, Washington State Department of Ecology, and Leidos. Publication No. 16-09-339. June 2016. [11061]
- Ecology. 2016c. Agreed Order No. DE-13458. Seattle Iron and Metals Corporation and 730 Myrtle LLC (Whitehead Tyee Site). Effective August 25, 2016. [11068]
- Ecology. 2017a. Letter from Bill Moore (Ecology) to Susanne McIlveen (Boeing) Re: Administrative Order for Modification of Permit Coverage, Level 3 Waiver, WAR000146. February 8, 2017. [11457]
- Ecology. 2017b. Administrative Order Docket No. 13932 Against The Boeing Company. Military Flight Center. March 23, 2017. [11449]
- Ecology. 2017c. Agreed Order No. DE-6069 First Amendment to Agreed Order to Substitute Centerpoint 8801 Marginal LLC, for Merrill Creek Holdings, LLC. Effective August 1, 2017. [11459]
- Ecology. 2018a. Administrative Order Against the Boeing Company - Boeing Developmental Center Agreed Order No. DE-15600. January 9, 2018. [11246]
- Ecology. 2018b. Initial Investigation Field Report, SCL Duwamish Substation. January 9, 2018. [11497]

- Ecology. 2018c. Immediate Action Order Against Seattle Iron and Metals, Administrative Order Docket No. 155373. January 10, 2018. [11142]
- Ecology. 2018d. Letter from Ed Jones (Ecology) to Dana Cannon (Aspect Consulting) Re: West of 4th Site – Agreed Order # DE 10402, Site Unit 1, In Situ Metals Immobilization Pilot Testing Work Plan. January 11, 2018. [11906]
- Ecology. 2018e. Letter from Ed Jones (Ecology) to Dana Cannon (Aspect Consulting) Re: West of 4th Site – Agreed Order #DE 10402, Site Unit 1, CVOC Pilot Study Work Plan. January 11, 2018. [11908]
- Ecology. 2018f. Letter from Ed Jones (Ecology) to Dana Cannon (Aspect Consulting) Re: West of 4th Site – Agreed Order #DE 10402, Site Unit 2: Capital Industries Plant 4 Interim Action Work Plan. January 12, 2018. [11895]
- Ecology. 2018g. Letter from Michael Warfel (Ecology) to Richard Sand (Morris Management) Re: Request for Information on Status of VCP Project for Glen Acres Golf & Country Club. January 22, 2018. [11502]
- Ecology. 2018h. Stormwater Compliance Inspection Report, Jorgensen Forge Corporation. January 24, 2018. [11505]
- Ecology. 2018i. Site Hazard Assessment Worksheet 1 Summary Score Sheet, Unified Grocers, 3301 South Norfolk Street, Seattle, King County, WA. February 1, 2018. [11512]
- Ecology. 2018j. Letter from Donna Musa (Ecology) to Prologis Re: Site Hazard Assessment: Facility Site ID 73338176, Unified Grocers Norfolk 3301 South Norfolk Street, Seattle, WA 98118. February 12, 2018. [11511]
- Ecology. 2018k. Letter from Jing Song (Ecology) to Mary Logue (Kelly-Moore Paint Company) Re: Opinion on Proposed Cleanup of the following site: Kelly Moore Paint Company. February 27, 2018. [11498]
- Ecology. 2018l. Letter from Ramen Iyer (Ecology) to Steve Shestag (The Boeing Company) Re: Preliminary Determination of Liability for Release of Hazardous Substances at the following Contaminated Site: Boeing Developmental Center. March 20, 2018. [11281]
- Ecology. 2018m. Letter from Louise Bardy (Ecology) to Tom Meyer (Seattle City Light) Re: Early Notice Letter: Facility Site #17593, SCL Duwamish Substation. March 23, 2018. [11496]
- Ecology. 2018n. South Park Landfill: Final Cleanup Action Plan. Issued by the Washington State Department of Ecology, Toxics Cleanup Program, Southwest Regional Office, Olympia, Washington. March 2018. [11904]
- Ecology. 2018o. Letter from Ed Jones (Ecology) to Dana Cannon (Aspect Consulting) Re: West of 4th Site – Agreed Order #DE 10402, Site Unit 2: Capital Industries Plant 4 Interim Action Field Investigation Work Plan. April 3, 2018. [11898]
- Ecology. 2018p. Stormwater Compliance Inspection Report, Boeing Military Flight Center, 10002 East Marginal Way South, Tukwila, WA. April 4, 2018. [11508]

- Ecology. 2018q. Letter from Ed Jones (Ecology) to Dana Cannon (Aspect Consulting) Re: West of 4th Site – Agreed Order #DE 10402, Site Unit 1, CVOC Pilot Study Field Investigation Work Plan. April 30, 2018. [11909]
- Ecology. 2018r. Fact Sheet: Grand Street Commons Cleanup and Redevelopment. Publication Number 18-09-137. April 2018. [11901]
- Ecology. 2018s. Public Participation Plan, Grand Street Commons, 1750 22nd Ave S Seattle, WA. April 2018. [11902]
- Ecology. 2018t. Letter from Ed Jones (Ecology) to Dana Cannon (Aspect Consulting) Re: West of 4th Site – Agreed Order #DE 10402, Site Unit 2: Capital Industries Plant 4 Interim Action Field Investigation Work Plan. May 24, 2018. [11897]
- Ecology. 2018u. Letter from Robert Wright, Ecology, to Wade Wheeler, Boeing, Re: Warning Letter – Noncompliance with NPDES Industrial Stormwater General Permit No. WAR000150, terms and conditions. Boeing Military Flight Center. May 25, 2018. [11506]
- Ecology. 2018v. Public Participation Plan: South Park Landfill, Seattle, Washington. Prepared by the Washington State Department of Ecology. May 2018. [11302]
- Ecology. 2018w. Letter from Dale Myers (Ecology) to Dan Hatch (G-Logics, Inc.) Re: Formal Notification of Extension to Complete Remedial Investigation Field Activities Approved: Boeing Field Chevron, 10805 Tukwila International Blvd. Tukwila, WA. June 25, 2018. [11288]
- Ecology. 2018x. Water Compliance Inspection Report, Seattle Iron & Metals, 601 S. Myrtle Street, Seattle, WA. June 27, 2018. [11538]
- Ecology. 2018y. Lower Duwamish Waterway Source Control Status Report, January 2014 through December 2016. Publication No. 17-09-266. Toxics Cleanup Program, Washington State Department of Ecology, and Leidos. June 2018. [12005]
- Ecology. 2018z. Letter from Ed Jones (Ecology) to Dana Cannon (Aspect Consulting) Re: West of 4th Site, Agreed Order #DE 10402, Site Unit 1, In Situ Metals Immobilization Pilot Study Field Investigation Work Plan. July 3, 2018. [11910]
- Ecology. 2018aa. Letter from Donna Musa (Ecology) to TCP File Re: Initial Investigation, No Further Action Determination, Corvid Construction, 6346 6th Ave S. July 9, 2018. [12397]
- Ecology. 2018ab. Letter from Robert Warren (Ecology) to Robert Code (Fox Avenue Building) Re: Final Determination of Liability for Release of Hazardous Substances at the Following Contaminated Site: Whitehead Tyee, 730 S Myrtle Street, Seattle WA. July 10, 2018. [11305]
- Ecology. 2018ac. Letter from Robert Warren (Ecology) to Howard and Beth Giske (Whitehead Company) Re: Final Determination of Liability for Release of Hazardous Substances at the Following Contaminated Site: Whitehead Tyee, 730 S Myrtle Street, Seattle WA. July 10, 2018. [11306]

- Ecology. 2018ad. Letter from Robert Warren (Ecology) to Bradley Graham (Robertson-Ceco II Corporation and RCH Newco II) Re: Final Determination of Liability for Release of Hazardous Substances at the Following Contaminated Site: Whitehead Tyee, 730 S Myrtle Street, Seattle WA. July 10, 2018. [11307]
- Ecology. 2018ae. Letter from Robert Warren (Ecology) to Jenny Durkan (Mayor of Seattle) Re: Final Determination of Liability for Release of Hazardous Substances at the Following Contaminated Site: Whitehead Tyee, 730 S Myrtle Street, Seattle WA. July 10, 2018. [11308]
- Ecology. 2018af. Letter from Robert Warren (Ecology) to Dean Whitehead (Reliable Transfer and Storage Company) Re: Final Determination of Liability for Release of Hazardous Substances at the Following Contaminated Site: Whitehead Tyee, 730 S Myrtle Street, Seattle WA. July 10, 2018. [11309]
- Ecology. 2018ag. SEPA Checklist GE Aviation. Applicants: General Electric (GE) 220 South Dawson Street Site. Cleanup under the Model Toxics Control Act of dangerous wastes and dangerous constituents at and from the former GE site located at 220 S Dawson Street, Seattle, WA. SEPA Lead Agency: Washington State Department of Ecology, Hazardous Waste and Toxic Reduction, Northwest Regional Office. July 26, 2018. [11286]
- Ecology. 2018ah. State Environmental Policy Act Determination of Nonsignificance, General Electric (GE) 220 South Dawson Street Site. SEPA Lead Agency: Washington State Department of Ecology, Hazardous Waste and Toxic Reduction, Northwest Regional Office. July 26, 2018. [11287]
- Ecology. 2018ai. Initial Investigation Field Report, Georgetown CSO. August 10, 2018. [11501]
- Ecology. 2018aj. Letter from Ed Jones (Ecology) to Dana Cannon (Aspect Consulting) Re: West of 4th Site, Agreed Order #DE 10402, Site Unit 1, In Situ Metals Immobilization Pilot Study Field Investigation Work Plan. August 14, 2018. [11907]
- Ecology. 2018ak. Letter from Ed Jones (Ecology) to William Beck (Stericycle) Re: PSC-Georgetown Facility, Tier 5 Well Installation Work Plan Ecology/EPA ID#: WAD 0081 2909. August 15, 2018. [11903]
- Ecology. 2018al. Letter from Louise Bardy (Ecology) to Matoya Darby (King County) Re: Early Notice Letter: Facility Site #55698119, Georgetown CSO. September 12, 2018. [11900]
- Ecology. 2018am. Letter from Grant Yang (Ecology) to Janet Frentzel (Georgetown Crossroads) Re: Opinion on Proposed Cleanup of the following site: Consolidated Freightways Seattle. October 9, 2018. [11495]
- Ecology. 2018an. Letter from Ed Jones (Ecology) to William Beck (Stericycle) Re: PSC-Georgetown Facility, 1,4-dioxane full-scale work plan Ecology/EPA ID#: WAD 00081 2909. November 1, 2018. [11989]
- Ecology. 2018ao. Letter from Gretchen Onstad (Ecology) to David Pouliot (Boeing) Re: Warning Letter: National Pollutant Discharge Elimination System (NPDES), Industrial Stormwater General Permit (ISGP) Number WAR000150, Boeing Military Flight Center. November 14, 2018. [11507]

- Ecology. 2018ap. Letter from Gretchen Onstad (Ecology) to John Kett (Insurance Auto Auctions) Re: Warning Letter: National Pollutant Discharge Elimination System (NPDES), Industrial Stormwater General Permit (ISGP) Number WAR0008681, Insurance Auto Auctions. November 14, 2018. [11503]
- Ecology. 2018aq. Letter from Gretchen Onstad (Ecology) to David Pouliot (The Boeing Company) Re: Warning Letter: National Pollutant Discharge Elimination System (NPDES), Industrial Stormwater General Permit (ISGP) Number WAR000146, Boeing Developmental Center. November 15, 2018. [11494]
- Ecology. 2018ar. Letter from (Ecology) to Robin Choi (Supervalu) Re: Notice of Termination of Coverage under the Industrial Stormwater General Permit. November 30, 2018. [11510]
- Ecology. 2018as. Washington State Department of Ecology New Release: South Park Marina Cleanup Moves Forward. December 17, 2018. [11905]
- Ecology. 2018at. Letter from Dean Yasuda (Ecology) to Tom Antonoff (General Electric Company) Re: Ecology Contingent Approval Letter for the Draft Indoor Air Sampling and Analysis Plan (SAP) for the McKinstry Building located at 5005 3rd Ave. South, Seattle, Washington, Dated December 18, 2018. December 20, 2018. [11899]
- Ecology. 2018au. Letter from Dean Yasuda (Ecology) to Tom Antonoff (General Electric Company) Re: Revised Ecology Contingent Approval Letter for the Draft Indoor Air Sampling and Analysis Plan (SAP) for the McKinstry Building located at 5005 3rd Ave. South, Seattle, Washington, Dated December 21, 2018. December 24, 2018. [11285]
- Ecology. 2018av. Fact Sheet, South Park Marina Cleanup Site. Washington State Department of Ecology, Toxics Cleanup Program. Publication Number 18-09-157. December 2018. [11303]
- Ecology. 2018aw. Public Participation Plan, South Park Marina, 8694 Dallas Avenue S, Seattle WA. Publication Number 18-09-160. December 2018. [11304]
- Ecology. 2019a. Lower Duwamish Waterway Source Control Status Report, 2017. Publication No. 19-09-138. Toxics Cleanup Program, Washington State Department of Ecology and Leidos. June 2018. [12262].
- Ecology. 2019b. Sediment Cleanup User's Manual (SCUM): Guidance for Implementing the Cleanup Provisions of the Sediment Management Standards, Chapter 173-204 WAC. Toxics Cleanup Program. Publication No. 12-09-057. Revised December 2019.
- EHS-International (EHSI). 2015. Federal Center South Additional Site Characterization, VCP Site #NW2177. Prepared for US General Services Administration. April 2015, Revised August 2015. [12389]
- EPA (U.S. Environmental Protection Agency). 2013. Proposed Plan, Lower Duwamish Waterway Superfund Site. February 28, 2013. [02415]
- EPA. 2014. Record of Decision, Lower Duwamish Waterway Superfund Site. November 2014. [12119]
- EPA. 2015. Memorandum from Alison Hiltner (EPA) to the Lower Duwamish Waterway EPA Site File, Subject: Lower Duwamish Waterway Record of Decision Table and Figure Revisions. August 26, 2015. [11095]

- EPA. 2018a. Letter from Ravi Sanga (EPA) to Jason Munn (Jorgensen Forge) and Will Ernst (Boeing) RE: US EPA Approval – Supplemental Removal Action Completion Report Jorgensen Forge Outfall Site, Seattle, Washington. May 9, 2018. [11524]
- EPA. 2018b. Order on Consent, Fourth Amendment in the Matter of Lower Duwamish Waterway, Seattle WA. United States Environmental Protection Agency, Region 10. CERCLA Docket No. 10-2001-0055. July 9, 2018. [11299]
- EPA. 2018c. Fact Sheet: Lower Duwamish Waterway Superfund Site, State of the Cleanup. August 2018. [11300]
- EPA and Ecology. 2002. Lower Duwamish Waterway Site, Memorandum of Understanding between the U.S. Environmental Protection Agency and the Washington Department of Ecology. April 2002. [00008]
- EPA and Ecology. 2004. Lower Duwamish Waterway, Site Memorandum of Understanding between the U.S. Environmental Protection Agency and the Washington Department of Ecology. Updated April 2004. [00009]
- EPA and Ecology. 2014. Lower Duwamish Waterway Site, Memorandum of Agreement between the U.S. Environmental Protection Agency and the Washington State Department of Ecology. November 20, 2014. [12132]
- Farallon Consulting. 2018a. Draft Capital Industries Plant 4 Field Implementation Work Plan. Prepared by Farallon for the West of 4th Avenue Group. March 6, 2018. [11911]
- Farallon Consulting. 2018b. Technical Memorandum from Kyle Korbines (Farallon) to Jerome Cruz (Ecology) Re: Landfill CAP Annual Inspection Progress Report – 2017, SPPD Property South Park Landfill Site, Seattle, Washington. April 17, 2018. [11913]
- Farallon Consulting. 2018c. Technical Memorandum from Kyle Korbines (Farallon) to Jerome Cruz (Ecology) Re: Landfill Gas Collection and Control System, Interim Action Progress Report – 2017, SPPD Property South Park Landfill Site, Seattle, Washington. April 17, 2018. [11914]
- Farallon Consulting. 2018d. Revised Capital Industries Plant 4 Stage 1 Field Implementation Work Plan. Prepared by Farallon for the West of 4th Avenue Group. May 10, 2018. [11912]
- Farallon Consulting. 2018e. Cleanup Action Closure Report, 6050 East Marginal Way South, Seattle, Washington. Prepared for Prologis, Inc. July 25, 2018. [11513]
- Floyd|Snider. 2018a. Removal Action Completion Report, Jorgensen Forge Outfall Site. Prepared for Jorgensen Forge Corporation and The Boeing Company. March 2018. [11437]
- Floyd|Snider. 2018b. Fox Avenue Site, 2018 Annual Report. Prepared for Fox Avenue Building LLC. April 2018. [11915]
- GHD. 2018. Soil Vapor Investigation Work Plan, Phillips 66/Former Tidewater Site, 2800 Martin Luther King Jr Way South Seattle, WA. September 24, 2018. [11916]

- G-Logics. 2018a. Progress Report, November 15, 2017 to January 15, 2018. Boeing Field Chevron, Agreed Order DE-10947, 10805 East Marginal Way South, Tukwila, WA. January 16, 2018. [11289]
- G-Logics. 2018b. Progress Report, January 1 to January 31, 2018. Boeing Field Chevron, Agreed Order DE-10947, 10805 East Marginal Way South, Tukwila, WA. February 15, 2018. [11290]
- G-Logics. 2018c. Progress Report, February 1 to February 28, 2018. Boeing Field Chevron, Agreed Order DE-10947, 10805 East Marginal Way South, Tukwila, WA. March 15, 2018. [11291]
- G-Logics. 2018d. Progress Report, March 1 to March 31, 2018. Boeing Field Chevron, Agreed Order DE-10947, 10805 East Marginal Way South, Tukwila, WA. April 16, 2018. [11292]
- G-Logics. 2018e. Progress Report, May 1 to May 31, 2018. Boeing Field Chevron, Agreed Order DE-10947, 10805 East Marginal Way South, Tukwila, WA. June 18, 2018. [11515]
- G-Logics. 2018f. Progress Report, September 1 to September 30, 2018. Boeing Field Chevron, Agreed Order DE-10947, 10805 East Marginal Way South, Tukwila, WA. October 15, 2018. [11518]
- General Electric. 2018. Letter from Tom Antonoff (General Electric) to Dean Yasuda (Ecology) Re: Addendum to the In-Situ Chemical Oxidation Pilot Study Completion Report, General Electric South Dawson Street Site. March 23, 2018. [11996]
- Integral. 2018a. Waterway User Survey and Assessment of In-Water Structures- Data Report. Prepared by Integral, Moffatt & Nichol, and Windward, for the USEPA, Region 10. July 2, 2018. [11310]
- Integral. 2018b. Terminal 117 Cleanup, Final Joint Long-Term Monitoring and Maintenance Plan, Lower Duwamish Waterway Superfund Site, Terminal 117 Early Action Area. Prepared for the Port of Seattle and the City of Seattle. September 2018. [11520]
- ISOTEC. 2018. Letter from (ISOTEC) to Mr. Hsieh (Dalton, Olmsted & Fuglevand) Re: Bench Scale Treatability Study, Stericycle Georgetown Site Seattle, WA. November 26, 2018. [11997]
- Jorgensen Forge. 2018. Press Release: Jorgensen Forge Closing Operations in 2018 at Tukwila Facility. April 18, 2018. [11521]
- Kane Environmental (Kane). 2019. Technical Memorandum from Eric Nassau, Kane Environmental, to Bob Bliss, U.S. General Services Administration, Re: Groundwater Monitoring Well Sampling and Analysis. May 30, 2019. [12388]
- Kennedy/Jenks. 2018. Draft Supplemental Investigation Report, Bob's Texaco Station. May 21, 2018. [12392]
- King County. 2015. Fact Sheet: Discharging Industrial Wastewater to the King County Sewer System, King County Industrial Waste Program. January 2015. [12182]
- King County. 2016. Lower Duwamish Waterway Source Control Implementation Plan, 2014-2018. Revised Draft. Prepared June 2014, updated January 2016. [11543]

- King County. 2018a. Green River PCB Equipment Blank Study Data Report. Prepared by Carly Greyell and Debra Williston, King County Water and Land Resources Division, Science and Technical Support Section. February 2018. [11314]
- King County. 2018b. Lower Duwamish Waterway Source Control: Green River Watershed Surface Water Surface Water Data Report – Revised. Prepared by Carly Greyell, Debra Williston, and Deb Lester. Water and Land Resources Division. March 2014, Revised February 2018. [11315]
- King County. 2018c. Lower Duwamish Waterway Source Control: Upper and Middle Green River Surface Water Data Report – Revised. Prepared by Carly Greyell, Richard Jack, and Debra Williston, Water and Land Resources Division. January 2015, Revised February 2018. [11318]
- King County. 2019. King County Lower Duwamish Waterway Source Control Annual Report Year 2018. Prepared by Department of Natural Resources and Parks, Department of Executive Services, Department of Local Services, and Department of Health. Prepared for the Washington State Department of Ecology. November 2019. [11925]
- King County Superior Court. 2018a. Amendment No. 3 to Prospective Purchaser Consent Decree No. 16-2-29584-3 SEA between the Washington State Department of Ecology and Mount Baker Housing Association and Mount Baker Village. Signed July 18, 2018. [11919]
- King County Superior Court. 2018b. Prospective Purchaser Consent Decree No. 18-2-14708-5 SEA between the Washington State Department of Ecology and Grand Street Commons, signed May 31, 2018. Filed September 6, 2018. [11917]
- King County Superior Court. 2018c. Prospective Purchaser Consent Decree No. 18-2-14714-0 between the Washington State Department of Ecology and Mount Baker Housing Association, signed May 31, 2018. Filed September 13, 2018. [11918]
- Landau. 2018a. Technical Memorandum from Kenneth Reid and Clinton Jacob (Landau Associates), to Byung Maeng (Ecology) Re: November 2017 Semiannual Groundwater Monitoring Report Boeing Development Center, Tukwila, Washington. January 26, 2018. [11922]
- Landau. 2018b. 2017 Annual Report SWMU-17 Remedial Action Enhanced Anaerobic Bioremediation Boeing Developmental Center Tukwila, Washington. Prepared by Landau for The Boeing Company. March 27, 2018. [11923]
- Landau. 2018c. 2017 Annual Report AOC-05 Remedial Action Enhanced Anaerobic Biodegradation of Gasoline-Range Petroleum Hydrocarbons, Boeing Developmental Center, Tukwila, Washington. Prepared by Landau for The Boeing Company. June 15, 2018. [11920]
- Landau. 2018d. Data Report Phase 3 Groundwater Investigation NBF/GTSP Remedial Investigation. July 11, 2018. [11312]
- Landau. 2018e. Technical Memorandum from Kenneth Reid and Clinton Jacob (Landau Associates), to Byung Maeng (Ecology) Re: May 2018 Semiannual Groundwater Monitoring Report Boeing Development Center, Tukwila, Washington. July 16, 2018. [11921]

- Landau. 2019. Interim Action Work Plan, Developmental Center, Tukwila, Washington. Prepared for The Boeing Company. March 22, 2019. [11458]
- Leidos. 2018. Lower Duwamish Waterway, Inventory of Lower Duwamish Waterway Slivers. Prepared for the Washington State Department of Ecology. May 2018. [12004]
- Partner (Partner Engineering and Science). 2017. Phase I Environmental Site Assessment Report, KL Leasing Company LLC, 5300-5304 1st Avenue South. Prepared for JP Morgan Chase Bank, N.A. January 2017. [12391]
- Partner. 2018. Phase I Environmental Site Assessment Report, Go-4 Nudge Production Rentals, 747 South Monroe Street, Seattle WA. Prepared for First Citizens Bank. May 21, 2018. [11924]
- PCHB (Pollution Control Hearings Board). 2018. PCHB No. 17-025. Notice of Voluntary Dismissal, The Boeing Company v. State of Washington, Department of Ecology. January 11, 2018. [11254]
- PGG (Pacific Groundwater Group). 2019. Memo from Janet Knox (PGG) to Chris Maurer (Ecology) Re: Scougal Rubber Remedial Action Update (VCP Site NW 1707). August 12, 2019. [11994]
- Peterson, Piper. 2018. Email from Piper Peterson (EPA) to Roy Kuroiwa (Port of Seattle) and Allison Crowley (City of Seattle) Subject: Conditional approval of draft Final T-117 LTMMP. July 3, 2018 [11522]
- Pioneer. 2018. Tier 5 Well Installation Work Plan, Stericycle Georgetown Site. Prepared by Pioneer for Stericycle. July 2018. [11998]
- Seattle. 2016. Seattle's Source Control Plan for the Lower Duwamish Waterway (2015-2020). May 2016. [12271]
- SIM (Seattle Iron & Metals). 2018. Annual Report, Industrial Stormwater General Permit, Calendar Year 2017. SIM Truck/Trailer Parking & Equipment Storage, WAR125002. May 14, 2018. [11523]
- SPU (Seattle Public Utilities). 2019. 90b – Status of Implementation Actions Taken Pursuant to S4F.3.D for Discharges of City of Seattle Municipal Separate Stormwater System (MS4) to Lower Duwamish Waterway. 2018 Annual Report. March 31, 2019. [11926]
- Supervalu. 2018. Notice of Termination Form, Industrial Stormwater General Permit. Permit # WAR-002040. Unified Grocers, 3301 Norfolk Street, Seattle WA. September 24, 2018. [11454]
- USGS (United States Geological Survey). 2018a. Chemical Concentrations in Water and Suspended Sediment, Green River to Lower Duwamish Waterway near Seattle, Washington, 2016-2017. U.S. Geological Survey Data Series 1073. 2018. [11274]
- USGS. 2018b. Suspended-Sediment Transport from the Green-Duwamish River to the Lower Duwamish Waterway, Seattle Washington, 2013-17. Prepared in cooperation with the Washington State Department of Ecology. U.S. Geological Survey Open-File Report 2018-1029. 2018. [11301]

- Windward (Windward Environmental). 2010. Lower Duwamish Waterway Remedial Investigation Report. Final. Prepared for the Lower Duwamish Waterway Group. July 9, 2010. [0011]
- Windward. 2017a. Baseline Fish and Crab Tissues Collection and Chemical Analyses- Quality Assurance Project Plan. Prepared for the Lower Duwamish Waterway Group for submittal to the U.S. Environmental Protection Agency. July 19, 2017. [11450]
- Windward. 2017b. Baseline Surface Water Collection and Chemical Analyses – Quality Assurance Project Plan. Prepared by Windward Environmental for Lower Duwamish Waterway Group. August 2, 2017. [11443]
- Windward. 2017c. Pre-Design Studies Work Plan. Prepared for the Lower Duwamish Waterway Group for submittal to the U.S. Environmental Protection Agency. August 28, 2017. [11097]
- Windward. 2018a. Long-Term Monitoring Data Report for the Slip 4 Early Action Area: Year 5 (2017). Prepared by Windward Environmental for City of Seattle. February 9, 2018. [11255]
- Windward. 2018b. Lower Duwamish Waterway Baseline Surface Water Collection and Chemical Analyses, Quality Assurance Project Plan, Addendum. Prepared by Windward for the Lower Duwamish Waterway Group. March 2, 2018. [11295]
- Windward. 2018c. Lower Duwamish Waterway Baseline Seep Collection and Chemical Analyses, Quality Assurance Project Plan. Prepared by Windward for the Lower Duwamish Waterway Group. March 9, 2018. [11293]
- Windward. 2018d. Lower Duwamish Waterway Clam Collection and Chemical Analyses, Quality Assurance Project Plan. Prepared by Windward for the Lower Duwamish Waterway Group. April 2, 2018. [11296]
- Windward. 2018e. Lower Duwamish Waterway Fish and Crab Data Report. Prepared by Windward for the Lower Duwamish Waterway Group. May 22, 2018. [11297]
- Windward. 2018f. Lower Duwamish Waterway Baseline Surface Sediment Collection and Chemical Analyses, Quality Assurance Project Plan. Prepared by Windward for the Lower Duwamish Waterway Group. May 31, 2018. [11294]
- Windward. 2018g. Lower Duwamish Waterway Surface Data Report (Part 1 of 2). Prepared by Windward for the Lower Duwamish Waterway Group. June 4, 2018. Draft. [11298]
- Windward. 2018h. Technical Memorandum: Compilation of Existing Data. Prepared by Windward in association with Integral for the Lower Duwamish Waterway Group. November 19, 2018. [11526]
- Windward. 2018i. Lower Duwamish Waterway Baseline Seep Data Report. Prepared by Windward for the Lower Duwamish Waterway Group. December 7, 2018. Draft. [11442]
- Windward. 2019. Lower Duwamish Waterway Surface Sediment Data Report. Prepared by Windward for the Lower Duwamish Waterway Group. February 8, 2019. [12109]
- Wood (Wood Environment & Infrastructure Solutions). 2018a. 2017 Summary of Investigations and Remedial Actions, Former Kelly-Moore Manufacturing Facility, 5400-5580 Airport

Way South. Prepared by Wood Environment & Infrastructure Solutions, Inc. for Kelly-Moore Paint Company, Inc. June 5, 2018. [11491]

Wood. 2018b. Year 1 Data Package, Enhanced Natural Recovery/Activated Carbon Pilot Study, Lower Duwamish Waterway. Prepared by Wood Environment & Infrastructure Solutions, Dalton, Olmsted & Fuglevand, Ramboll, Floyd|Snider, Geosyntec Consultants for the Lower Duwamish Waterway Group. September 24, 2018. [11527]

Wood. 2019. 2018 Summary of Investigations and Remedial Actions, Former Kelly-Moore Manufacturing Facility, 5400-5580 Airport Way South. October 10, 2019. [11927]

Appendix A: Source Control Area Maps

List of Maps

Figure A-1. Lower Duwamish Waterway Source Control Areas

Upper Reach:

Figure A-2. RM 4.9 East (EAA-7: Norfolk CSO/Storm Drain) Source Control Area

Figure A-3. RM 4.9 East (EAA07: Norfolk CSO/Storm Drain) Norfolk Basin

Figure A-4. RM 4.3-4.9 East (Boeing Developmental Center) Source Control Area

Figure A-5. RM 3.9-4.3 East (Slip 6) Source Control Area

Figure A-6. RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA) Source Control Area

Figure A-7. RM 2.8-3.7 East (EAA-4: Boeing Plant 2 to Jorgensen Forge) Source Control Area

Figure A-8. RM 4.2-5.8 West (Restoration Areas) Source Control Area

Figure A-9. RM 3.8-4.2 West (Sea King Industrial Park) Source Control Area

Figure A-10. RM 3.4-3.8 West (EAA-5: Terminal 117) Source Control Area

Middle Reach:

Figure A-11. RM 2.8 East (EAA-3: Slip 4) Source Control Area

Figure A-12. RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) Source Control Area

Figure A-13. RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) Source Control Area

Figure A-14. RM 1.7-2.0 East (Slip 2 to Slip 3) Source Control Area

Figure A-15. RM 1.7-2.0 East (Slip 2 to Slip 3) Michigan Street CSO Basin

Figure A-16. RM 2.2-3.4 West (Riverside Drive) Source Control Area

Figure A-17. RM 2.1-2.2 West (EAA-2: Trotsky Inlet) Source Control Area

Figure A-18. RM 2.1 West (1st Avenue South Storm Drain) Source Control Area

Figure A-19. RM 1.6-2.1 West (Terminal 115) Source Control Area

Lower Reach:

Figure A-20. RM 1.2-1.7 East (Saint Gobain to Glacier Northwest) Source Control Area

Figure A-21. RM 1.0-1.2 East (King County Lease Parcels) Source Control Area

Figure A-22. RM 1.0-1.2 East (King County Lease Parcels) Brandon CSO Basin

Figure A-23. RM 0.9-1.0 East (Slip 1) Source Control Area

Figure A-24. RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) Source Control Area

Figure A-25. RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) Diagonal Avenue S Storm Drain Basin

Figure A-26. RM 0.0-0.1 East (Spokane Street to Ash Grove Cement) Source Control Area

Figure A-27. RM 1.3-1.6 West (Glacier Bay) Source Control Area

Figure A-28. RM 1.0-1.3 West (Kellogg Island to Lafarge Cement) Source Control Area

Figure A-29. RM 0.0-1.0 West (Spokane Street to Kellogg Island) Source Control Area

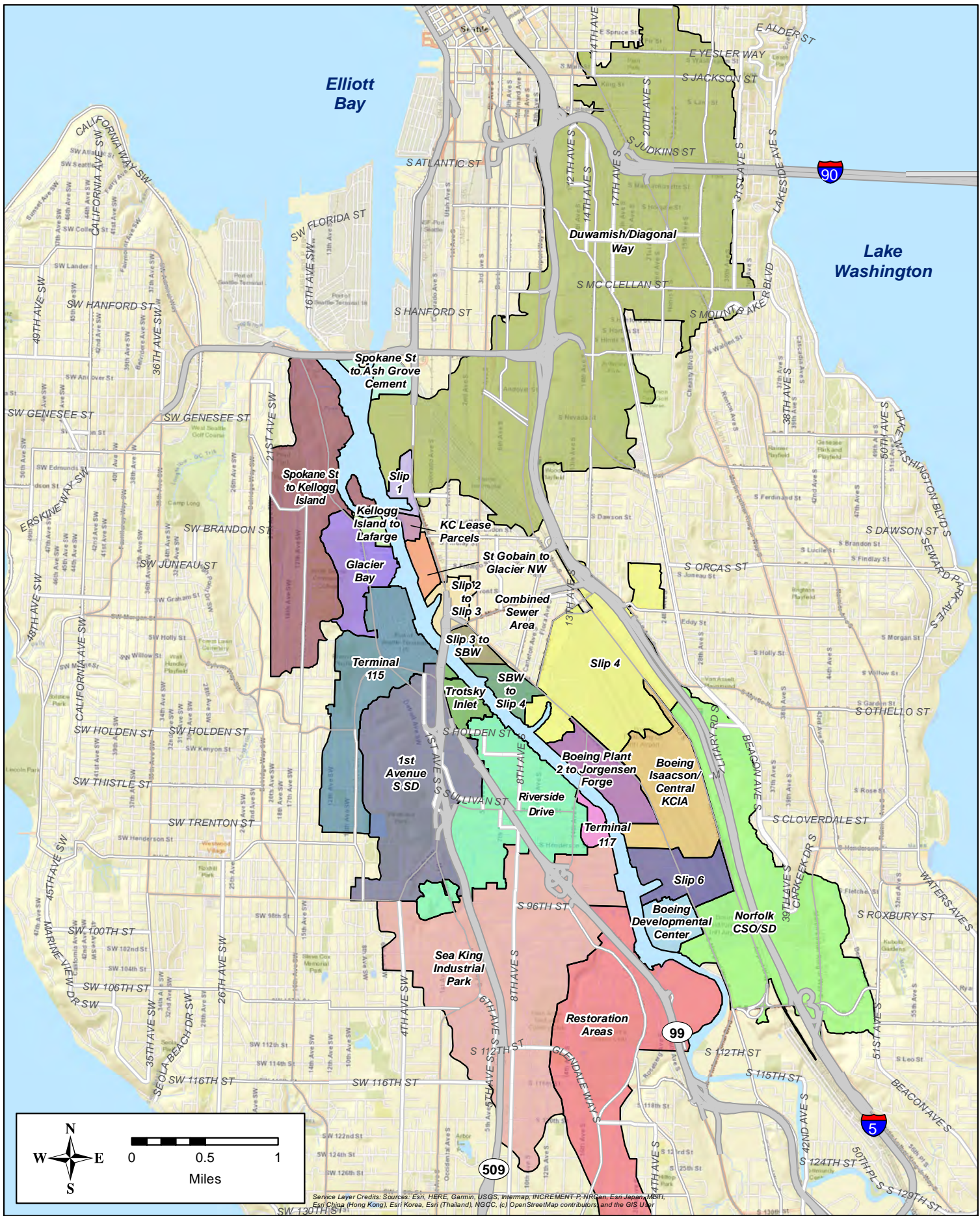
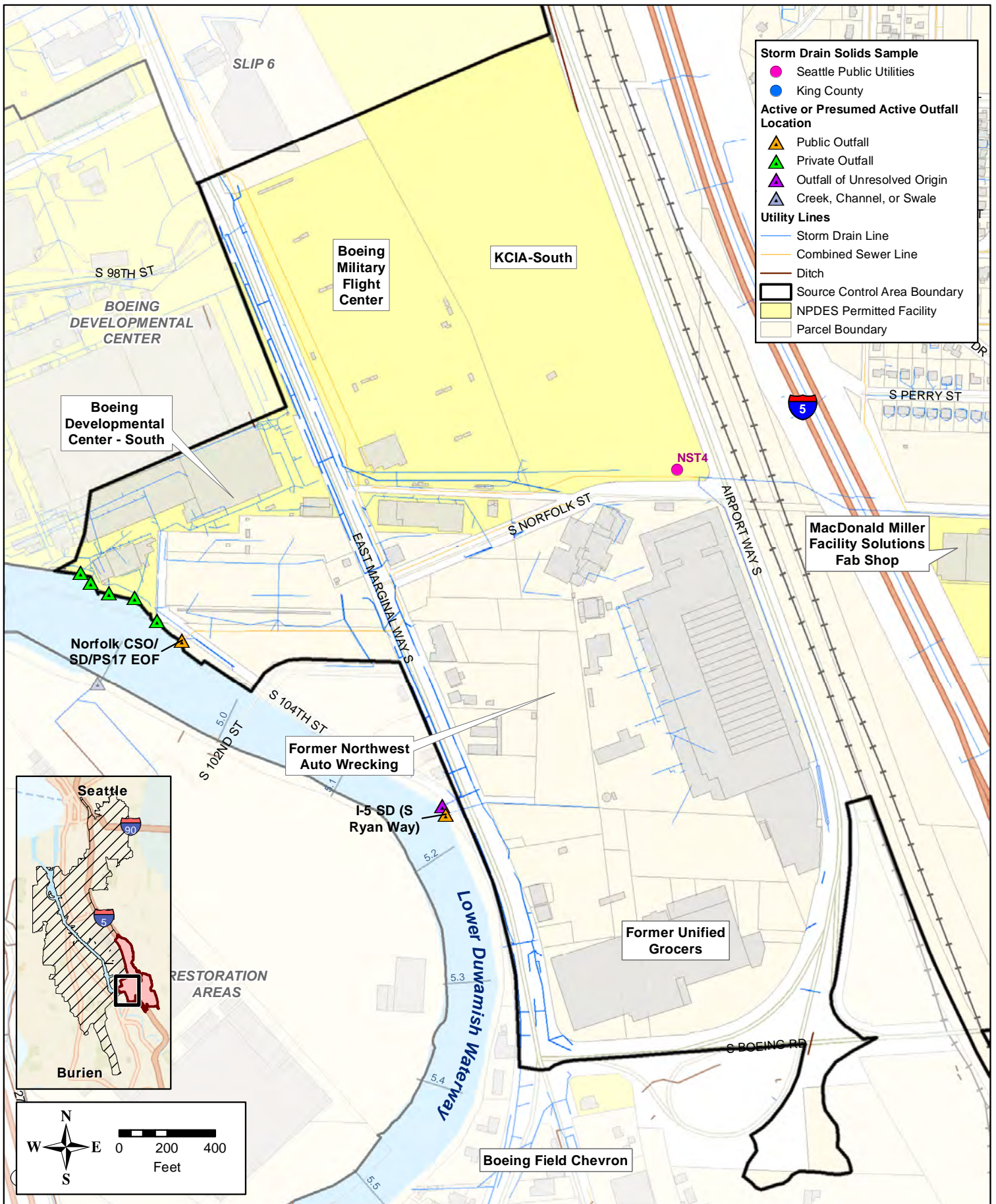
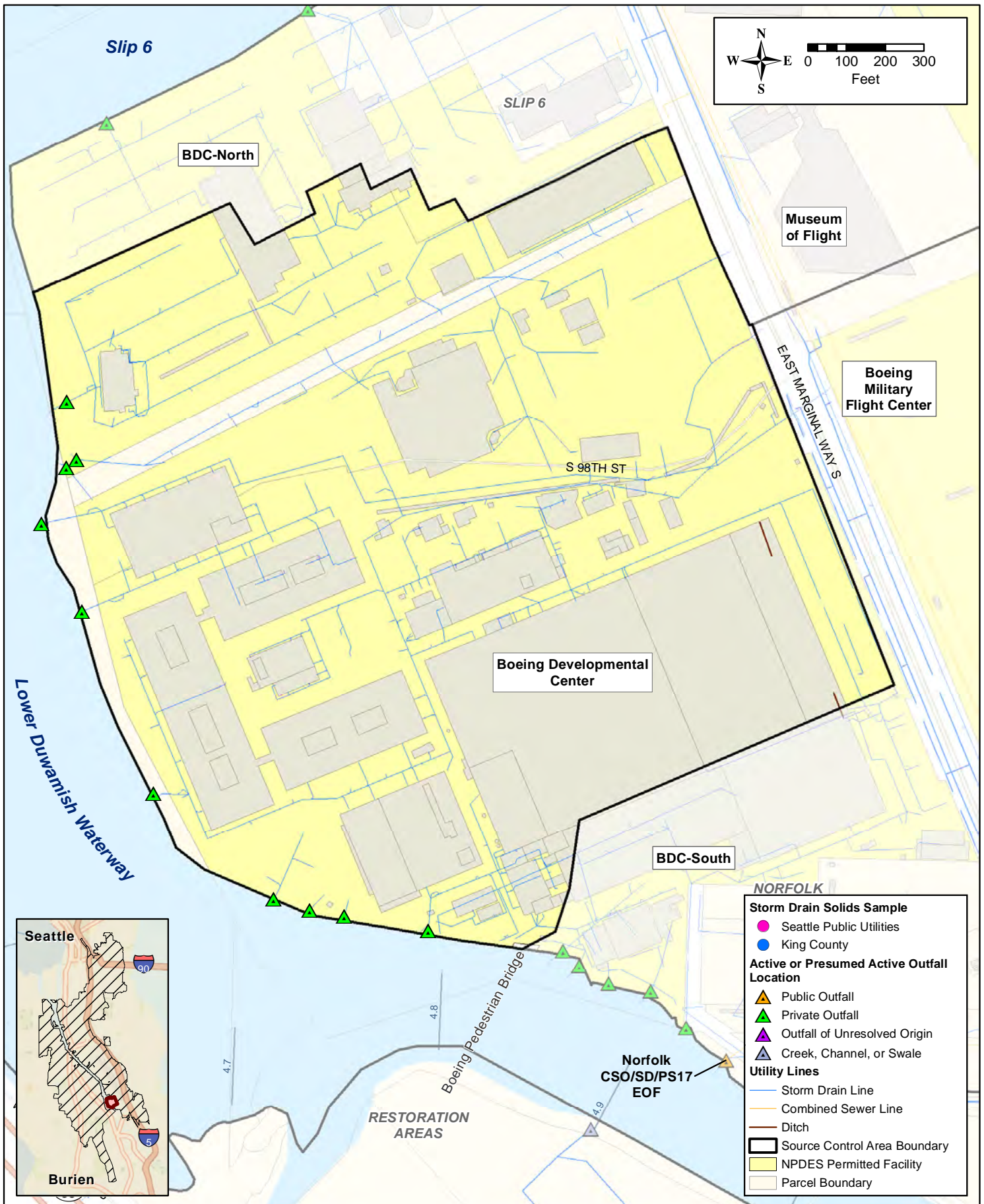


Figure A-1. Lower Duwamish Waterway Source Control Areas



**Figure A-2. RM 4.9 East
(EEA-7: Norfolk CSO/Storm Drain)
Source Control Area**





**Figure A-4. RM 4.3-4.9 East
(Boeing Developmental Center)
Source Control Area**



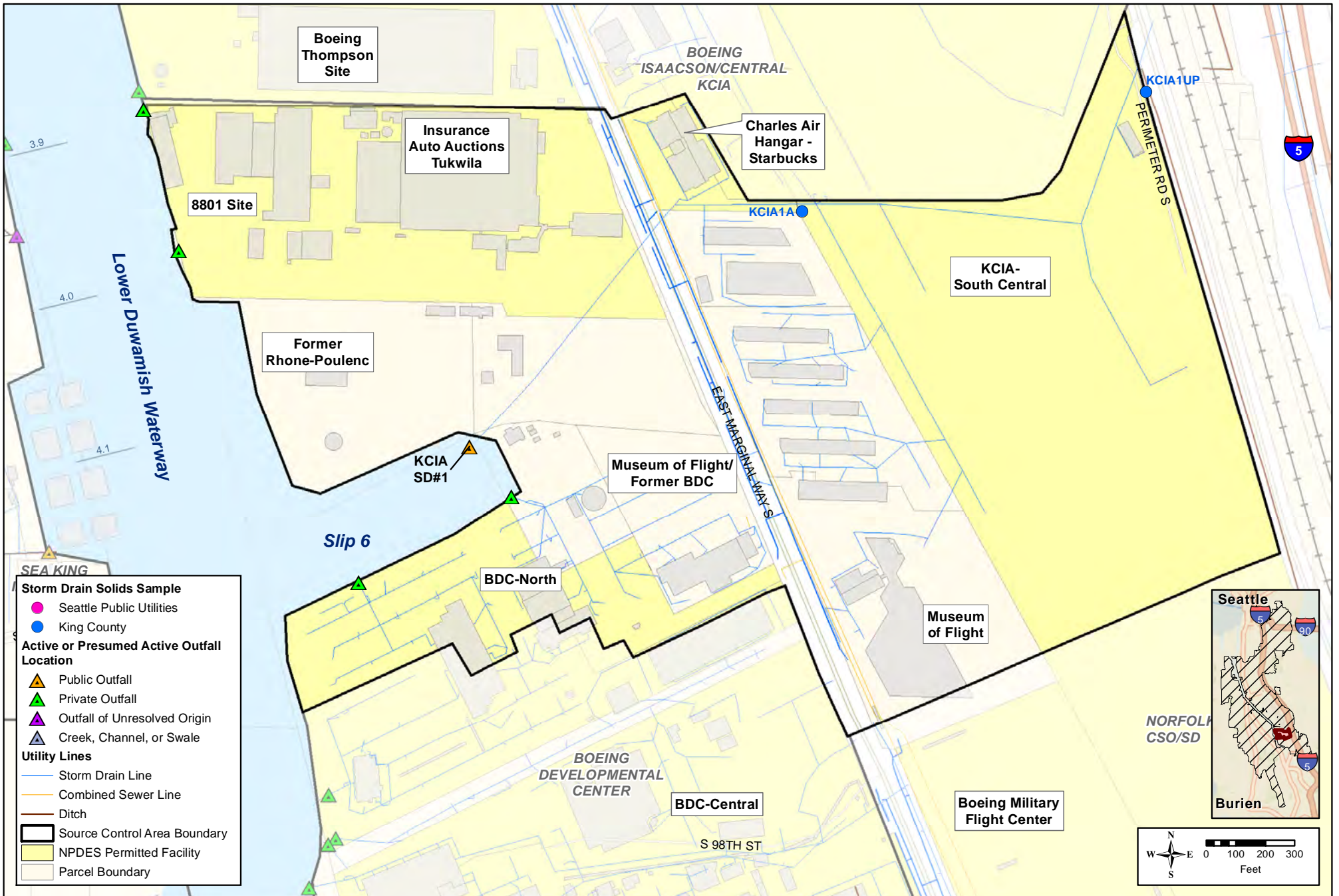
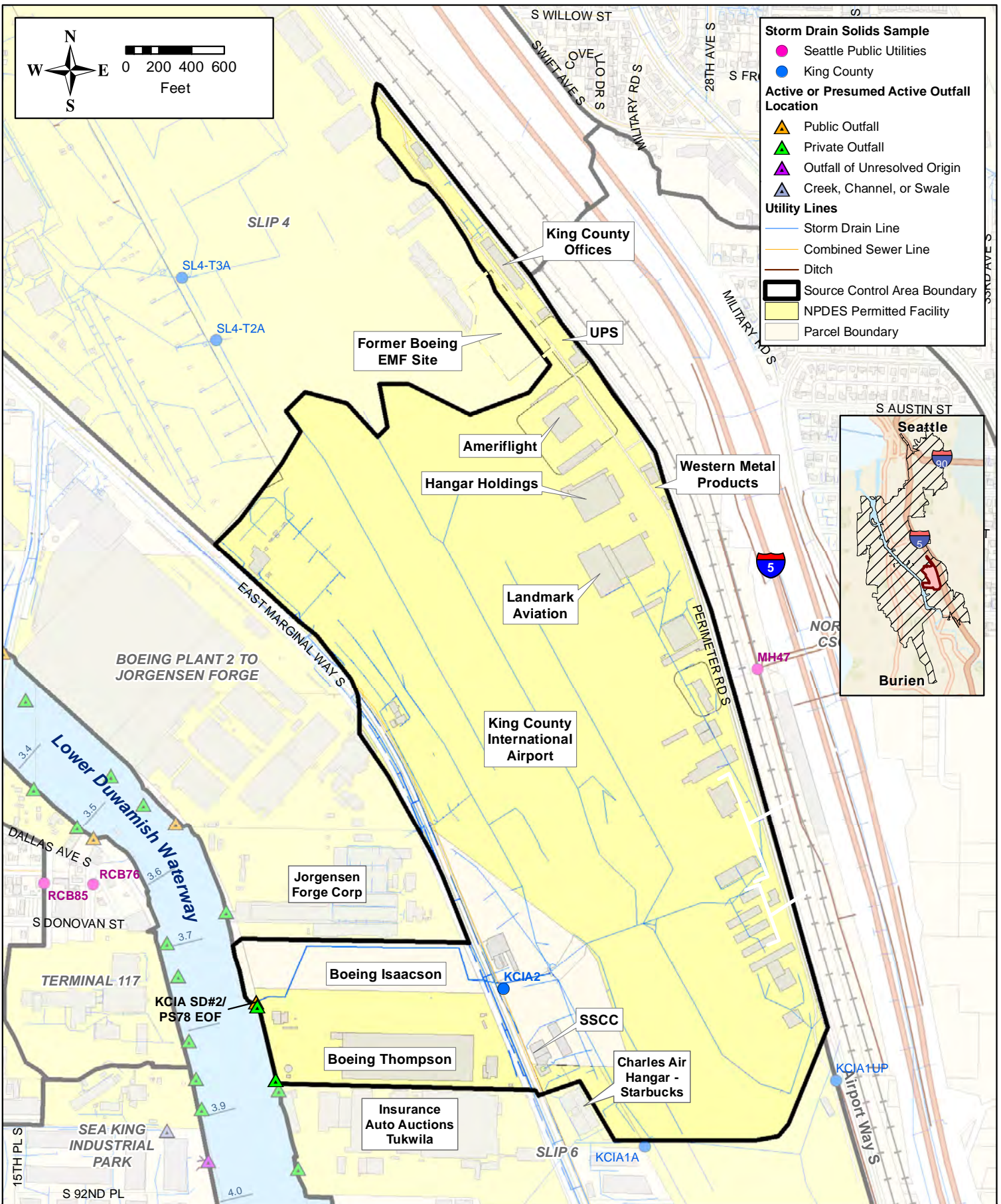


Figure A-5. RM 3.9-4.3 East (Slip 6) Source Control Area



**Figure A-6. RM 3.7-3.9 East
(EAA-6: Boeing Isaacson/Central KCIA)
Source Control Area**



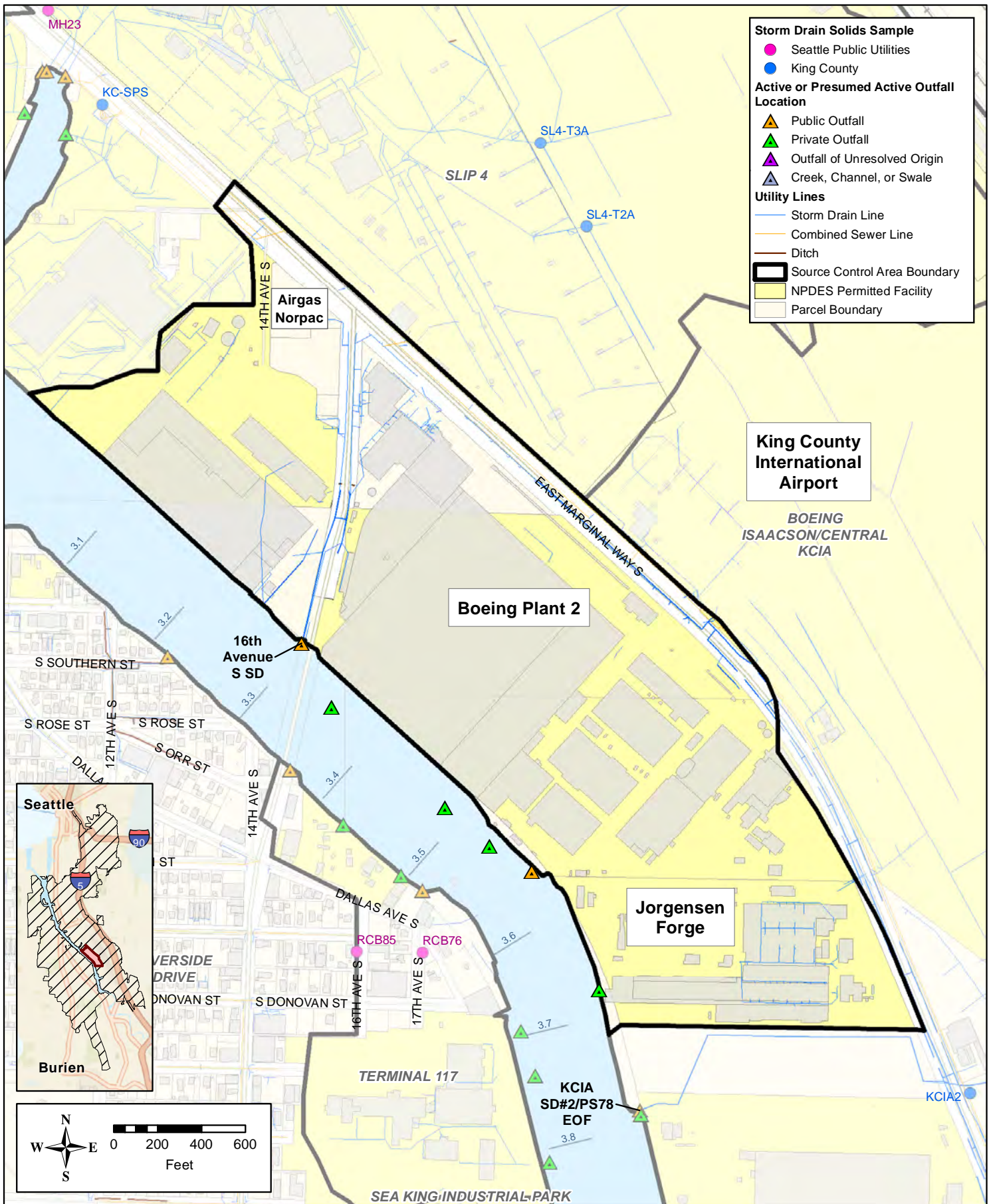
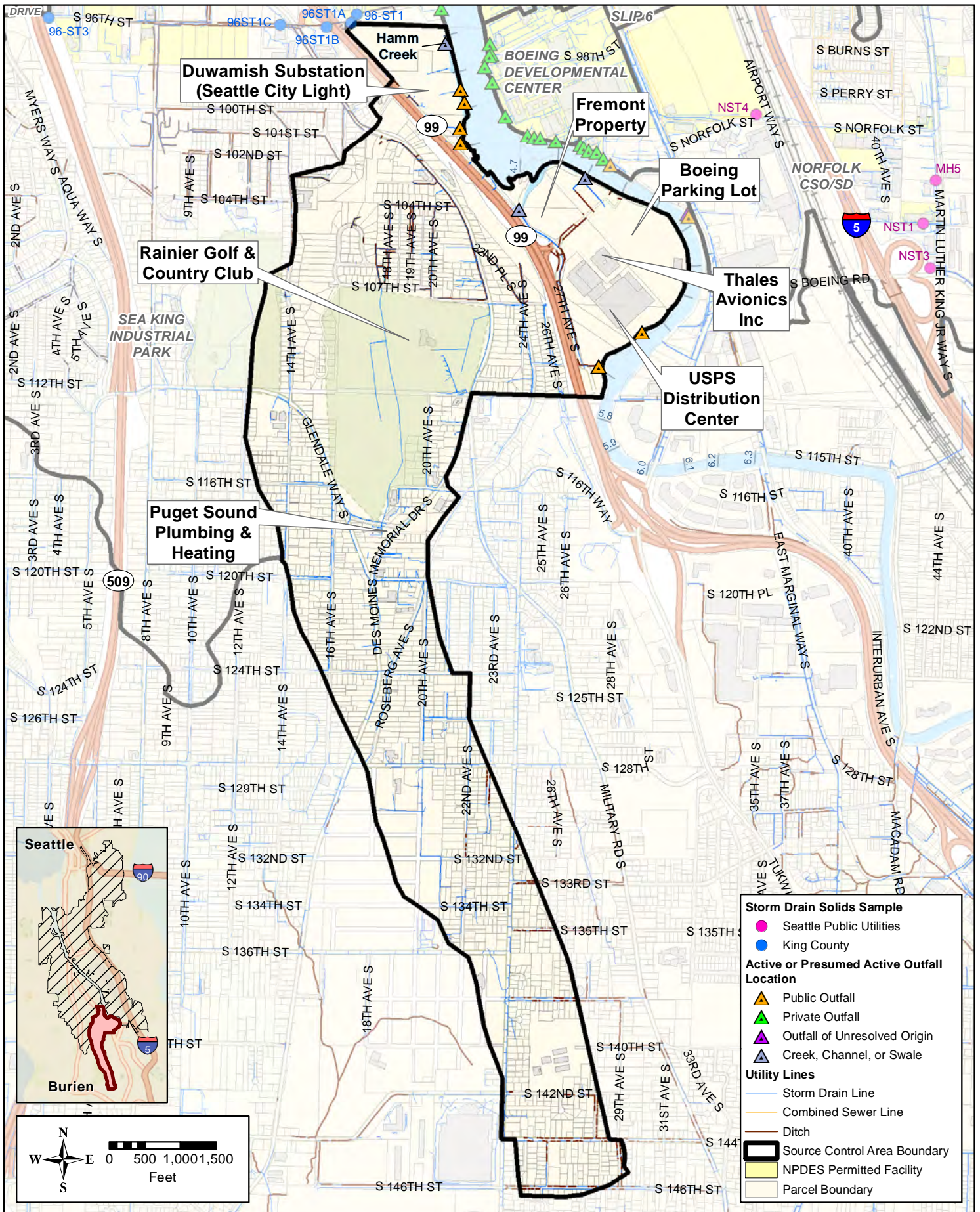


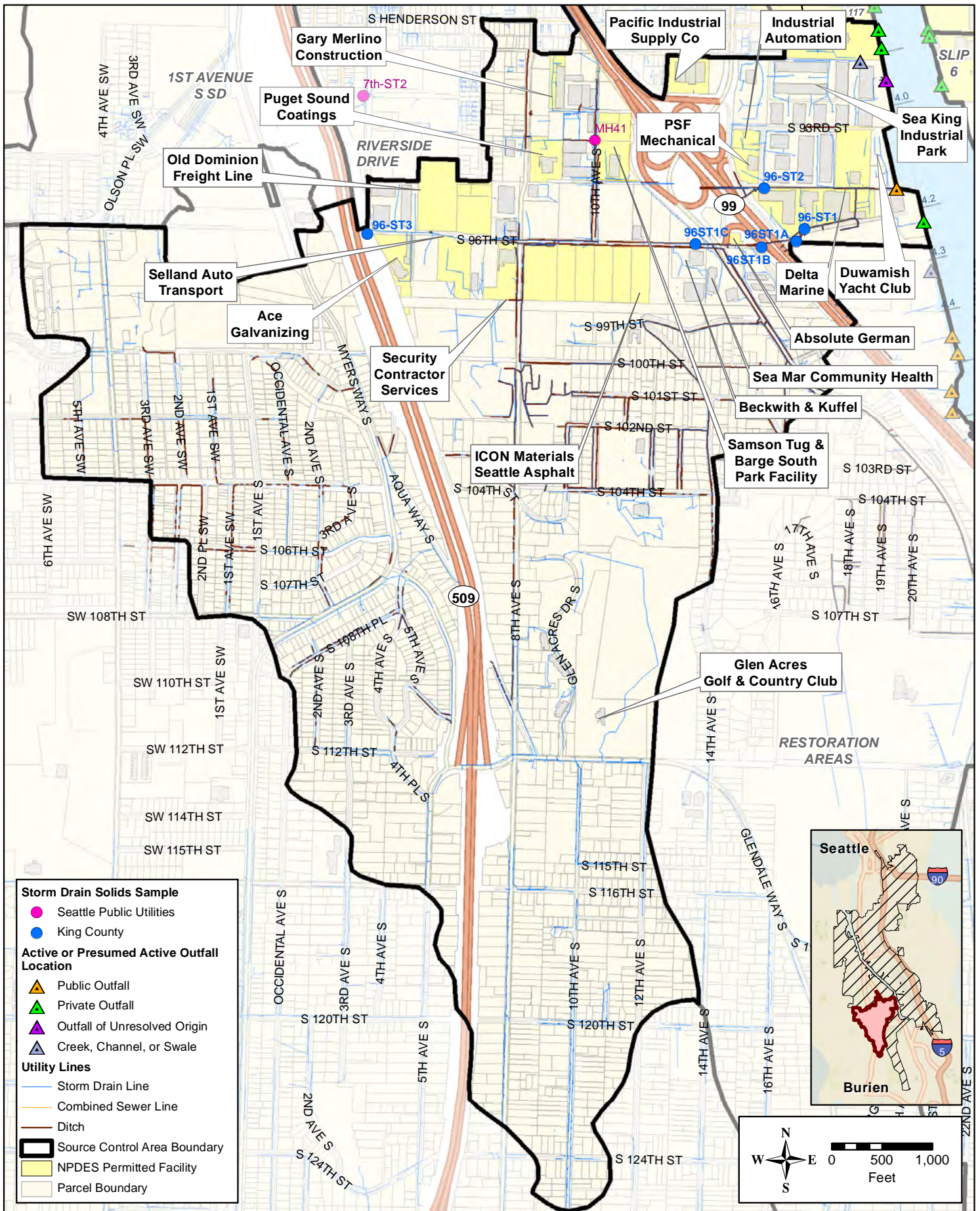
Figure A-7. RM 2.8-3.7 East
(EAA-4: Boeing Plant 2 to Jorgensen Forge)
Source Control Area





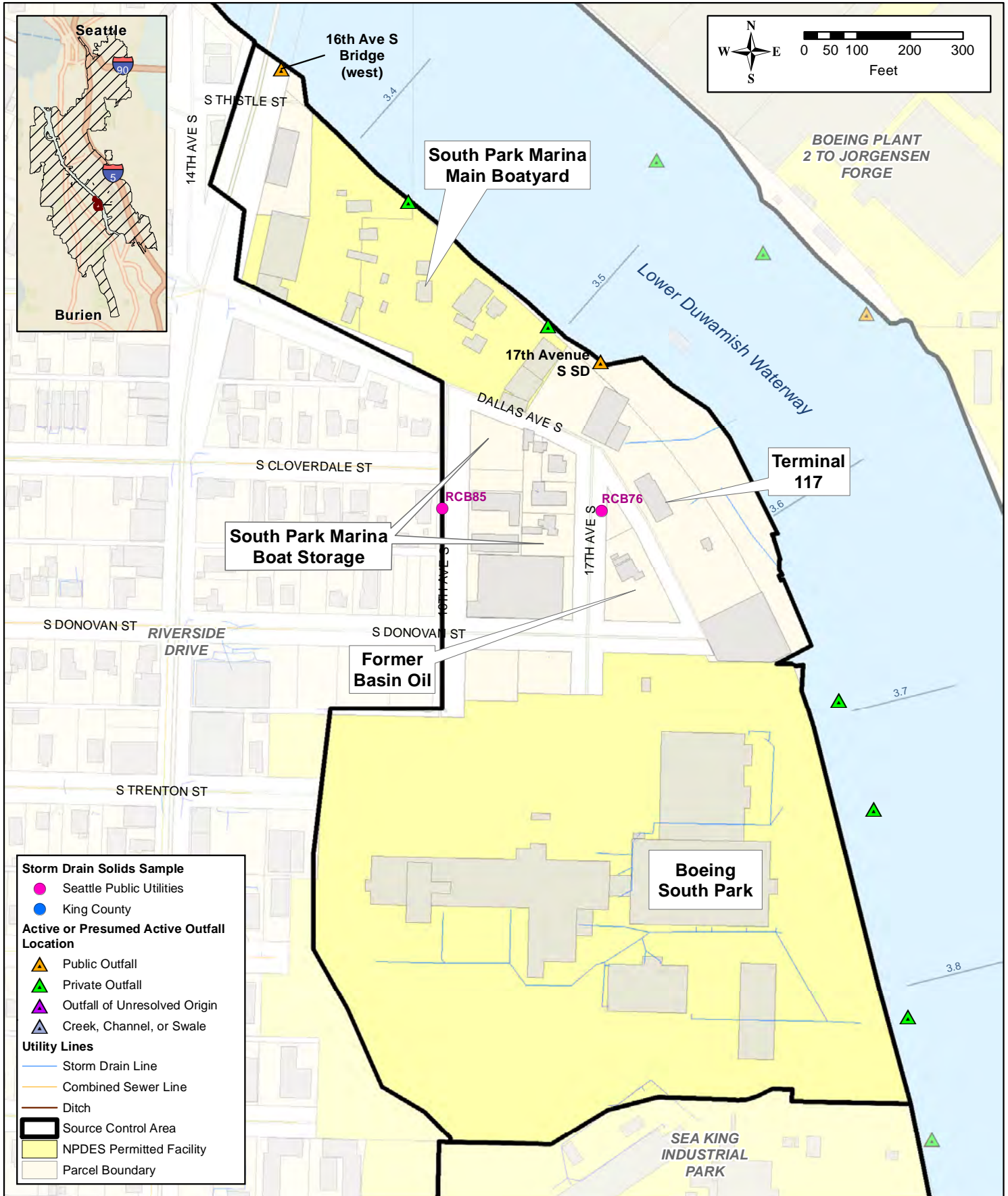
**Figure A-8. RM 4.2-5.8 West
(Restoration Areas)
Source Control Area**



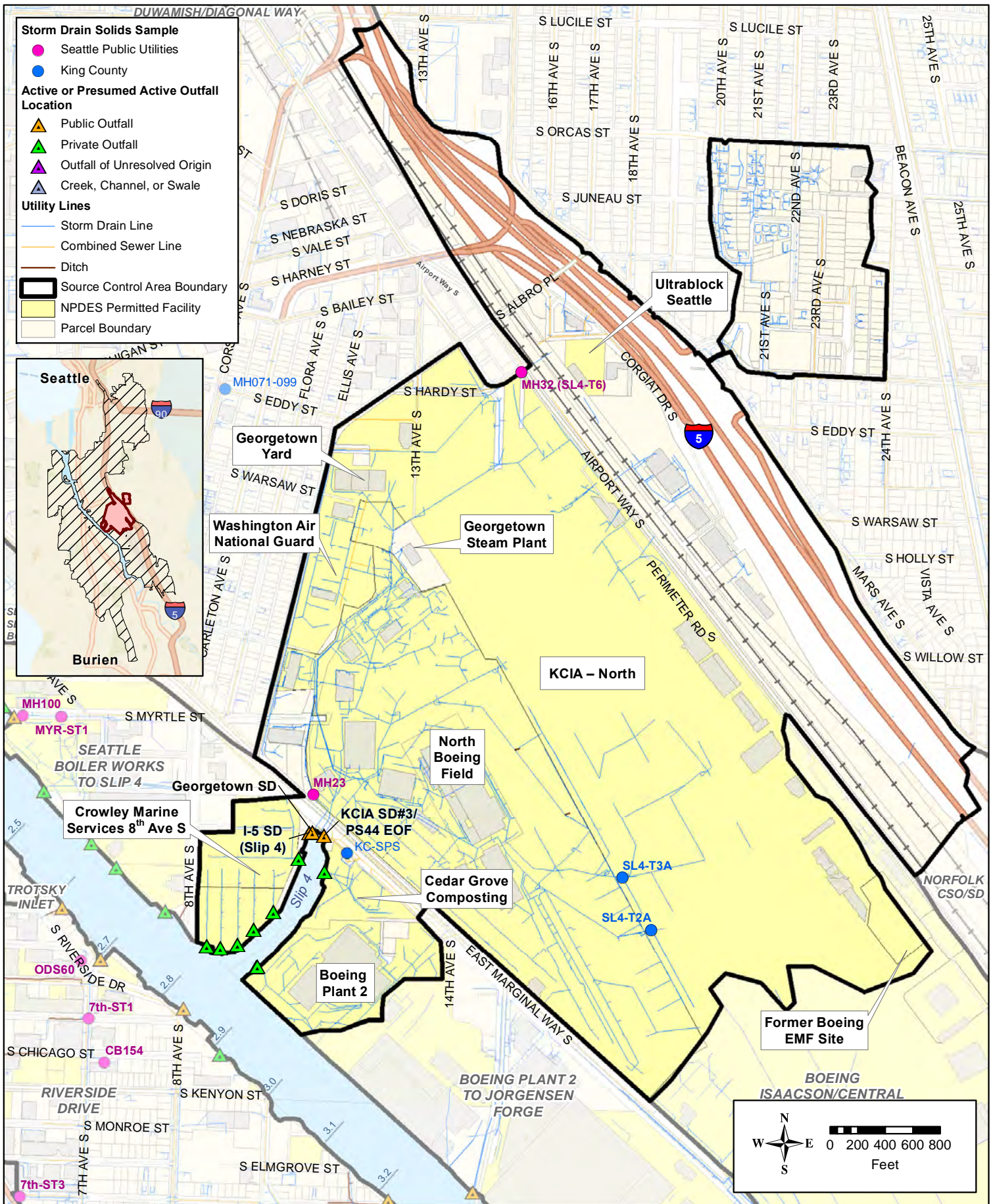


**Figure A-9. RM 3.8-4.2 West
(Sea King Industrial Park)
Source Control Area**



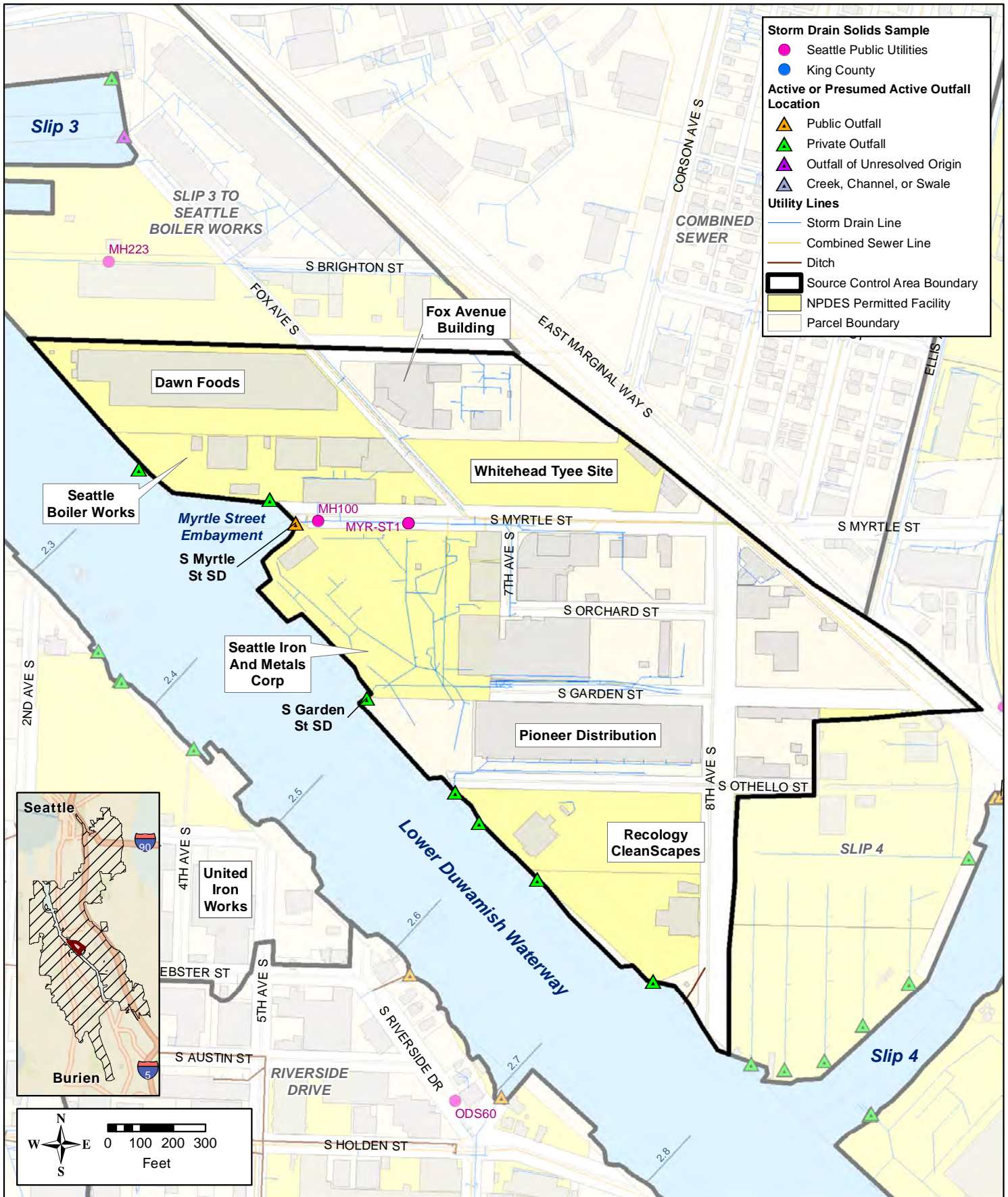


**Figure A-10. RM 3.4-3.8 West
(EAA-5: Terminal 117)
Source Control Area**



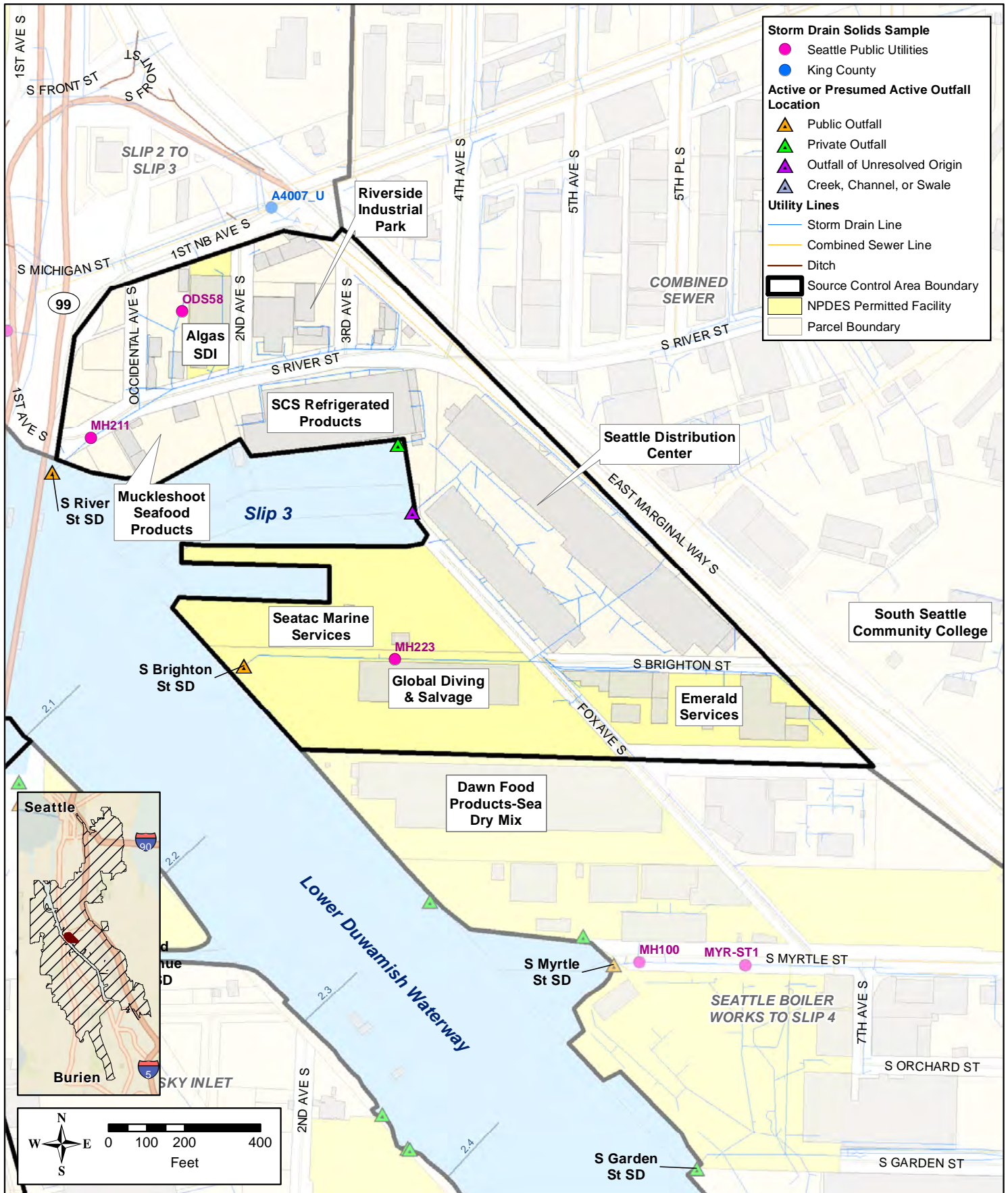
**Figure A-11. RM 2.8 East
(EAA-3: Slip 4)
Source Control Area**





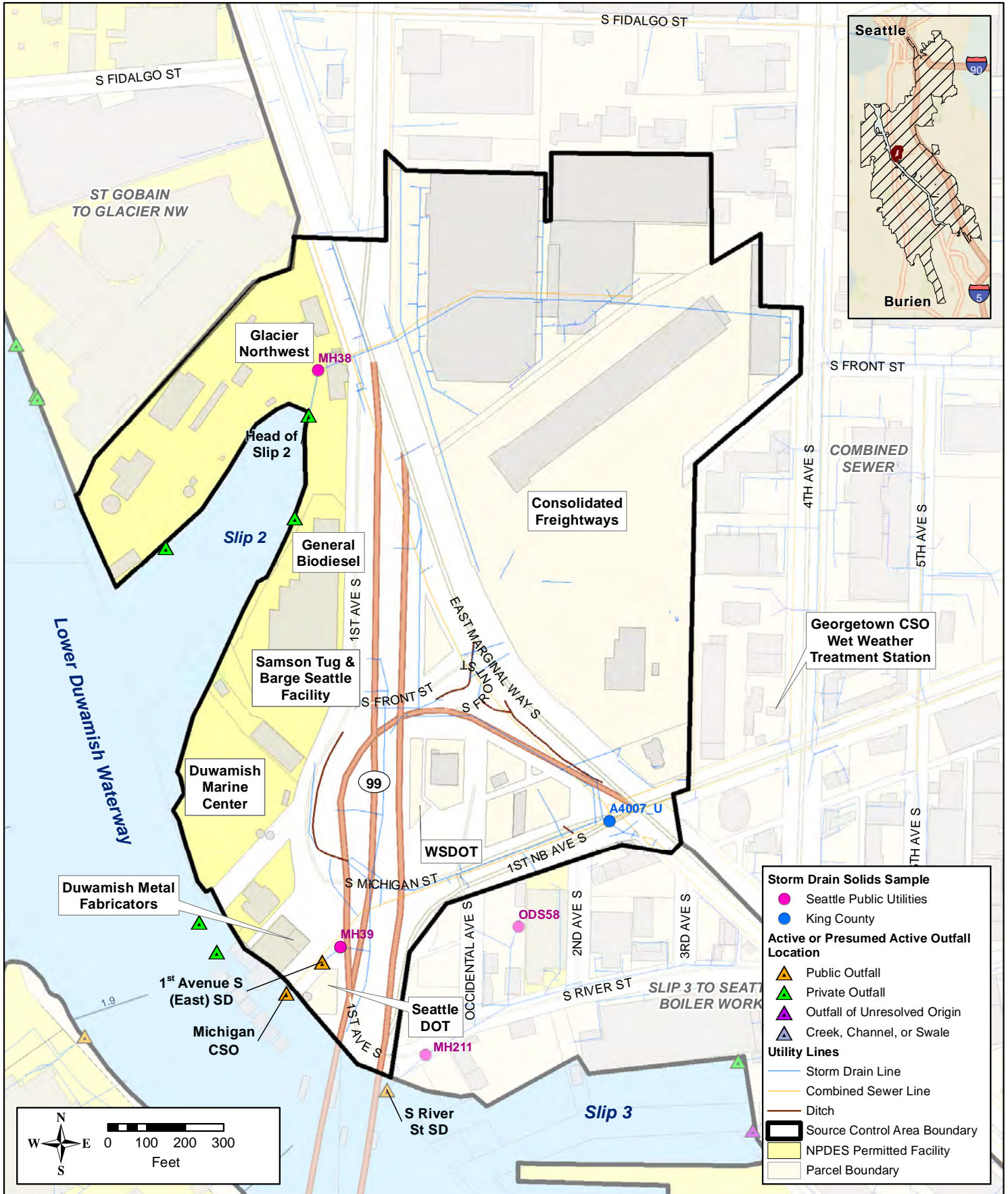
**Figure A-12. RM 2.3-2.8 East
(Seattle Boiler Works to Slip 4)
Source Control Area**





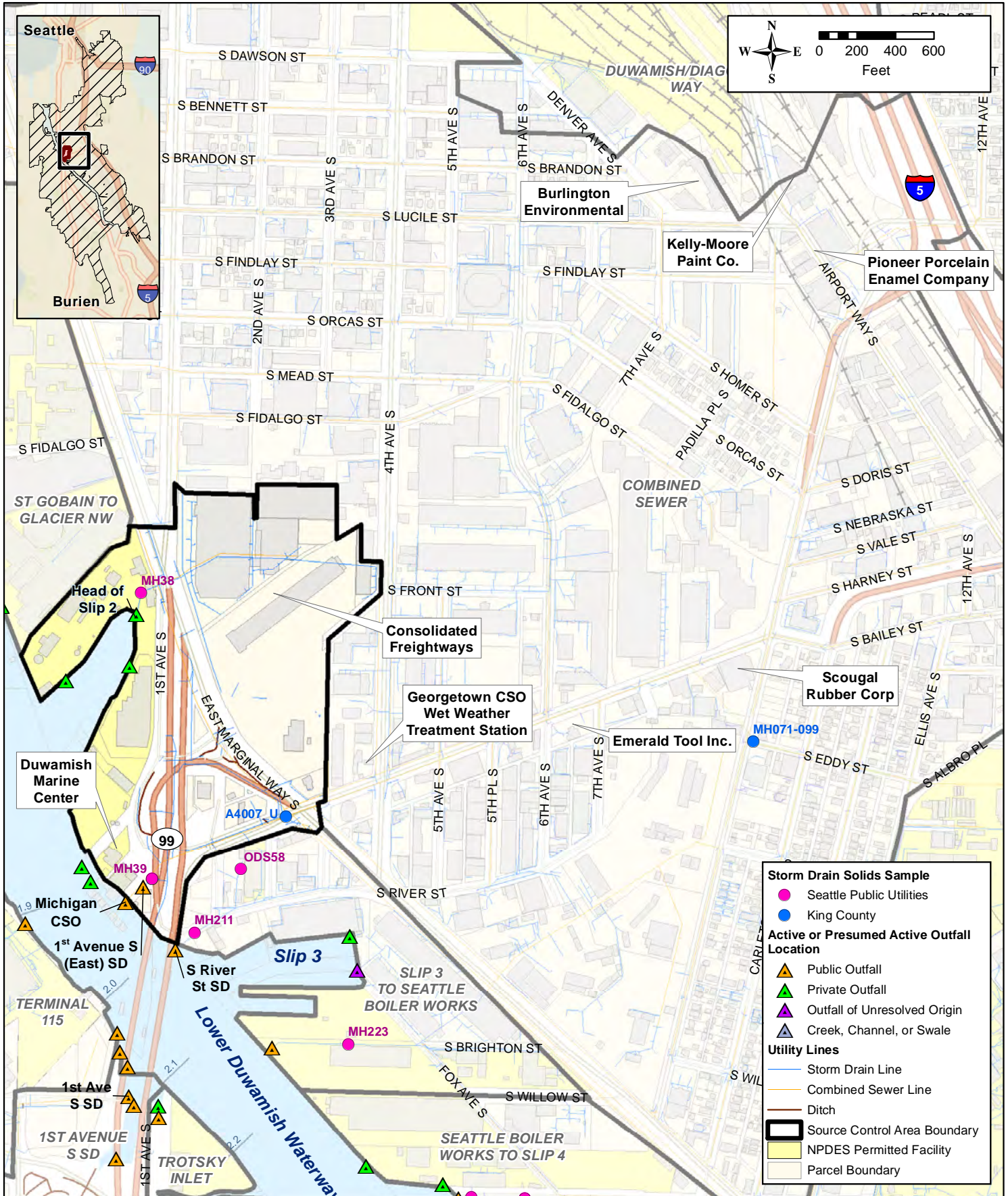
**Figure A-13. RM 2.0-2.3 East
(Slip 3 to Seattle Boiler Works)
Source Control Area**





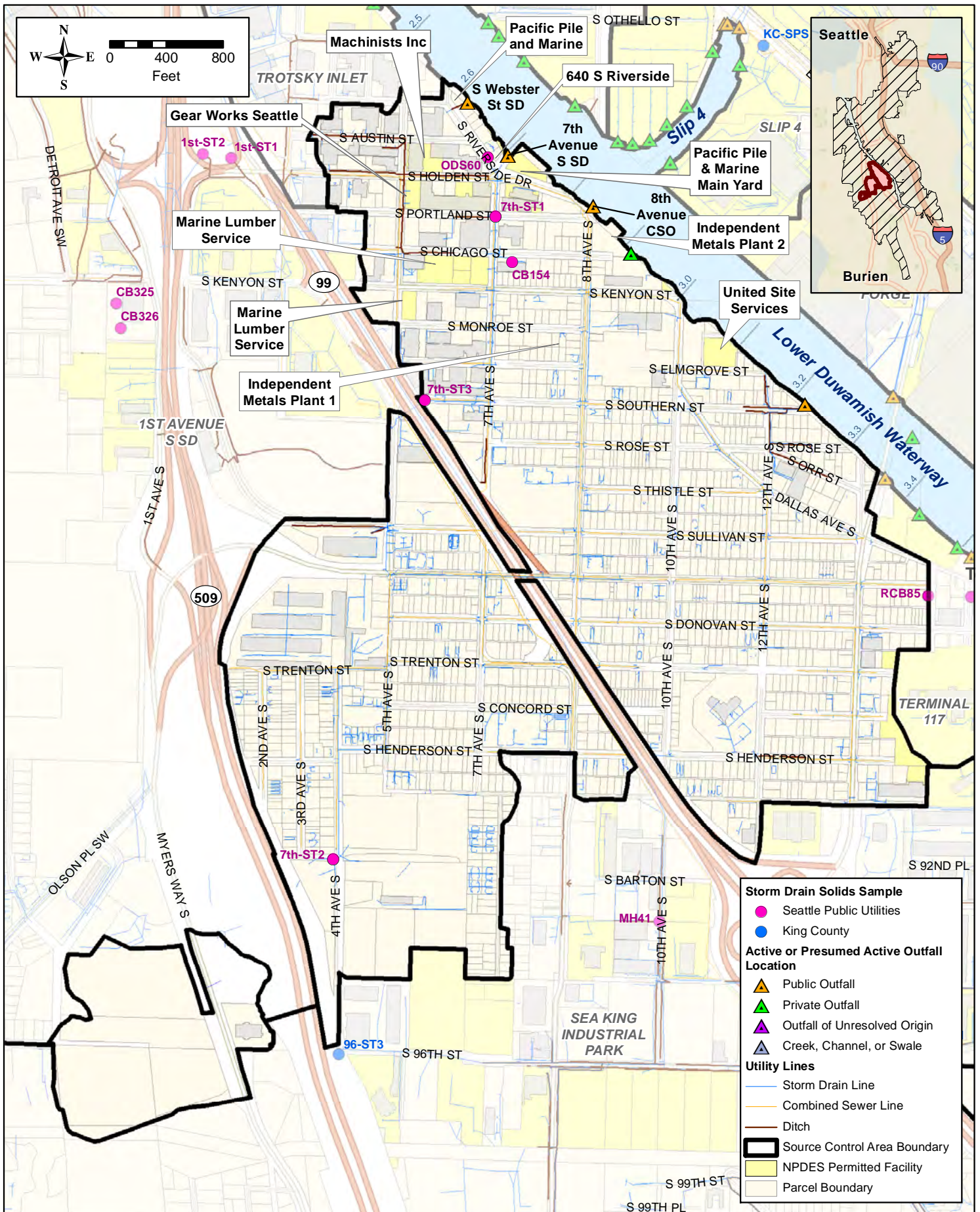
**Figure A-14. RM 1.7-2.0 East
(Slip 2 to Slip 3)
Source Control Area**





**Figure A-15. RM 1.7-2.0 East
(Slip 2 to Slip 3)
Michigan Street CSO Basin**





**Figure A-16. RM 2.2-3.4 West
(Riverside Drive)
Source Control Area**

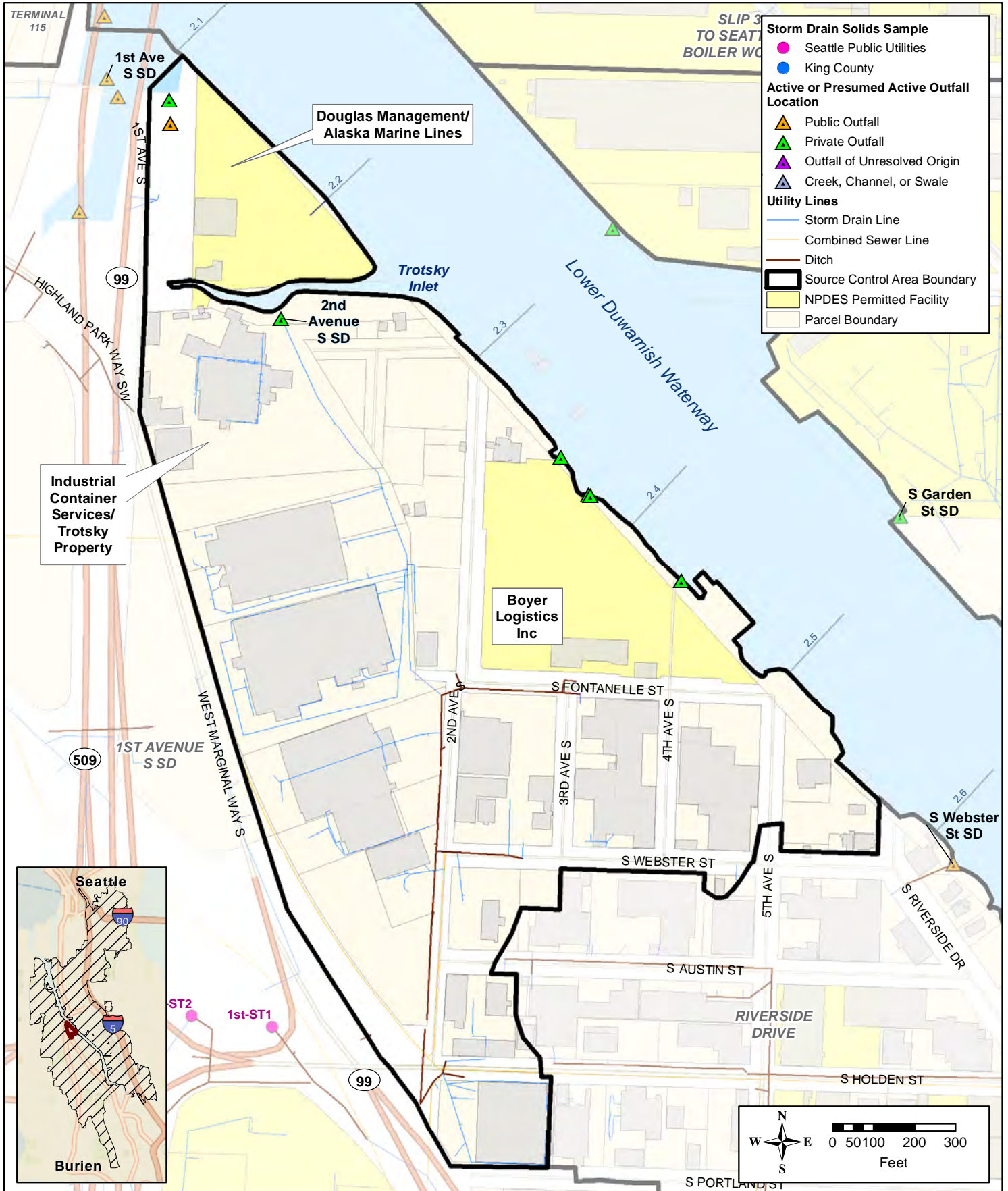
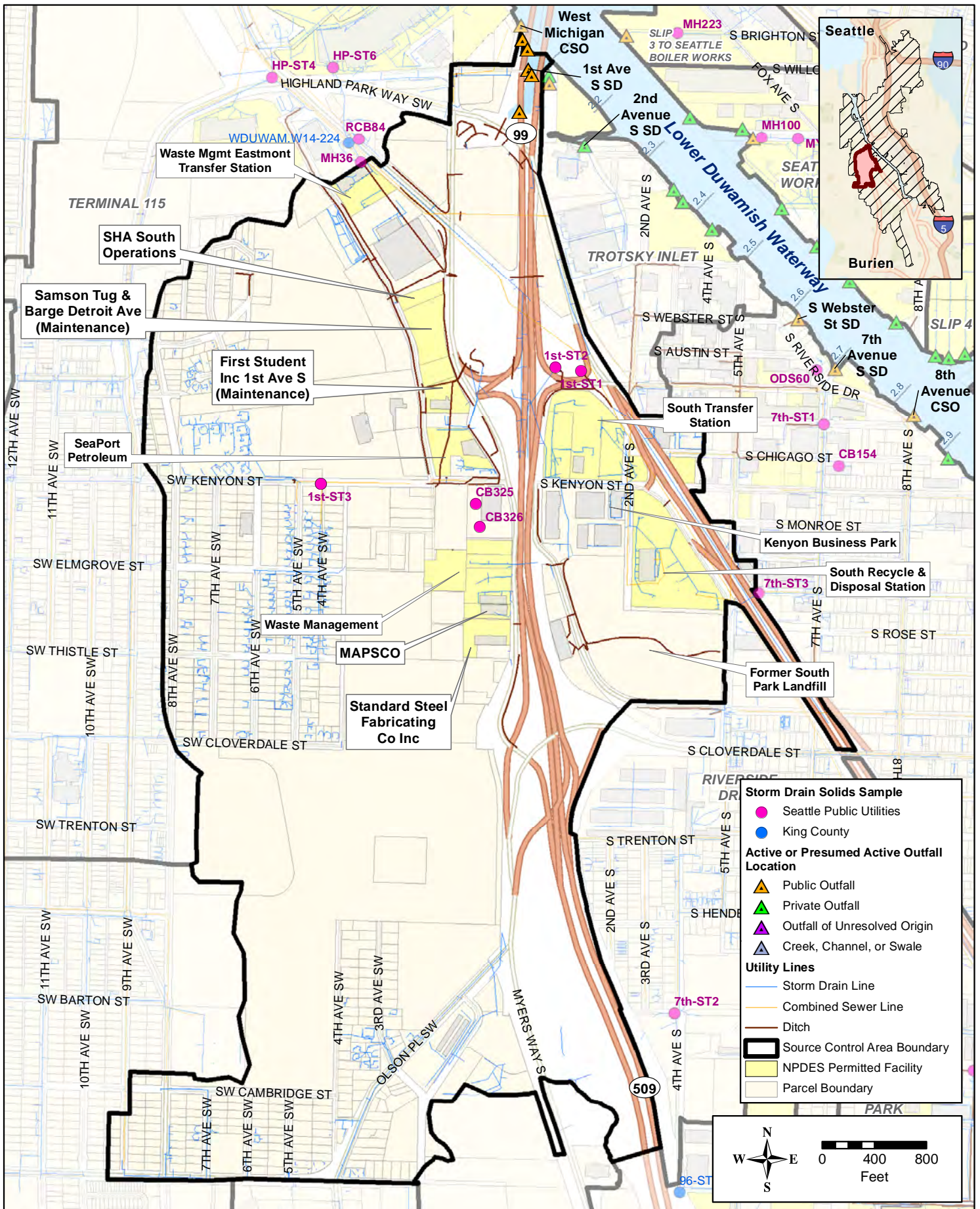


Figure A-17. RM 2.1-2.2 West
(EAA-2: Trotsky Inlet)
Source Control Area



**Figure A-18. RM 2.1 West
(1st Avenue South Storm Drain)
Source Control Area**



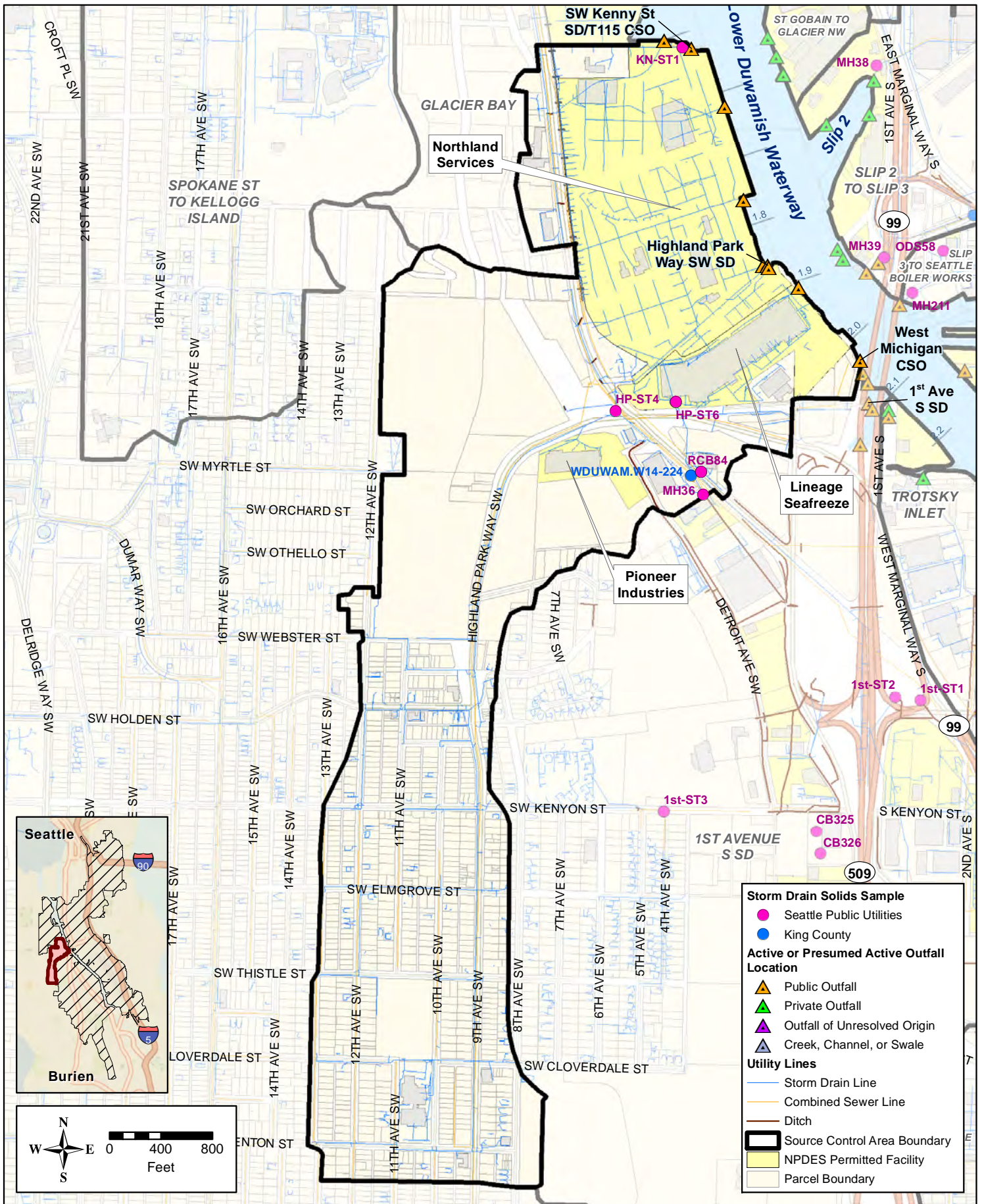
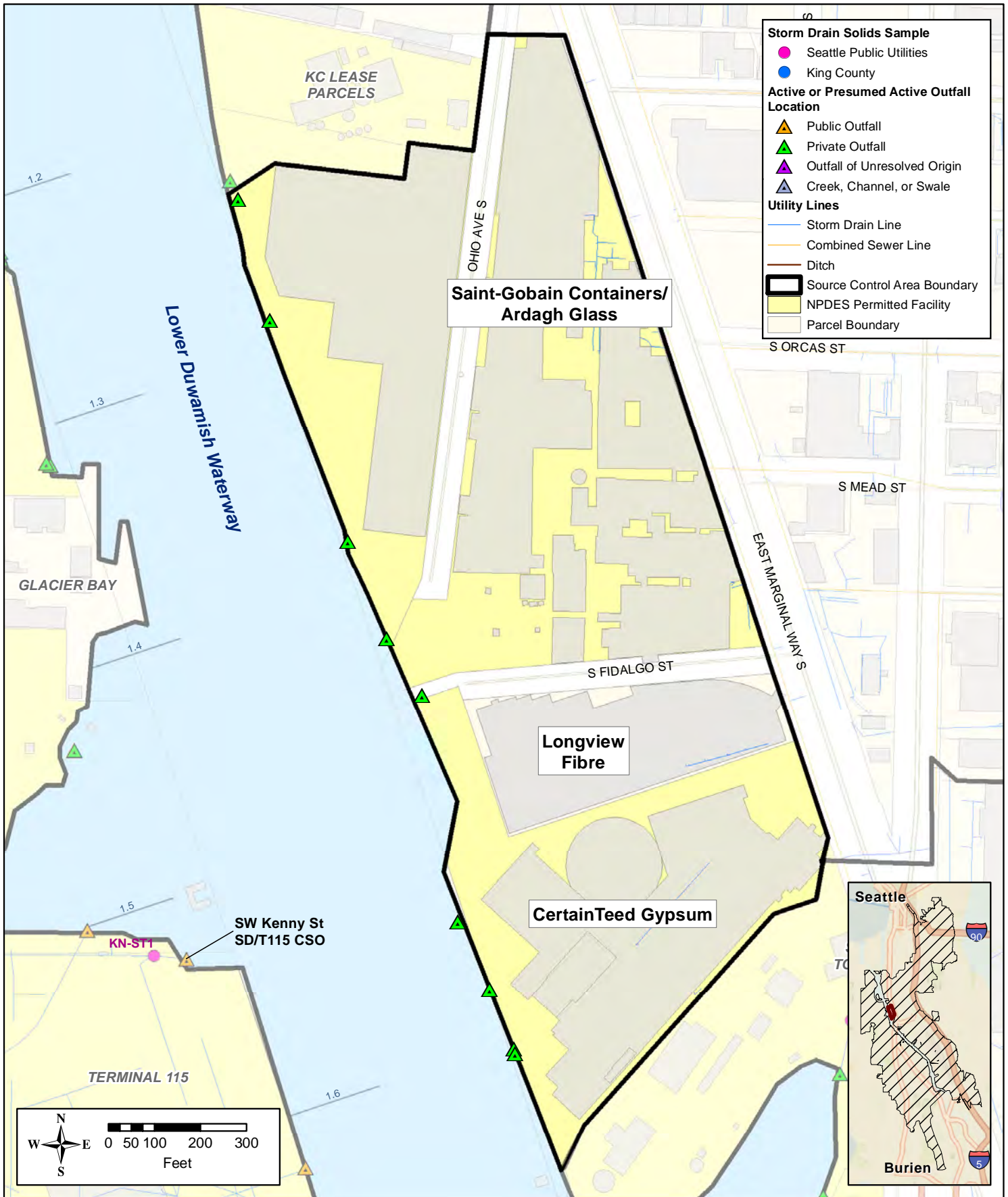
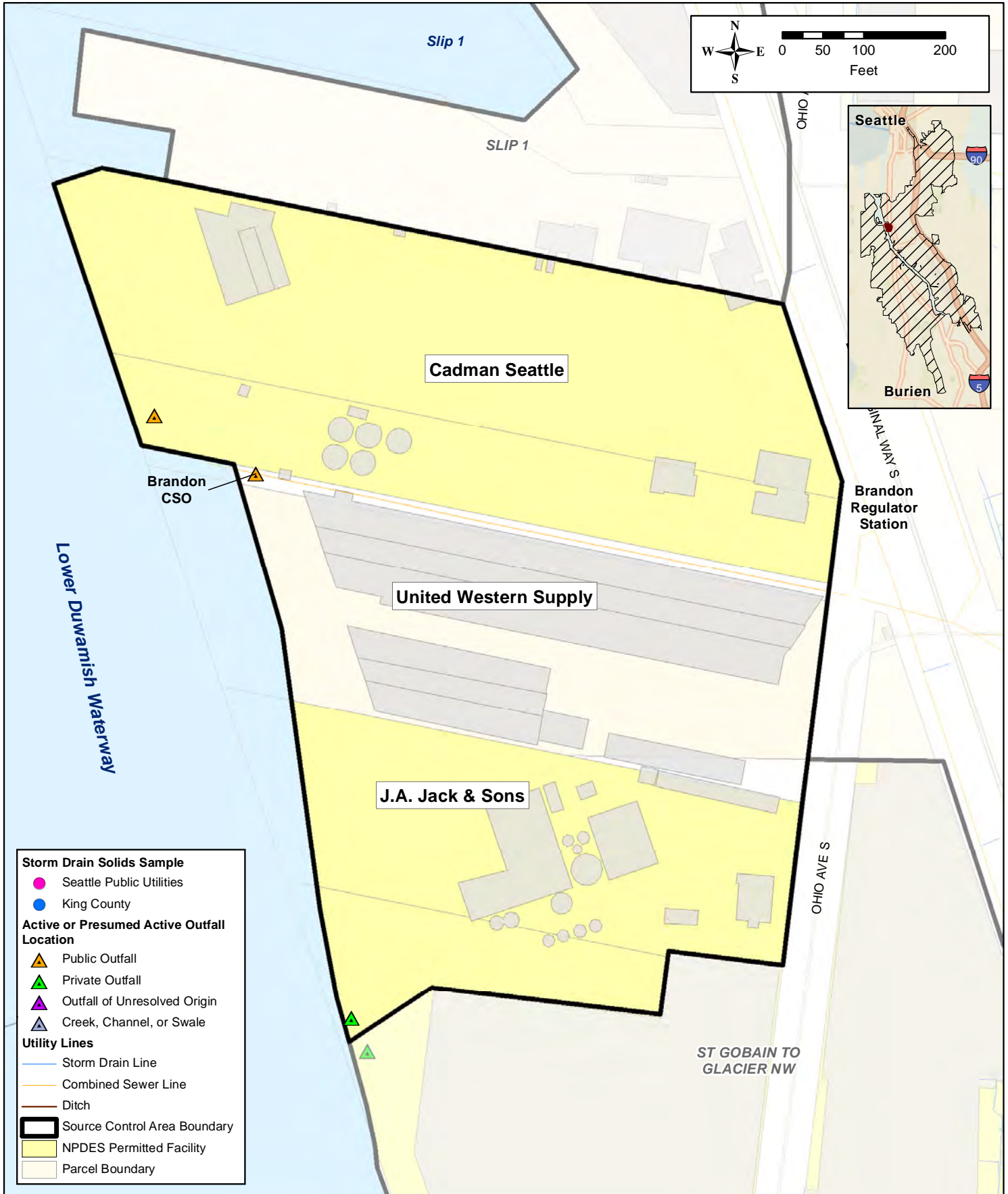


Figure A-19. RM 1.6-2.1 West
(Terminal 115)
Source Control Area



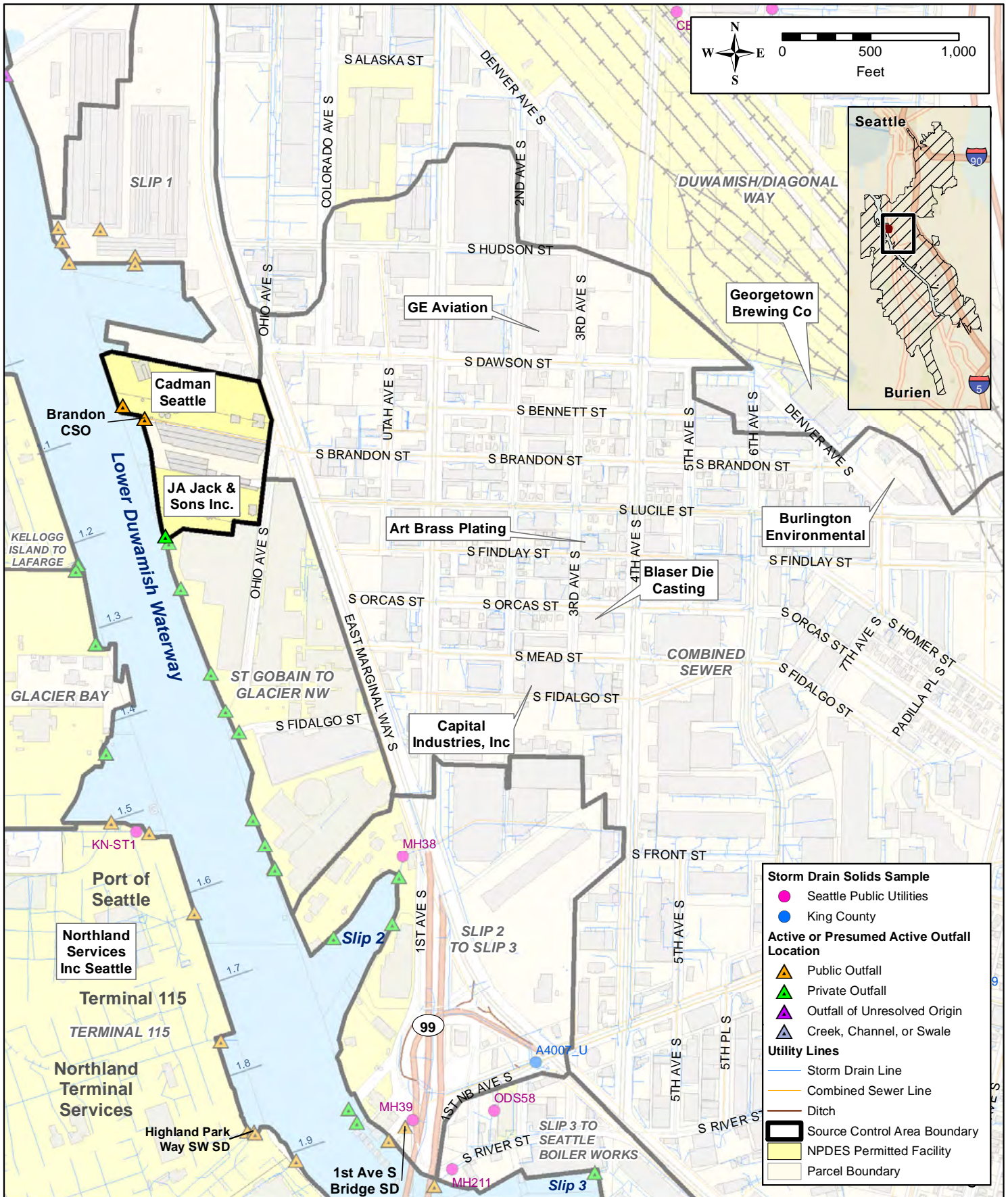


**Figure A-20. RM 1.2-1.7 East
(Saint Gobain to Glacier Northwest)
Source Control Area**



**Figure A-21. RM 1.0-1.2 East
(King County Lease Parcels)
Source Control Area**





**Figure A-22. RM 1.0-1.2 East
(King County Lease Parcels)
Brandon CSO Basin**



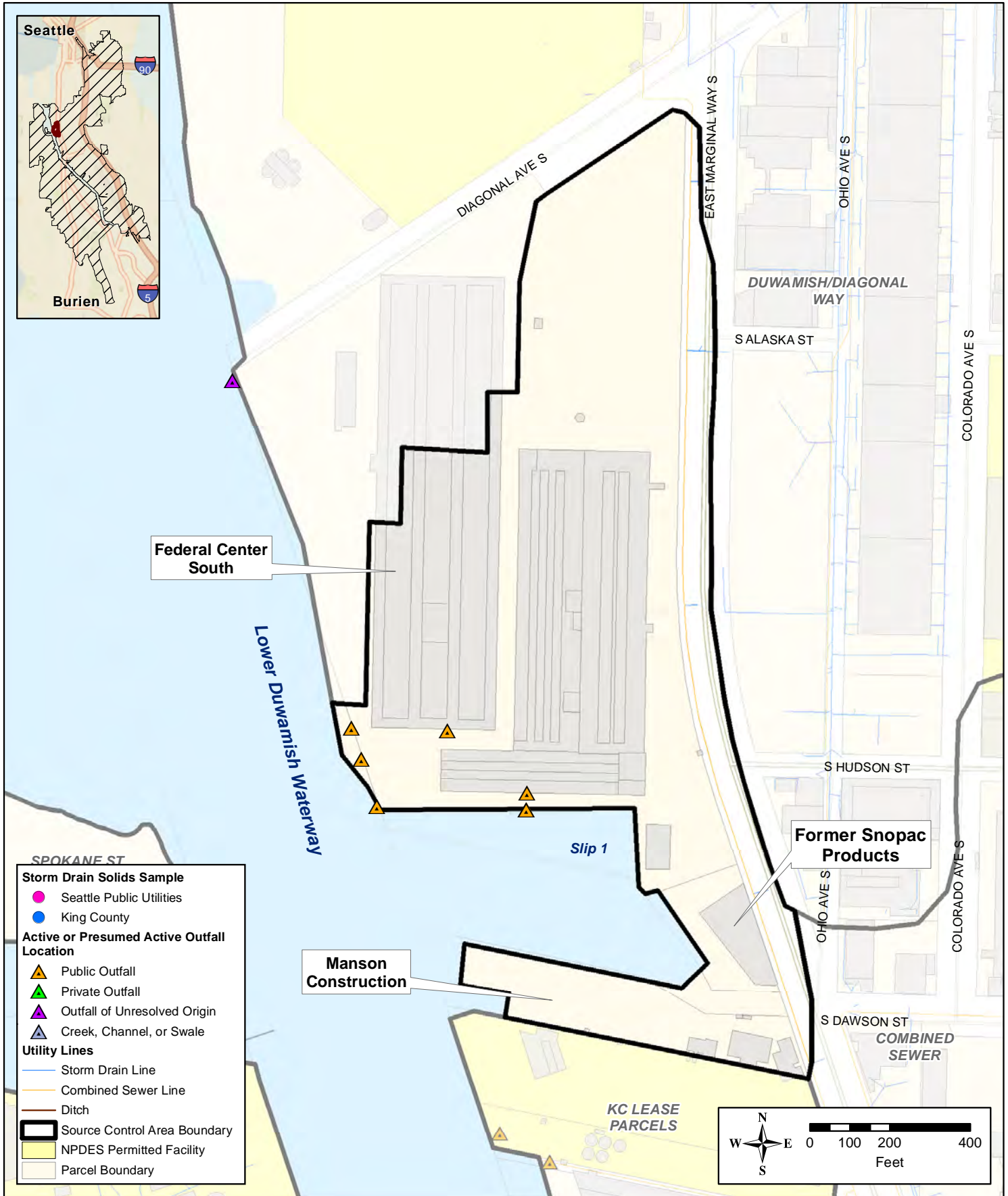
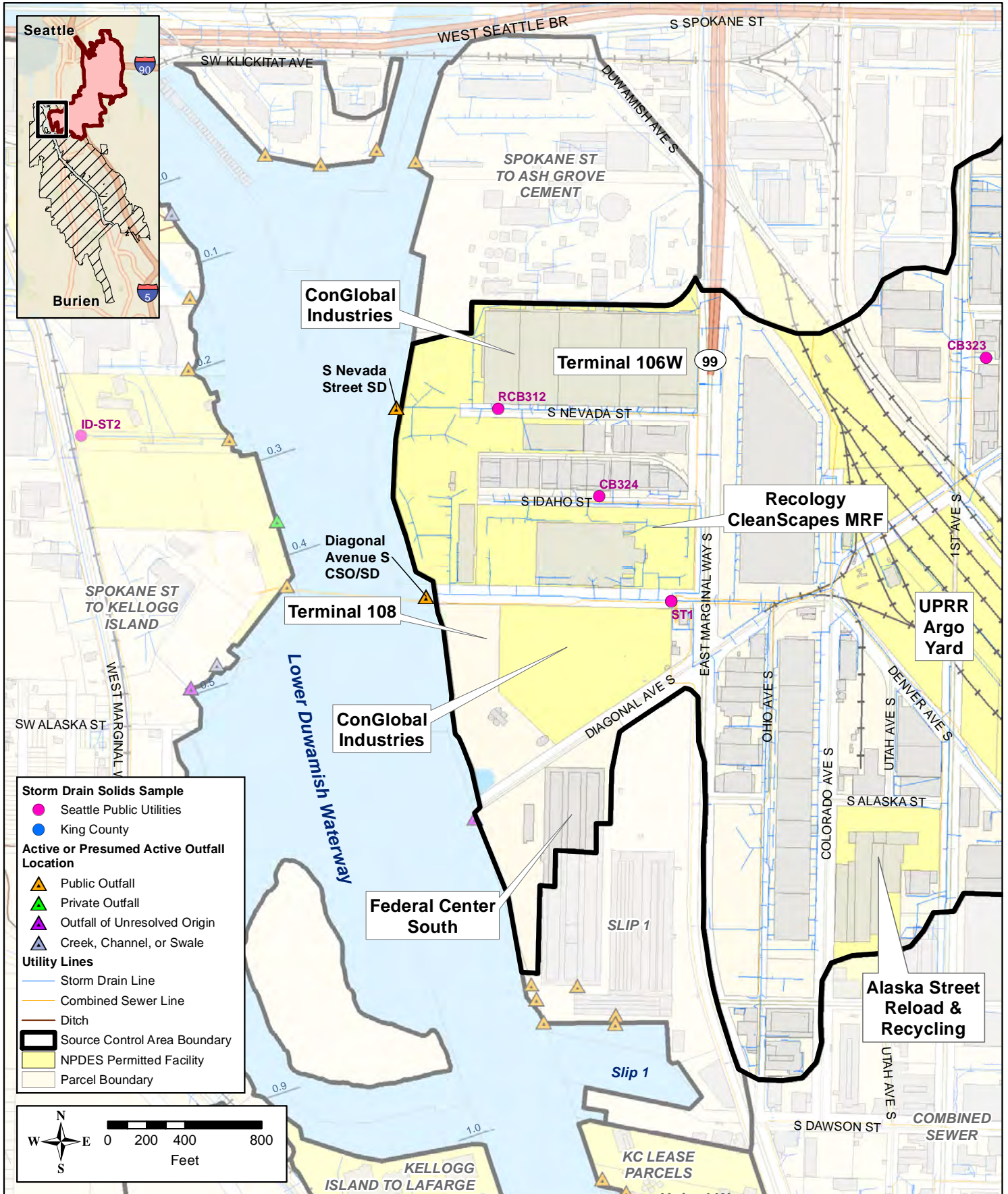


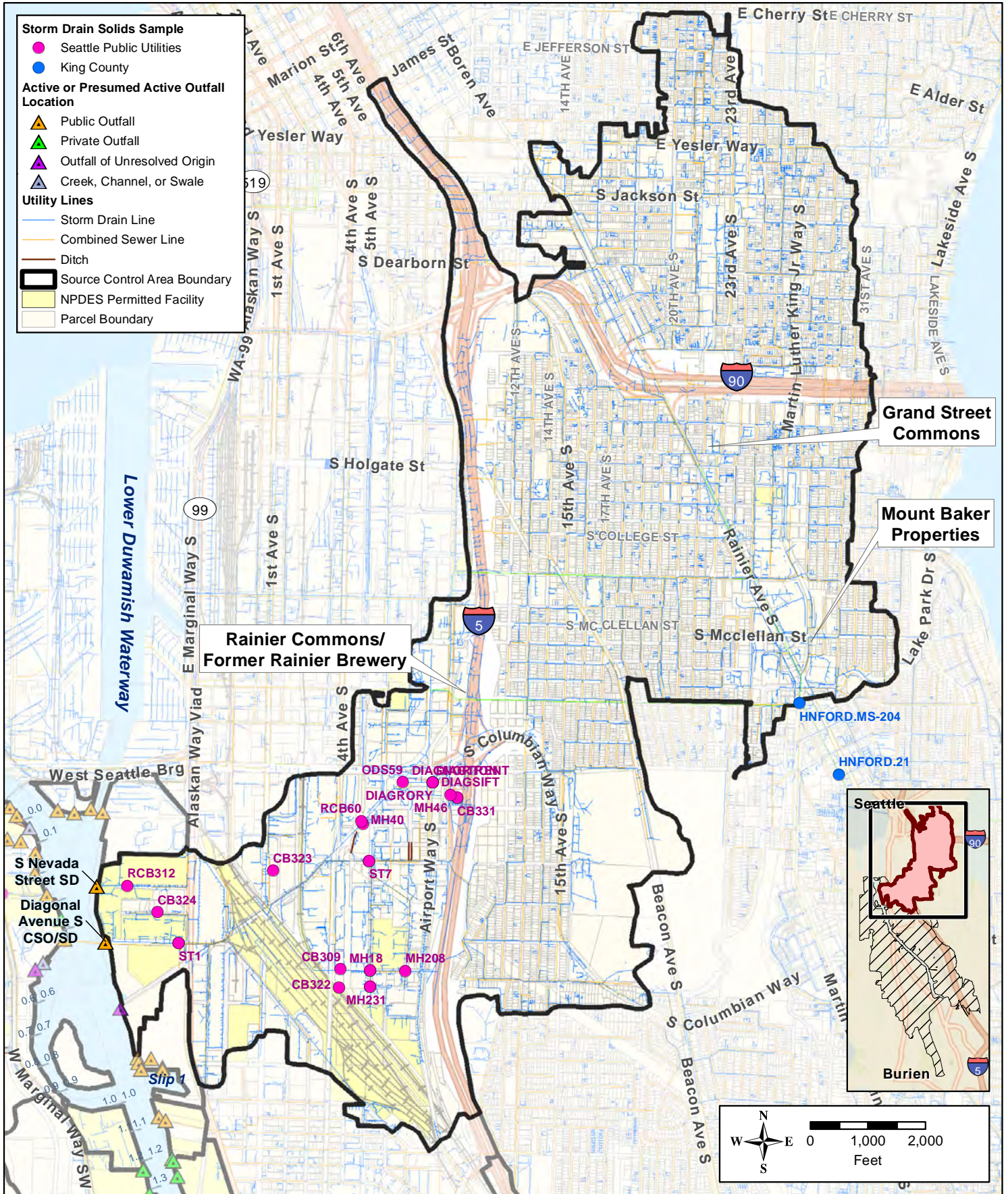
Figure A-23. RM 0.9-1.0 East (Slip 1) Source Control Area





**Figure A-24. RM 0.1-0.9 East
(EAA-1: Duwamish/Diagonal Way)
Source Control Area**





**Figure A-25. RM 0.1-0.9 East
(EAA-1: Duwamish/Diagonal Way)
Diagonal Avenue S Storm Drain Basin**



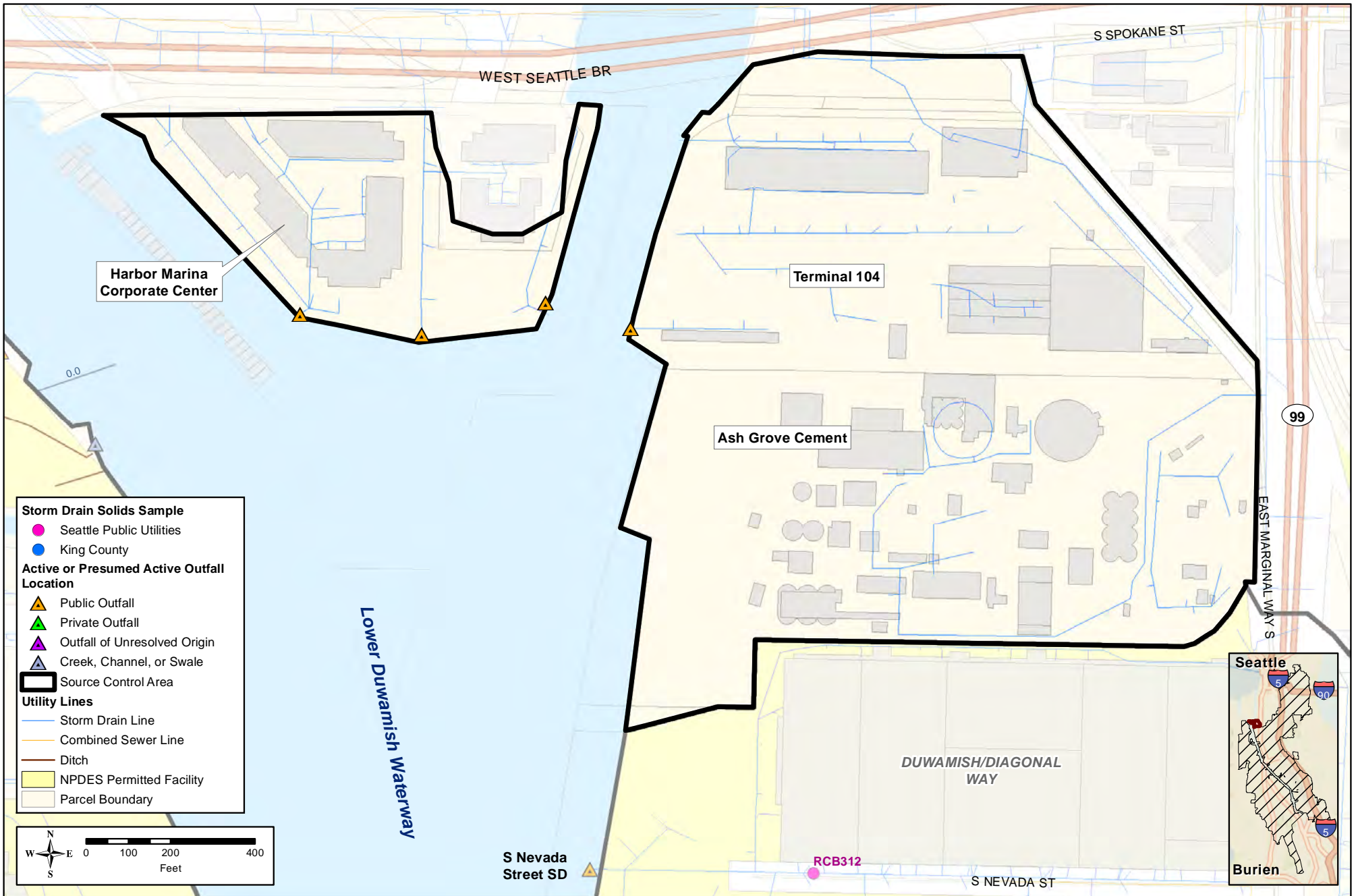


Figure A-26. RM 0.0-0.1 East
(Spokane Street to Ash Grove Cement)
Source Control Area

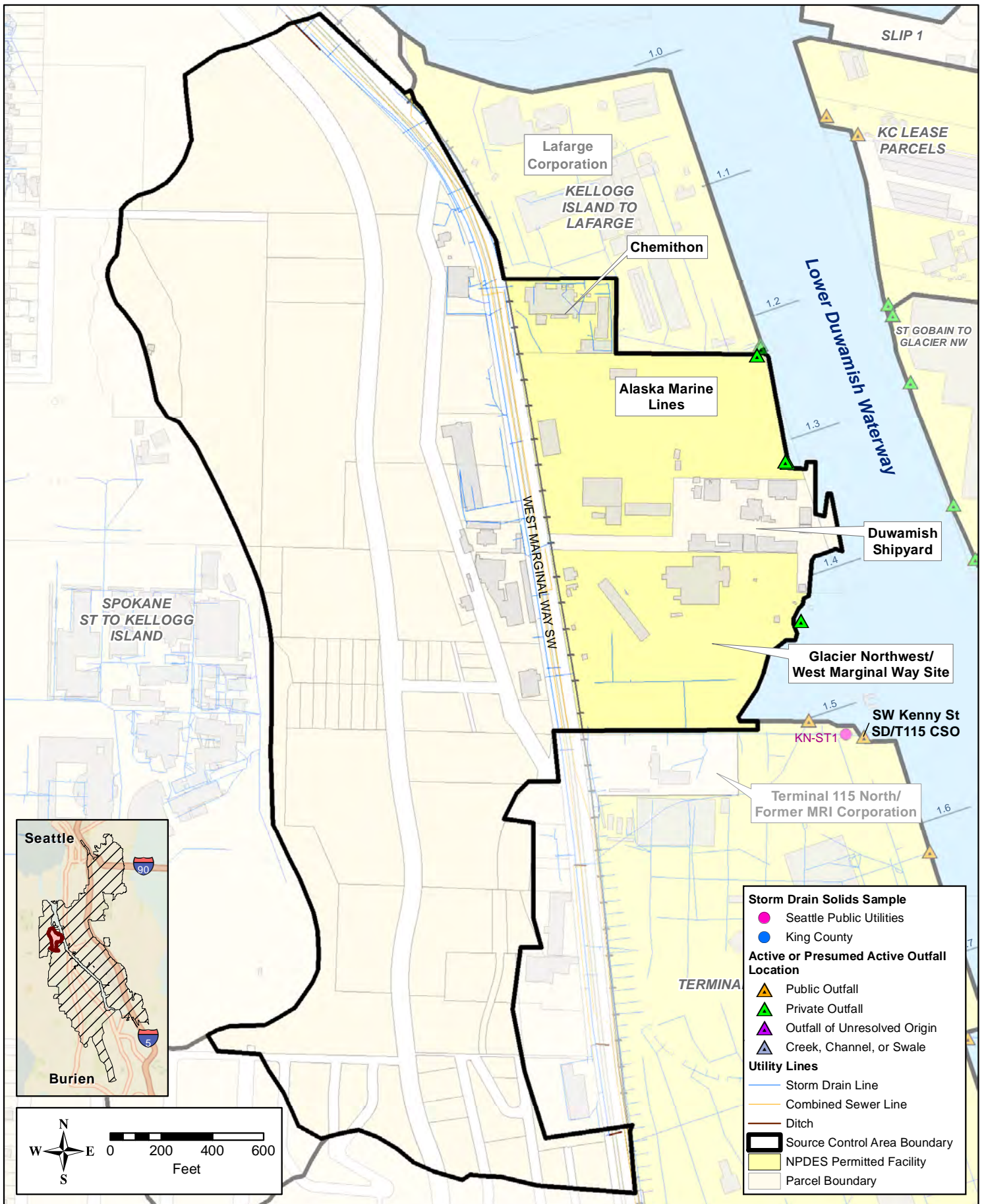
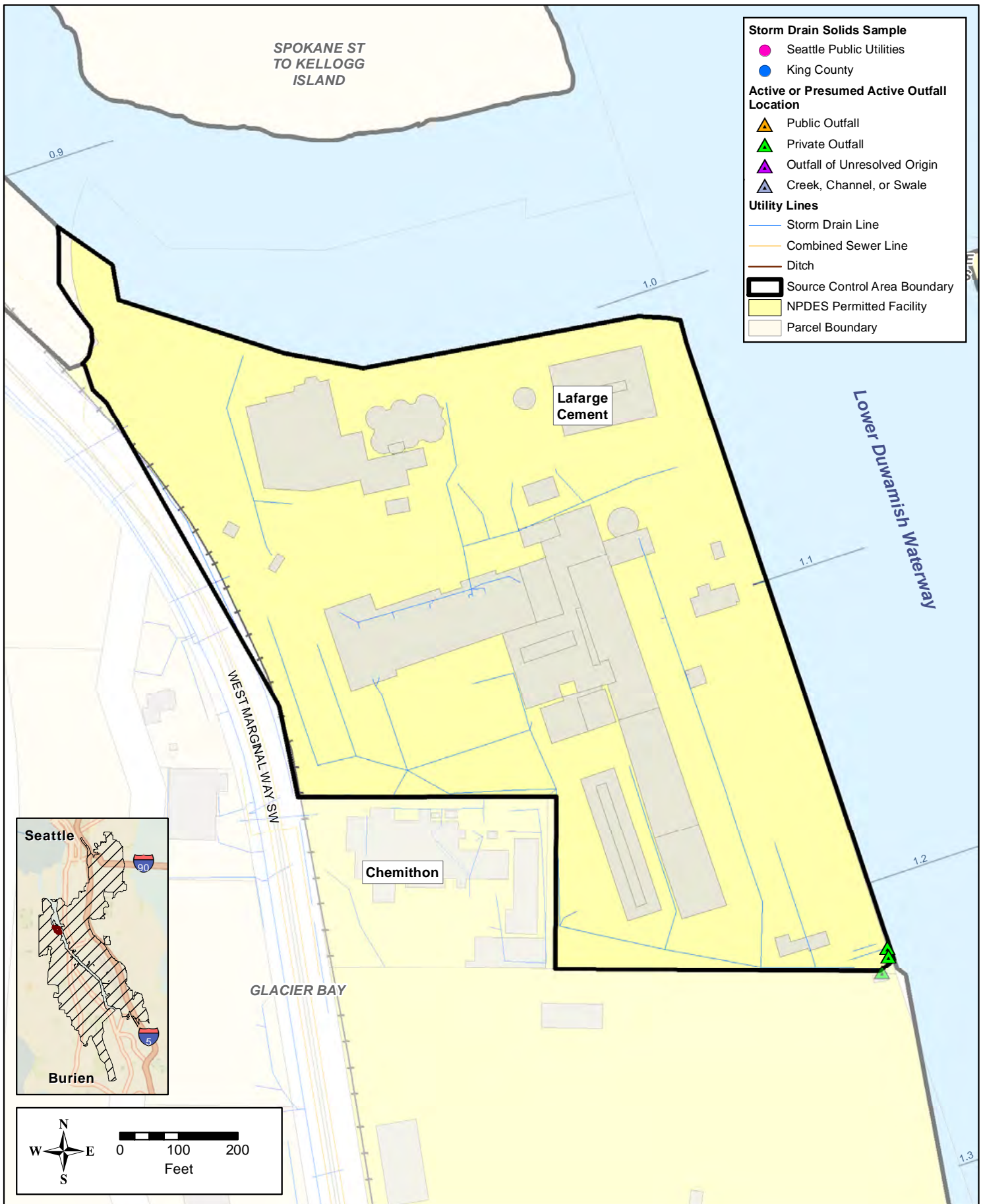


Figure A-27. RM 1.3-1.6 West (Glacier Bay) Source Control Area



**Figure A-28. RM 1.0-1.3 West
(Kellogg Island to Lafarge Cement)
Source Control Area**

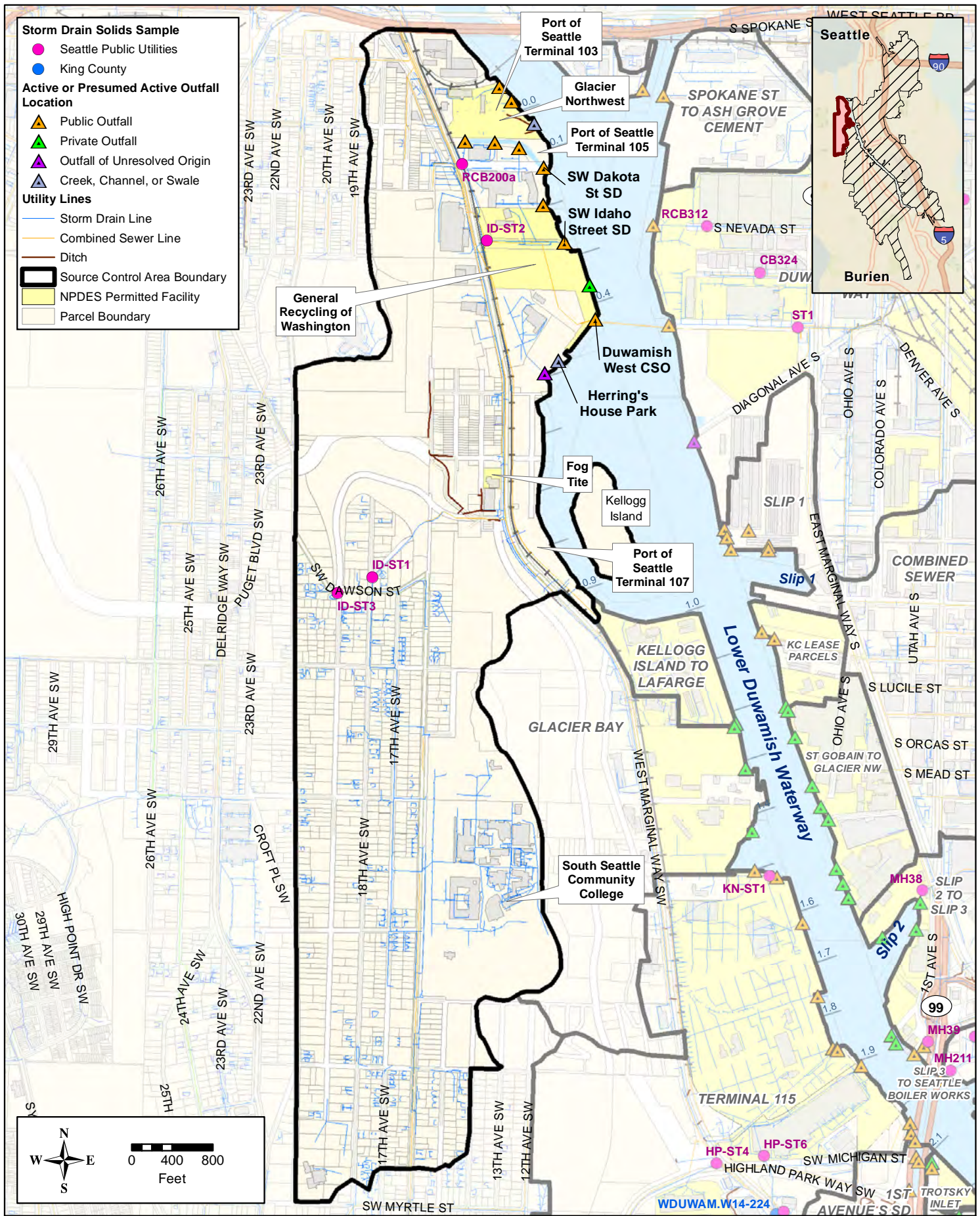


Figure A-29. RM 0.0-1.0 West
(Spokane Street to Kellogg Island)
Source Control Area



Appendix B: Action Item Status

Table B-1. Action Items Completed During 2018

Table B-2. Incomplete Action Items

Table B-1. Action Items Completed or Canceled During This Reporting Period

| Action Item No. | Action Item Category | Source Control Area | Property/ Facility/ Outfall | Property Number | Facility/ Site ID | Action Item | Priority | Responsible Party | Date Completed | Comments/Follow-On Actions |
|-----------------|------------------------|--|--|-----------------|----------------------------|--|----------|-------------------------|----------------|---|
| A01.10.02 | BMP Implementation | RM 0.0-0.1 East (Spokane Street to Ash Grove Cement) | Ash Grove Cement | 01001 | 2142 | Demonstrate appropriate separation of wastewater from storm water and install an appropriate treatment system. | Medium | Property Owner/Operator | Apr 2014 | Stormwater is managed under an individual NPDES permit (WA0032221). Stormwater from the central portion of the site is reused as process water; excess is pumped to the sanitary sewer. Other site stormwater is discharged to the East Waterway. A Chitosan Enhanced Sand Filtration treatment system was installed in 2014. |
| A02.37.00 | Records Review | RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) | Seattle Radiator | 02086 | 6433026 | Review discharge permit/authorization records to determine if Discharge Authorization 366 is valid. | Low | King County/ Ecology | Nov 2019 | KCIW regulates Seattle Radiator under Minor Discharge Authorization No. 796-03 (effective through 1/7/2024). |
| A03.01.00 | Records Review | RM 0.9-1.0 East (Slip 1) | Federal Center South | 03001 | 10233917 | Review historical property files for information regarding the status and contents of three 30,000-gallon USTs; determine if sediment COCs may be present in soil and groundwater in this area. | Medium | Ecology | Feb 2012 | Historical property files regarding the USTs were completed as part of an Environmental Conditions Report completed in February 2012. |
| A03.02.00 | Environmental Sampling | RM 0.9-1.0 East (Slip 1) | Federal Center South | 03001 | 10233917 | If file review indicates that sediment COCs may be present in soil and/or groundwater, require the property owner/operator to perform an environmental assessment of soil and groundwater around the 30,000-gallon UST area. | Medium | EPA | Feb 2012 | Sediment COCs have not been detected in soil or groundwater at concentrations above screening levels. The site is undergoing cleanup for petroleum hydrocarbons and chlorinated solvents. |
| A03.07.00 | Records Review | RM 0.9-1.0 East (Slip 1) | Former Snopac Products Property | 03003 | 1523145, 3967301 | Assess potential for historical release(s) of arsenic or other sediment COCs to soil and groundwater beneath this property. | Medium | Ecology | Jun 2019 | Current property owner (5055 Properties LLC) conducted an RI between 2015 and 2018; soil and groundwater contamination was investigated and documented in the Agency Review Draft RI (June 2019). |
| A03.10.00 | Environmental Sampling | RM 0.9-1.0 East (Slip 1) | Former Snopac Products Property, Manson Construction Company | 03003, 03002 | 1523145, 3967301, 80333167 | Collect additional samples from Seep 76 to determine if the arsenic concentration reported in 2004 was an anomaly. Analyze sample for all sediment COCs. | High | Ecology | Jul 2015 | The property owner collected six seep samples along the Snopac shoreline at Slip 1 in 2015. Samples were analyzed for sediment COCs. Arsenic concentrations ranged from 40 to 76 ug/L, significantly lower than the 290 ug/L measured at Seep 76 in 2004 but still above the preliminary cleanup level for arsenic in nonpotable groundwater of 8 ug/L. Additional actions will be conducted as needed under Agreed Order DE-16300. |
| A03.11.00 | Environmental Sampling | RM 0.9-1.0 East (Slip 1) | Former Snopac Products Property | 03003 | 1523145, 3967301 | Conduct a visual bank survey during low tide conditions; collect and analyze bank soil samples for sediment COCs to evaluate the potential for sediment recontamination from bank erosion and leaching. Reconnaissance cores should be collected along the top and bottom of the bank to determine "as is" conditions. | Medium | Ecology | Oct 2019 | The property owner collected bank soil/sediment samples along the Slip 1 shoreface as part of the RI. Results presented in the agency review draft RI Report submitted to Ecology in October 2019. |
| A03.12.00 | Information Request | RM 0.9-1.0 East (Slip 1) | Former Snopac Products Property | 03003 | 1523145, 3967301 | Obtain information from Snopac or other historical property owners regarding the construction of the dock adjacent to the property. If no information is available, perform an evaluation of the materials used to construct the dock. | Medium | Ecology | Oct 2019 | The RI Report includes historical information about the dock. The dock and other subsidiary sources of contaminants generally fall within the mapped area of sandblast grit-containing fill, which was characterized during the RI. |
| A04.22.01 | Records Review | RM 1.0-1.2 East (KC Lease Parcels) | Bob's Texaco Service | 25094 | 47157762 | Review information regarding LUSTs at Bob's Texaco Service to evaluate the potential for sediment recontamination, if any, that may be associated with these facilities. | Low | Ecology | May 2018 | An SHA was completed in 2015, and a Phase I ESA was conducted in 2017. Ecology performed a site supplemental investigation in late 2017 which identified remaining data gaps; additional investigation of TPH/BTEX contamination is recommended. |
| A06.21.00 | Cleanup | RM 1.7-2.0 East (Slip 2 to Slip 3) | Duwamish Marine Center | 06003 | 21945598 | Require the property owner/operator to collect data on concentrations of chemical contaminants in river bank soils to assess the potential for sediment recontamination by erosion. | High | Ecology | Jul 2019 | Conducted as part Agreed Order DE-8072. The Public Review Draft RI Report was completed in July 2019; bank soil sample data are included in the report. |
| A07.17.00 | Environmental Sampling | RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) | V. Van Dyke | 07010 | 68427684 | Work with V. Van Dyke to complete quarterly groundwater or other monitoring suggested by Adapt, if needed. | Medium | Ecology | Dec 2016 | V. Van Dyke ceased operation at this location in December 2016. Action item canceled. |
| A08.25.00 | Environmental Sampling | RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | Crowley Marine Services | 09002 | 1940187 | Collect stormwater and/or solids samples from storm drain system to determine if onsite system is source of COCs found in waterway sediment. | High | Ecology | Aug 2019 | To be conducted in accordance with Agreed Order No. DE-6721. The Public Review Draft RI was completed in August 2019 and stormwater system data is included in the report. A supplemental investigation for the draft FS is in progress. |
| A13.10.00 | Cleanup | RM 4.3-4.9 East (Boeing Developmental Center) | BDC - Central | 13001 | 2101 | Negotiate an Agreed Order to complete an RI/FS/CAP for the entire BDC Site. | Medium | Ecology | Jul 2019 | Agreed Order DE-16275 was issued on July 23, 2019. |

Table B-1. Action Items Completed or Canceled During This Reporting Period

| Action Item No. | Action Item Category | Source Control Area | Property/ Facility/ Outfall | Property Number | Facility/ Site ID | Action Item | Priority | Responsible Party | Date Completed | Comments/Follow-On Actions |
|-----------------|------------------------|--|---|-----------------|-------------------|--|----------|-------------------|----------------|--|
| A15.04.00 | Inspection | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | Outfalls 2140, 2141, 2142, 2153, 2144, 2145, 2146 | NA | NA | Conduct an inspection during a storm event to determine if Outfalls 2140 through 2146 are operational or have been abandoned. If discharge from these outfalls is observed, request that the property owners conduct dye testing to determine if storm drain lines are connected to the unresolved outfalls and delineate the associated drainage areas. | Medium | SPU, Ecology | Dec 2018 | Outfalls 2140-2143 are located on City property at the Port's T107 Park at 4750 W Marginal Wy SW. Outfalls 2140-2141 are upstream/downstream ends of a culvert that conveys park runoff under the path to the Herring's House habitat area. Outfalls 2142-2143 are also upstream/downstream ends of culvert that convey runoff from the parking lot. Parking lot runoff sheet flows across a vegetated area before entering the culvert. SPU inspected these outfalls in 2018. Outfalls 2144, 2145, and 2146 were located on General Recycling property at 4260 W Marginal Wy SW. Based on a 2/19/2019 site map provided by General Recycling, these outfalls are no longer present. |
| A16.05.00 | Records Review | RM 1.0-1.3 West (Kellogg Island to Lafarge Cement) | Lafarge North America Inc. Seattle | 16001 | 2132 | Review the response to the CERCLA Section 104(e) Supplemental Information Request sent to Lafarge by EPA. | Medium | Ecology | | EPA is no longer provide 104(e) responses to Ecology for review. |
| A18.09.00 | Environmental Sampling | RM 1.6-2.1 West (Terminal 115) | Terminal 115 - Port of Seattle Storm Drain Outfalls (Outfalls 2122, 2123, 2124, 2220, and POS 6146) | 18014 | 4040072 | Collect storm drain solids samples from the storm drain lines discharging to Outfalls 2122, 2123, 2124, 2128, 2220, and POS 6146 and provide the data to Ecology to identify potential contaminant sources. | High | Port of Seattle | Dec 2015 | Samples were collected from the storm drain lines discharging to Outfalls 2122, 2123, 2124, 2220, and POS 6146 by the Port of Seattle in 2015, following storm drain line cleaning activities in late 2014. A summary report was published in December 2015 and submitted to Ecology. |
| A21.02.00 | Source Assessment | RM 2.2-3.4 West (Riverside Drive) | King County Outfall (Outfall 3037) | NA | NA | Conduct source tracing to identify potential sources of sediment COCs reported above screening levels in LDW sediments adjacent to Outfall 3037. | Medium | King County | Jun 2016 | Outfall 3037 is at the terminus of S Southern Street within unincorporated King County. A sample collected from a catch basin associated with this outfall was collected in June 2016; no screening level exceedances were observed. |
| A23.05.00 | Information Request | RM 3.8-4.2 West (Sea King Industrial Park) | Sea King Industrial Park | 23038 | NA | Request clarification from King County regarding the owner and operator status for the S Director Street Outfall and Outfall 2101. | Medium | Ecology | Jun 2020 | According to King County, the right-of-way ends at 15th Avenue S. From there, the drainage and outfall are privately owned and part of the Sea King Industrial Park. |

Table B-2. Incomplete Action Items

| Action Item No. | Action Item Category | Source Control Area | Property/ Facility/ Outfall | Property Number | Facility/ Site ID | Action Item | Priority | Responsible Party | Status | Comments/Follow-On Actions |
|-----------------|------------------------|--|---|-----------------|------------------------|--|----------|----------------------------------|-------------|--|
| A01.04.00 | Source Assessment | RM 0.0-0.1 East (Spokane Street to Ash Grove Cement) | Port of Seattle Terminal 104 | 01003 | 72668645 | Determine how to address identified data gaps in the western portion of T-104. | Low | Ecology, Port of Seattle | | Specific data gaps could not be identified. One outfall discharges to the LDW; it drains a 1.3-acre area in the southwest corner of the property. The tenant in this area is Pacific Coast Container (PCC), which operates under an ISGP (WAR125003). A 2018 stormwater utility assessment indicated some pipes that need repair, but considered low priority. |
| A01.05.00 | Data Evaluation | RM 0.0-0.1 East (Spokane Street to Ash Grove Cement) | Port of Seattle Terminal 104 | 01003 | 72668645 | Prepare and submit an annual report to document groundwater monitoring results and provide recommendations for future remedial efforts as stated in the VCP Cleanup Action Plan | Medium | Port of Seattle | | Project is currently in final stages of property/project transfer to City of Seattle SDOT. |
| A01.07.00 | Records Review | RM 0.0-0.1 East (Spokane Street to Ash Grove Cement) | Port of Seattle Terminal 104 | 01003 | 72668645 | Review post remediation reports and annual report as part of the VCP and determine whether further action is needed. | High | Ecology | | Project is currently in final stages of property/project transfer to City of Seattle SDOT. |
| A01.08.00 | Cleanup | RM 0.0-0.1 East (Spokane Street to Ash Grove Cement) | Ash Grove Cement | 01001 | 2142 | Negotiate an agreed order for a Remedial Investigation/ Feasibility Study that will focus on potential soil and groundwater contamination at the site. | Medium | Ecology, Property owner/operator | | Additional information about current soil and groundwater conditions is needed before negotiation of an Agreed Order |
| A01.11.00 | Source Assessment | RM 0.0-0.1 East (Spokane Street to Ash Grove Cement) | Ash Grove Cement | 01001 | 2142 | Inspect condition and operational records of the groundwater well used for cooling water to ensure that it cannot release contaminants into the aquifer. | Medium | Ecology WQ | | It is unknown whether this well is currently active. |
| A02.07.01 | BMP Implementation | RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) | GSA / Federal Center South | 03001 | 10233917 | Clean and repair storm drain system; correct housekeeping issues | Medium | GSA | | This action item was based on a 2004 inspection. Major storm drain system revisions were completed during construction of a new building at the site, based on design drawings dated August 2010 received from B. Schmoyer. An August 2010 Urban Waters inspection (during construction) found some issues. No inspection since 2010. Outfall inventory indicates there are still questions about which outfalls have been permanently plugged and which are currently active. |
| A02.10.02 | Data Evaluation | RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) | Former JANCO-United, Inc. | 02114 | 5568786 | Review groundwater data collected under VCP; determine if further source control actions are needed. | Low | Ecology | | Site is listed on CSCSL as Lennox Industries; status is 'awaiting cleanup.' Arsenic and 1,4-dichlorobenzene were detected in groundwater above MTCA Method A or B levels in 2009. |
| A02.20.04 | Cleanup | RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) | Terminal 108 | 02119 | 2344 | Implement appropriate source control actions. | Medium | Port of Seattle | In Progress | EPA and the Port of Seattle completed and EPA approved a Preliminary Assessment Report (PA-SI) in February 2019. The Port, City and County signed an ASAOC in 2020 to perform an EE/CA, which includes an evaluation of the need for a future removal action to address human health risks or source control. |
| A02.24.00 | Cleanup | RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) | Rainier Commons / Former Rainier Brewery Property | 02053 | 8972, 9192461 | Sample and remove PCB-contaminated building materials, including interior paint, as needed. | High | EPA/Property Owner | In Progress | EPA approved Rainier's general work plan in December 2013. Removal will take place in phases, with each phase commencing only after EPA approves the individual phase work plan. In 2017 Rainier Commons submitted an application for Phase II-b, paint removal of several building faces. No additional information available. |
| A02.32.00 | Data Evaluation | RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) | North Star Casteel | 02042 | 18301, 21195, 11628955 | Review results of environmental investigations to determine if sediment COCs are present in soil and/or groundwater at concentrations that exceed screening levels, and determine if additional actions are needed for source control. | Low | Ecology | | |
| A03.03.00 | Environmental Sampling | RM 0.9-1.0 East (Slip 1) | Federal Center South | 03001 | 10233917 | Conduct a visual bank survey; collect and analyze bank soil samples for sediment COCs to evaluate the potential for sediment recontamination from bank erosion. | Medium | Ecology, Property owner/operator | | |
| A03.04.00 | Source Assessment | RM 0.9-1.0 East (Slip 1) | Federal Center South | 03001 | 10233917 | Perform Site Hazard Assessment | High | Ecology | | |
| A03.06.00 | Inspection | RM 0.9-1.0 East (Slip 1) | Federal Center South | 03001 | 10233917 | Determine if Federal Center South must apply for coverage under the Industrial Stormwater General Permit. | Medium | EPA, Ecology | | |

Table B-2. Incomplete Action Items

| Action Item No. | Action Item Category | Source Control Area | Property/ Facility/ Outfall | Property Number | Facility/ Site ID | Action Item | Priority | Responsible Party | Status | Comments/Follow-On Actions |
|-----------------|------------------------|---|------------------------------------|-----------------|-------------------|--|----------|-------------------------|-------------|---|
| A03.08.00 | Environmental Sampling | RM 0.9-1.0 East (Slip 1) | Former Snopac Products Property | 03003 | 1523145, 3967301 | If there is potential for historical releases, require the property owner/operator to collect soil and groundwater samples and analyze them for sediment COCs. Prepare and implement a plan to remediate soil and/or groundwater, as needed. | Medium | Ecology | In Progress | Samples have been collected and analyzed; soil and groundwater remediation will be implemented as part of Agreed Order DE-16300. |
| A03.14.00 | Records Review | RM 0.9-1.0 East (Slip 1) | Manson Construction Company | 03002 | 80333167 | Obtain laboratory data and site plans from historical site assessment(s) and remediation performed at the property. Confirm that satisfactory completion of soil cleanup activities was achieved. Determine if arsenic or other sediment COCs are present in soil and groundwater beneath the facility at concentrations that may recontaminate sediments. | High | Ecology | | |
| A03.15.00 | Environmental Sampling | RM 0.9-1.0 East (Slip 1) | Manson Construction Company | 03002 | 80333167 | If satisfactory soil cleanup was not achieved, require the property owner/operator to conduct a site assessment to determine residual concentrations of sediment COCs in soil and groundwater beneath the property. | High | Ecology | | |
| A03.17.00 | Environmental Sampling | RM 0.9-1.0 East (Slip 1) | Manson Construction Company | 03002 | 80333167 | Conduct a visual bank survey during low tide conditions; collect and analyze bank soil samples for COCs. Reconnaissance cores should be collected along the top and bottom of the bank to determine "as is" conditions. | Medium | Ecology | | |
| A04.09.00 | Information Request | RM 1.0-1.2 East (KC Lease Parcels) | Cadman Seattle, Inc. | 04001 | 70313617 | Require Cadman to report when discharges to Outfall No. 2244 occur to allow Ecology to track overflow events and evaluate potential impacts to the LDW. | High | Ecology | | |
| A04.14.00 | Records Review | RM 1.0-1.2 East (KC Lease Parcels) | United Western Supply | 04003 | 9953954 | Obtain and review the March 1997 environmental assessment report, prepared by Boateng, in order to identify potential sources of COCs to sediment and develop appropriate source control actions. | Medium | Ecology | | |
| A04.19.00 | Environmental Sampling | RM 1.0-1.2 East (KC Lease Parcels) | J.A. Jack & Sons | 04002 | 37836248 | Require J.A. Jack to obtain environmental data to assess the groundwater quality in the infiltration gallery in order to determine if sediment COCs are present in groundwater and if these COCs may be transported to the LDW. | Medium | Ecology | | |
| A04.20.00 | Inspection | RM 1.0-1.2 East (KC Lease Parcels) | J.A. Jack & Sons | 04002 | 37836248 | Conduct a visual bank survey. If bank erosion is likely, collect bank soil samples and analyze them for sediment COCs to evaluate the potential for contaminants to enter the LDW via bank erosion. | Medium | Ecology | | |
| A04.22.02 | Records Review | RM 1.0-1.2 East (KC Lease Parcels) | Chevron 9-0636 | 25101 | 1792892 | Review information regarding LUSTs at Chevron 9-0636 to evaluate the potential for sediment recontamination, if any, that may be associated with these facilities. | Low | Ecology | | Chevron 9-0636 is a state cleanup site; status is listed as Awaiting Cleanup. An SHA was performed in 2015, and the site was assigned a rank of 4. Contaminants are TPH and benzene. |
| A04.23.00 | Inspection | RM 1.0-1.2 East (KC Lease Parcels) | Union Pacific Motor | 2131 | 74589256 | Perform an inspection at Union Pacific Motor (a LUST facility) to verify compliance with applicable regulations and BMPs to prevent the release of contaminants to the LDW. | Low | Ecology TCP | | This is a state cleanup site; status is listed as Cleanup Started. An SHA was performed in 2015, and the site was assigned a rank of 5. A stormwater compliance inspection was conducted in February 2019; several permit violations were identified. |
| A04.24.02 | Inspection | RM 1.0-1.2 East (KC Lease Parcels) | Seattle-SPU Materials Storage Yard | 25156 | NA | Perform an inspection at the SPU Materials Storage Yard; this facility holds a KCIW discharge authorization but had not been assigned a Facility/Site ID number by Ecology at the time the SCAP was prepared. | Low | Ecology | | |
| A05.02.00 | Cleanup | RM 1.2-1.7 East (Saint Gobain to Glacier Northwest) | Saint Gobain Containers Inc. | 05003 | 94925241 | Determine appropriate engineering controls for the inaccessible contamination located beneath the soil/water separator described in the 1991 Limited UST Assessment. | High | Property Owner/Operator | | This is a state cleanup site; status is listed as Cleanup Started. |

Table B-2. Incomplete Action Items

| Action Item No. | Action Item Category | Source Control Area | Property/ Facility/ Outfall | Property Number | Facility/ Site ID | Action Item | Priority | Responsible Party | Status | Comments/Follow-On Actions |
|-----------------|------------------------|---|---|-----------------|-------------------|--|----------|---------------------------------|-------------|--|
| A05.06.00 | Data Evaluation | RM 1.2-1.7 East (Saint Gobain to Glacier Northwest) | Longview Fibre Paper and Packaging | 05002 | 2226 | Review the latest groundwater monitoring report regarding exceedances of diesel-range hydrocarbons. | High | Ecology | | If needed, require the property owner/operator to prepare a remedial action plan. This is a state cleanup site; status is listed as Cleanup Started. Most recent groundwater sampling was in 2012; diesel-range hydrocarbons exceeded MTCA and PCULs in one well. |
| A05.12.00 | Records Review | RM 1.2-1.7 East (Saint Gobain to Glacier Northwest) | Certaineed Gypsum | 05001 | 2253 | Locate and review the 500-gallon UST closure report documented in Ecology's UST database. Evaluate the potential for groundwater contamination. | Low | Ecology | | This is a state cleanup site; status is listed as Cleanup Started. |
| A05.13.01 | Cleanup | RM 1.0-1.2 East (KC Lease Parcels) | Burlington Environmental/PSC Environmental Services | 25163 | 47779679 | Implement Cleanup Action Plan as specified in Agreed Order and Dangerous Waste Permit. | Medium | Property Owner/Operator | In Progress | Of the cleanup actions required by the 2010 CAP, three primary actions have yet to be completed: (1) implementation of in-situ bioremediation (groundwater behind the barrier wall), (2) establishment of an environmental covenant for the Burlington property, and (3) establishment of an environmental covenant for the adjoining UPRR property. Completion of in-situ bioremediation (1 above) is expected in May 2020. |
| A05.14.02 | Cleanup | RM 1.0-1.2 East (KC Lease Parcels) | Art Brass Plating | 25161 | 88531932 | Complete the West of 4th Site Feasibility Study, finalize FS report and draft Cleanup Action Plan. | Medium | Ecology/Property Owner/Operator | In Progress | Pilot studies and interim action activities were initiated in the second half of 2018 and are scheduled to continue through 2019. |
| A05.16.02 | Cleanup | RM 1.0-1.2 East (KC Lease Parcels) | Blaser Die Casting | 25162 | 7118747 | Complete the West of 4th Site Feasibility Study, finalize FS report and draft Cleanup Action Plan. | Medium | Ecology/Property Owner/Operator | In Progress | Pilot studies and interim action activities were initiated in the second half of 2018 and are scheduled to continue through 2019. |
| A05.17.02 | Cleanup | RM 1.0-1.2 East (KC Lease Parcels) | Capital Industries Inc. | 25164 | 11598755 | Complete the West of 4th Site Feasibility Study, finalize FS report and draft Cleanup Action Plan. | Medium | Ecology/Property Owner/Operator | In Progress | Pilot studies and interim action activities were initiated in the second half of 2018 and are scheduled to continue through 2019. |
| A05.18.00 | Cleanup | RM 1.0-1.2 East (KC Lease Parcels) | Burlington Environmental/PSC Environmental Services | 25163 | 47779679 | Complete the West of 4th Site Feasibility Study, finalize FS report and draft Cleanup Action Plan. | Medium | Ecology/Property Owner/Operator | In Progress | Pilot studies and interim action activities were initiated in the second half of 2018 and are scheduled to continue through 2019. |
| A06.01.00 | BMP Implementation | RM 1.7-2.0 East (Slip 2 to Slip 3) | 1st Avenue S Bridge Storm Drain (Outfall 2503) | NA | NA | Assess the effectiveness of the vegetated swale in treating stormwater discharged via Outfall 2503. | Medium | Ecology | | |
| A06.14.00 | Environmental Sampling | RM 1.7-2.0 East (Slip 2 to Slip 3) | Seattle Biodiesel | 06007 | 5023482 | Collect information regarding chemical concentrations in bank soils. A 2007 spill of process mixture flowed across the bank soils at this property. | Medium | Ecology | | General Biodiesel now operates at this location. |
| A06.25.00 | Source Assessment | RM 1.7-2.0 East (Slip 2 to Slip 3) | Former Frank's Used Cars | 06005 | 2337 | Review the current status of cleanup activities at this site to determine whether residual soil contamination poses a risk of sediment recontamination. | Medium | Ecology | | This site is listed as 'awaiting cleanup' on the CSCSL. An SHA conducted at this site in 2015 assigned a rank of 4 due to arsenic, cadmium, lead, PCBs and BTEX in shallow soil. |
| A06.28.00 | Inspection | RM 1.7-2.0 East (Slip 2 to Slip 3) | Fittings, Inc. | 06004 | 22569 | Determine whether this facility should apply for coverage under the Industrial Stormwater General Permit | Medium | Ecology | | SPU inspected in 2015 and found illicit connection to the storm drain discharging to Slip 2. Facility corrected the problem in 2016. |
| A06.30.00 | Data Evaluation | RM 1.7-2.0 East (Slip 2 to Slip 3) | Former Consolidated Freightways | 06002 | 54757868 | Locate and review the results of soil and groundwater sampling proposed in 2000 (if the sampling plans were implemented), and assess the potential for sediment recontamination via groundwater transport. | Medium | Ecology | In Progress | The current site owner (Prologis, Inc.) is conducting a cleanup of this site under the VCP (NW3050). A cleanup action closure report was submitted to Ecology in July 2018. Further remedial action is needed. |
| A06.31.00 | Source Assessment | RM 1.7-2.0 East (Slip 2 to Slip 3) | Former Consolidated Freightways | 06002 | 54757868 | Search for additional information regarding the two dump areas located just east of East Marginal Way S in 1940, as identified in historical aerial photographs (Harper-Owest 1985, Item 21), and evaluate the potential for sediment recontamination associated with these areas. | Medium | Ecology | | This area of the site was covered by industrial development in 1961. It is within the boundaries of Cleanup Site 6262 (Consolidated Freightways), which is being remediated under VCP NW3050. |
| A06.32.00 | Inspection | RM 1.7-2.0 East (Slip 2 to Slip 3) | Emerald Tool, Inc. | 25166 | 2084 | Conduct a business inspection at this facility; request information regarding concentrations of sediment COCs in soil and catch basins at this property. | Low | Ecology | | In 2018, a site investigation at an adjoining property found chlorinated solvents in groundwater above MTCA cleanup levels; Ecology concluded that contaminants likely migrated from Emerald Tool. |
| A06.34.00 | Cleanup | RM 1.7-2.0 East (Slip 2 to Slip 3) | Kelly Moore Paint Company | 25167 | 2163 | Determine the current status of cleanup efforts to evaluate whether additional remedial activities are required. | Low | Ecology | In Progress | Cleanup is in progress at this site under the VCP (NW 2305). |

Table B-2. Incomplete Action Items

| Action Item No. | Action Item Category | Source Control Area | Property/ Facility/ Outfall | Property Number | Facility/ Site ID | Action Item | Priority | Responsible Party | Status | Comments/Follow-On Actions |
|-----------------|----------------------|--|----------------------------------|-----------------|-------------------|---|----------|-------------------|-------------|--|
| A06.37.01 | Source Assessment | RM 1.7-2.0 East (Slip 2 to Slip 3) | Pioneer Porcelain Enamel Company | 25168 | 2161 | Request the property owner to provide information regarding the nature and extent of soil contamination at the site to determine if contaminants in soil may be leaching to groundwater, and if contaminated groundwater may then be infiltrating into the combined sewer system. | Low | Ecology | | This site is listed on the CSCSL as 'awaiting cleanup' with confirmed metals contamination in soil. |
| A06.37.02 | Source Assessment | RM 1.7-2.0 East (Slip 2 to Slip 3) | Scougal Rubber corp. | 25169 | 93637295 | Request the property owner to provide information regarding the nature and extent of soil contamination at the site to determine if contaminants in soil may be leaching to groundwater, and if contaminated groundwater may then be infiltrating into the combined sewer system. | Low | Ecology | In Progress | Site cleanup is in progress under VCP NW1707. Soil was excavated in 2017 to remove residual TCE contamination. An oxidation infiltration system was installed and began operation in 2017; infiltration events were planned for 2018 and 2019. |
| A06.37.03 | Source Assessment | RM 1.7-2.0 East (Slip 2 to Slip 3) | Sonn Property | 25169 | 93637295 | Request the property owner to provide information regarding the nature and extent of soil contamination at the site to determine if contaminants in soil may be leaching to groundwater, and if contaminated groundwater may then be infiltrating into the combined sewer system. | Low | Ecology | | Same FSID as Scougal Rubber above. |
| A06.37.04 | Source Assessment | RM 1.7-2.0 East (Slip 2 to Slip 3) | Unocal Service Station 0907 | 25172 | 2825755 | Request the property owner to provide information regarding the nature and extent of soil contamination at the site to determine if contaminants in soil may be leaching to groundwater, and if contaminated groundwater may then be infiltrating into the combined sewer system. | Low | Ecology | | The site is listed as 'cleanup started' on the CSCSL, with confirmed contamination of soil and groundwater (petroleum products, non-halogenated VOCs). |
| A07.02.00 | Source Assessment | RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) | S Brighton Street SD | NA | NA | Conduct source tracing in the S Brighton Street SD basin. | High | SPU, Ecology | In Progress | SPU jetted and cleaned the entire drainage system in 2010. In 2018, zinc (970 mg/kg), TPH-oil (3,350 mg/kg), BEHP (4.04 mg/kg DW), and dibutyl phthalate (22.1 mg/kg DW), exceeded the CSL in an inline sample at MH223. These concentrations are higher than what was measured in this system two years after cleaning. SPU will continue to monitor this system. |
| A07.03.01 | Records Review | RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) | S Brighton Street SD | 07008 | 11887871, 2134 | Review VCP files pertaining to four former facilities at South Seattle Community College (Arrow Transportation, Inland Transportation Company, Ben's Truck Repair, and Hat n' Boots Gas Station). Investigate the South Seattle Community College property to determine what cleanup actions may have been conducted during development, and whether potential sources of sediment recontamination may remain onsite from the four former facilities. | Medium | Ecology | | Inland Transportation (Arrow Transportation) is a cleanup site (CSID 5061). Ecology has determined that no further action is needed at this site. |
| A07.04.00 | Records Review | RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) | South Seattle Community College | | NA | Based on the review of VCP files investigate, if necessary, the South Seattle Community College property to determine what cleanup actions may have been conducted during development, and whether potential sources of sediment recontamination may remain onsite from the four former facilities of concern. | Medium | Ecology | | |

Table B-2. Incomplete Action Items

| Action Item No. | Action Item Category | Source Control Area | Property/ Facility/ Outfall | Property Number | Facility/ Site ID | Action Item | Priority | Responsible Party | Status | Comments/Follow-On Actions |
|-----------------|----------------------|--|--|-----------------|--------------------|--|----------|----------------------------------|-------------|--|
| A07.06.00 | Source Assessment | RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) | S River Street SD | NA | NA | Conduct source tracing in the S River Street SD basin. | High | SPU, Ecology | In Progress | SPU jetted and cleaned the entire system in 2010. Elevated levels of PAHs (1.2 mg/kg DW) were found in a surface dirt sample collected adjacent to an onsite catch basin in 2018. SPU had the owner clean/jet onsite drainage system and pressure wash the paved lot. SPU will resample in 2019/2020 to confirm that PAHs have been controlled. SPU conducted IDDE survey in this area in 2014. Did not find any evidence of cross connections in this system. SPU sampled the downstream-most MH in 2018. TPH-oil (2,860 mg/kg) and BEHP (4.4 mg/kg DW) exceeded the City's source tracing thresholds. SPU intends to continue monitoring storm drain solids at the downstream end of this system. |
| A07.14.00 | Records Review | RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) | V. Van Dyke | 07010 | 68427684 | Determine whether a UST may have been removed from the property without a proper closure. | Medium | Ecology | | |
| A07.16.00 | Records Review | RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) | V. Van Dyke | 07010 | 68427684 | Locate and review additional reports related to V. Van Dyke property that are missing from Ecology's files. | Medium | Ecology | | |
| A07.20.00 | Cleanup | RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) | Riverside Industrial Park | 07004 | 37289288, 44383713 | Determine the status of cleanup at the facility and whether to pursue additional investigation and cleanup under an administrative order. | Medium | Ecology | | This is a state cleanup site (CSID 4178); status is listed as 'Cleanup Started'. It is currently enrolled in the VCP Program. |
| A08.02.00 | Source Assessment | RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | S Garden Street and S Myrtle Street Storm Drains | NA | NA | Conduct source tracing to identify potential contaminant sources to stormwater discharging to the LDW. | High | SPU, Ecology | In Progress | SPU cleaned the entire system in 2010. <u>S Garden Street SD</u> : Seattle Iron and Metals (SIM) owns the downstream end of the drainage system located on their property. SPU required Seattle Iron and Metals to install a Filterra treatment unit on S Garden Street to control pollutant track out from the processing area at 701 S Orchard St. No samples were collected in 2018. <u>S Myrtle Street SD</u> : SPU installed 5 styles of sediment traps in the 2 downstream-most MHs in this system in 2016 as part of the sediment trap pilot study. Samples collected from 3 of the traps in 2018 contained elevated levels of copper (540 to 660 mg/kg), lead (540 to 620 mg/kg), mercury (1.4 to 1.9 mg/kg), PCBs (2.3 to 2.9 mg/kg DW), and TPH-oil (8,000 mg/kg). SDOT sweeps S Myrtle Street and S Garden Street every week. SPU also required SIM to install Filterra stormwater water treatment units on S Myrtle Street adjacent to driveway to control track out. Per Puget SoundKeepers lawsuit, SIM is required to design/install a dust collection system for the shredder unit, install wind fences to capture fugitive dust emissions, and design/implement a 2-phase dust emission monitoring program (to start in 2019). |
| A08.06.00 | Inspection | RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | Seattle Boiler Works, Inc. | 08008 | 17577864 | Determine if the five outfalls that are not included in Seattle Boiler Work's NPDES permit are in use. If in use and Seattle Boiler Works is the source of discharge, modify the facility's stormwater permit to include these outfalls. | High | Ecology | | |
| A08.12.01 | Source Assessment | RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | Seattle Iron & Metals Corporation | 08010 | 94727791 | Review stormwater improvements, when completed, to assess the potential for transport of ASR to the LDW. | Medium | Ecology | | Stormwater treatment upgrade has been completed, however effluent violations continue. |
| A08.18.00 | Source Assessment | RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | Puget Sound Truck Lines | 08007 | 41684823 | Determine whether the five outfalls identified at the property are active, and identify the source of discharge from these outfalls, if any. | High | Ecology, Property owner/operator | | Current operator at this property is Recology CleanScapes. |
| A08.20.00 | Records Review | RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | Seattle City Light Georgetown Pump Station | 08009 | 21369 | Obtain and review information about any groundwater sampling that has been conducted at this property. Based on this review, evaluate the need for further source control actions. | Medium | Ecology | | |

Table B-2. Incomplete Action Items

| Action Item No. | Action Item Category | Source Control Area | Property/ Facility/ Outfall | Property Number | Facility/ Site ID | Action Item | Priority | Responsible Party | Status | Comments/Follow-On Actions |
|-----------------|------------------------|--|--|-----------------|-------------------|--|----------|----------------------------------|-------------|--|
| A08.21.00 | Cleanup | RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | Crowley Marine Services | 09002 | 1940187 | In conjunction with an Agreed Order for the Crowley Marine Services site, perform additional investigations that include collection of data on chemical concentrations in soil and groundwater at the western and southern portions of the property. | High | Property owner/operator | In Progress | To be conducted in accordance with Agreed Order No. DE-6721. A Public Review Draft RI Report was completed in 2019. A supplemental investigation for the draft FS is in progress. |
| A08.27.01 | Cleanup | RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | Fox Avenue Building | 08002 | 2282 | Conduct sitewide groundwater monitoring and continue ERD treatment and additional substrate injection in the downgradient area at Seattle Boiler Works property. | Medium | Property owner/operator | In Progress | Groundwater monitoring and substrate injection (including on the Seattle Boiler Works property) is continuing under Agreed Order DE-8985. |
| A08.29.00 | Cleanup | RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | Whitehead Company, Inc./Former Tyee Industries | 08013 | 9809, 48578491 | Require the property owner/operator to address the pentachlorophenol contamination in groundwater discovered by Cascade Columbia Distributions' consultant. | Medium | Ecology | In Progress | An Agreed Order (DE-13548) was signed in August 2016 requiring Seattle Iron and Metals and 730 Myrtle LLC to implement an interim action, conduct an RI/FS, and prepare a draft CAP. The interim action for removal of some of the PCP-contaminated soils (where the stormwater treatment system is to be installed) was completed in 2018. |
| A08.31.00 | Inspection | RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | Whitehead Company, Inc./Former Perkins Lot | 08006 | 43114188 | Conduct facility inspection to determine if activities conducted by businesses at 720 S Orchard Street require an NPDES permit, and to ensure compliance with applicable codes and regulations. | Medium | Ecology, EPA | In Progress | In 2013 Taxi King was granted coverage under the NPDES ISGP; the permit was canceled in March 2014. No additional information available. |
| A08.34.00 | Information Request | RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | Whitehead Company, Inc./Former Perkins Lot | 08006 | 43114188 | Obtain a list of previous tenants from the property owner to evaluate historical operations and to determine if these operations could have resulted in soil or groundwater contamination. | Medium | Ecology, Property owner/operator | | An NFA determination for this site was made for this site (CSID 1257) by Ecology in 2006. |
| A08.39.00 | Source Assessment | RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | Former Sternoff Parcel | 08011 | 2057 | Evaluate the need for additional soil and groundwater samples and analyze them for sediment COCs to determine the potential for sediment recontamination via the groundwater discharge pathway. | Medium | Ecology | | This cleanup site (CSID 4466) is listed as 'awaiting cleanup.' |
| A08.40.00 | Records Review | RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | Former Sternoff Parcel | 08011 | 2057 | Locate documentation verifying that a PCB-contaminated "trash pile" and approximately 52,187 pounds of contaminated soil have been removed from the property. | Medium | Ecology | | |
| A08.41.00 | Records Review | RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | Former Sternoff Parcel | 08011 | 2057 | Determine the disposition of petroleum-contaminated soil stockpiled at the property by Remedco and provide the documentation to Ecology. | Low | Ecology | | |
| A09.03.00 | Environmental Sampling | RM 2.8 East (EAA-3: Slip 4) | North Boeing Field / KCIA / I-5 Storm Drains | 09006, 09009 | 2387398, 2753918 | Reinstall sediment traps and continue monitoring as needed. | High | SPU, Boeing, King County | In Progress | Boeing has discontinued sediment trap sampling as of 2017. King County and SPU continue to reinstall and sample sediment traps at KCIA and the I-5 storm drain, respectively. In 2018, BEHP, butylbenzyl phthalate, dibutyl phthalate, benzoic acid, and benzyl alcohol exceeded the CSL in the sediment trap sample collected from the I-5 SD at Slip 4 (SL4-T6). |
| A09.04.02 | Source Assessment | RM 2.8 East (EAA-3: Slip 4) | North Boeing Field | 09009 | 2753918 | Determine impact of remaining joint sealant material on PCB concentrations in stormwater. | High | Ecology | In Progress | Investigation of joint sealant is continuing as part of the RI/FS. |
| A09.08.02 | Source Assessment | RM 2.8 East (EAA-3: Slip 4) | North Boeing Field | 09009 | 2753918 | Continue source tracing in north drain line to identify and/or eliminate transport of PCBs to Slip 4. | High | Boeing | In Progress | Source tracing is continuing as part of the RI/FS. |
| A09.29.00 | Cleanup | RM 2.8 East (EAA-3: Slip 4) | Crowley Marine / 8th Avenue Terminals | 09002 | 1940187 | Conduct investigation and cleanup activities in accordance with the Agreed Order, including collection of groundwater and storm drain system samples as appropriate. | Medium | 8th Avenue Terminals (Crowley) | In Progress | Stormwater catch basin samples have been collected. Results are reported in the Public Review Draft RI (August 2019). The tenant, Waste Management, installed stormwater treatment in early 2019. A supplemental investigation for the draft FS is in progress. |
| A09.38.00 | Data Evaluation | RM 2.8 East (EAA-3: Slip 4) | Boeing Plant 2 | 10002 | 2100 | Assess existing groundwater data in the area. | Low | Ecology, EPA | | Boeing conducted shoreline groundwater monitoring during 2017, however reports were not available for review. |
| A09.43.03 | Cleanup | RM 2.8 East (EAA-3: Slip 4) | KCIA | 09006 | 2387398 | Conduct soil and groundwater investigation and cleanup under Ecology's VCP. | Low | KCIA, property operator | In Progress | Shultz and subtenant operators are conducting investigations at the site for eventual cleanup under the VCP. KCIA lessee and subtenant operators are conducting investigations at the site for eventual cleanup under the VCP. |

Table B-2. Incomplete Action Items

| Action Item No. | Action Item Category | Source Control Area | Property/ Facility/ Outfall | Property Number | Facility/ Site ID | Action Item | Priority | Responsible Party | Status | Comments/Follow-On Actions |
|-----------------|------------------------|---|-------------------------------|---------------------|-------------------|---|----------|---|-------------|--|
| A09.54.00 | Cleanup | RM 2.8 East (EAA-3: Slip 4) | NBF-GTSP | 09005, 09006, 09009 | 2050 | Conduct RI/FS and implement interim actions (as needed). | High | Ecology, Boeing, City of Seattle, King County | In Progress | RI/FS is in progress. During 2018, several groundwater sampling events were complete at NBF and the GTSP. Off-property soil vapor and groundwater sampling along Ellis Avenue were also conducted. |
| A10.01.00 | Cleanup | RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge) | Boeing Plant 2 | 10002 | 2100 | Evaluate the remaining Plant 2 Corrective Measures Study study areas and continue to determine needed source control actions. | Medium | EPA, Boeing | In Progress | Boeing has completed many of the interim soil cleanups and installed stormwater treatment systems. EPA expects to publish a proposed final cleanup plan for the upland area of Boeing Plant 2 in 2019. |
| A10.02.00 | Cleanup | RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge) | Boeing Plant 2 | 09006 | 63879778 | Continue to delineate and evaluate the EMF plume. | Medium | EPA, Boeing | In Progress | An EE/CA was completed in December 2015, and a public review period ended in August 2016. EPA has delayed preparation of the Action Memorandum due to prioritization of other sites. Boeing conducted bioremediation treatment in selected areas at the site in November 2017. Boeing intends to conduct additional treatments in 2018. King County continues to monitor activities. |
| A10.05.00 | Cleanup | RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge) | Boeing Plant 2 | 10002 | 2100 | Conduct monthly sampling, including groundwater sampling and vapor sampling of the DDC wells and multiple points along the vapor treatment system. | Medium | EPA, Boeing | In Progress | |
| A10.06.00 | Cleanup | RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge) | Boeing Plant 2 | 10002 | 2100 | Continue shoreline groundwater monitoring. | High | EPA, Boeing | In Progress | Shoreline groundwater monitoring was conducted during 2017, however reports were not available for review. EPA issued a determination that migration of contaminated groundwater is under control. |
| A10.09.01 | Source Assessment | RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge) | Boeing Plant 2 | 10002 | 2100 | Conduct an investigation to provide additional hydrogeologic data at the boundary of the Boeing Plant 2/Jorgensen Forge facilities. | High | Boeing | In Progress | Activities at Plant 2 have reportedly been completed, however no documentation has been provided. |
| A10.09.02 | Source Assessment | RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge) | Jorgensen Forge | 10003 | 2382 | Conduct an to provide additional hydrogeologic data at the boundary of the Boeing Plant 2/Jorgensen Forge facilities. | Medium | Jorgensen Forge | In Progress | Jorgensen Forge will be investigated, as necessary, under new Agreed Order DE-14143, and results will be presented in the RI Report. |
| A10.11.00 | Environmental Sampling | RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge) | Boeing Plant 2 | 10002 | 2100 | Collect in-line sediment samples in the city of Seattle and city of Tukwila systems immediately prior to discharge to Plant 2's storm drain system. | High | Ecology, Boeing | | City of Seattle lines have been closed. Boeing is working with the city of Tukwila. In October 2017, EPA suspended stormwater monitoring under the Boeing RCRA Order in deference to Ecology's Water Quality Program. |
| A10.18.00 | Source Assessment | RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge) | Jorgensen Forge | 10003 | 2382 | Develop a hydrogeologic site model as part of the source control investigation to characterize the groundwater system on site, including tidal influence. | High | Jorgensen, Boeing | In Progress | For the Jorgensen site, a tidal study/ hydrogeologic investigation and conceptual model will be conducted, as necessary, under Agreed Order DE-14143. Results will be presented in the RI Report. |
| A10.33.00 | Cleanup | RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge) | Jorgensen Forge | 10003 | 2382 | Complete a Remedial Investigation/Feasibility Study of the upland site area | High | Jorgensen, Boeing | In Progress | Agreed Order (DE-14143) was signed in July 2017; this action item will be completed under the Agreed Order, and will be presented in the RI Report. |
| A10.34.00 | BMP Implementation | RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge) | East Marginal Way S. | 11002 | NA | Install stormwater treatment for roadway runoff discharged through the newly dedicated City of Tukwila outfall (the former Plant 2 Z line) | Medium | City of Tukwila | In Progress | This retrofit project is funded in part by an Ecology Stormwater Financial Assistance Program grant. Project has been delayed due to funding issues. |
| A11.12.00 | Cleanup | RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA) | Boeing Isaacson/Thompson Site | 11001 | 2218 | Clarify the purpose, function, and configuration of the edge drains along the Boeing Isaacson shoreline. | Low | Boeing, Port of Seattle | In Progress | To be addressed as part of Agreed Order No. DE-7088 (Ecology 2010 [6812]). |
| A11.14.00 | Cleanup | RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA) | Boeing Isaacson/Thompson Site | 11001 | 2218 | Investigate the status and source of the unidentified outfall pipe located near the Boeing Isaacson/Jorgensen Forge property boundary (Outfall 2063). | Low | Boeing | | To be addressed as part of Agreed Order No. DE-7088. |
| A11.16.00 | Cleanup | RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA) | Boeing Isaacson/Thompson Site | 11001 | 2218 | If COCs in soil and groundwater are present at concentrations that pose a risk of sediment recontamination, then develop a plan for controlling these contaminant sources. | High | Ecology, Boeing | In Progress | To be addressed as part of Agreed Order No. DE-7088. Final RI submitted 4/21/2014. Supplemental Port of Seattle "sliver" property subsurface investigation conducted in 2015. PLP working on draft FS. |
| A11.19.00 | Cleanup | RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA) | Boeing Isaacson/Thompson Site | 11001 | 2218 | Review Boeing memorandum regarding findings associated with the two drainage pipes that may be discharging to the 8801 Site, and assess the potential that these discharges may contribute to recontamination of LDW sediments. | Medium | Ecology | In Progress | To be addressed as part of Agreed Order No. DE-7088. |

Table B-2. Incomplete Action Items

| Action Item No. | Action Item Category | Source Control Area | Property/ Facility/ Outfall | Property Number | Facility/ Site ID | Action Item | Priority | Responsible Party | Status | Comments/Follow-On Actions |
|-----------------|------------------------|---|--------------------------------|-----------------|-------------------|---|----------|----------------------------------|-------------|---|
| A11.27.00 | Source Assessment | RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA) | KCIA | 11002 | 72811433 | Assess/confirm the adequate completion of cleanup activities associated with petroleum Leaking Underground Storage Tanks at Hangar Holdings. | Low | Ecology | | Site is listed as 'cleanup started' (CSID 6574), with confirmed contamination with petroleum products and non-halogenated solvents. |
| A11.31.00 | Cleanup | RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge) | KCIA | 09006 | 63879778 | Monitor remedial activities at the former Boeing EMF to ensure that contaminated soil does not enter the storm drain system. | Medium | King County, EPA | In Progress | Boeing conducted bioremediation treatment in selected areas at the site in November 2017. Boeing intends to conduct additional treatments in 2018. King County continues to monitor activities. |
| A12.06.00 | Cleanup | RM 3.9-4.3 East (Slip 6) | 8801 Site (Former PACCAR Site) | 12001 | 2072 | Re-evaluate existing soil and groundwater data and compare to site-specific screening levels (to be developed) for metals, PAHs, petroleum hydrocarbons, PCBs, SVOCs, and VOCs as COCs in the LDW, and test for dioxin/furans. | High | Ecology, Property owner/operator | In Progress | A revised draft FS and Interim Action Work Plan were submitted to Ecology in March 2018; Ecology provided review comments in November 2018. |
| A12.08.00 | Cleanup | RM 3.9-4.3 East (Slip 6) | 8801 Site (Former PACCAR Site) | 12001 | 2072 | Complete Phase 2 of the Sediment Evaluation Work, which includes sediment core sampling in selected locations in the LDW adjacent to the site. | High | Ecology, Property owner/operator | | |
| A12.09.00 | Cleanup | RM 3.9-4.3 East (Slip 6) | 8801 Site (Former PACCAR Site) | 12001 | 2072 | Negotiate expanding the stormwater and storm drain solids monitoring to add COCs at the site. Review future monitoring results to determine if further actions are necessary. | High | Ecology, Property owner/operator | In Progress | |
| A12.10.00 | BMP Implementation | RM 3.9-4.3 East (Slip 6) | 8801 Site (Former PACCAR Site) | 12001 | 2072 | Review the current SWPPP and Operations and Maintenance Plan. Make necessary changes and additions to prevent contaminants from potential upland sources (such as fuel leaks from damaged vehicles) from migrating to Slip 6 sediments via the stormwater system. | Medium | Ecology, Property owner/operator | | Facility is covered under the ISGP (WAR008681), Insurance Auto Auctions. |
| A12.12.00 | Cleanup | RM 3.9-4.3 East (Slip 6) | Former Rhône-Poulenc Site | 12005 | 2150 | Continue to monitor the effectiveness of the hydraulic interim control measure, and investigate the presence of elevated copper concentrations in groundwater outside the barrier wall and the potential leak in the barrier wall. | High | EPA, Property owner/operator | In Progress | The HICM is still in operation and effective. An investigation of shoreline bank contamination was completed Sept 2012. Groundwater outside the barrier wall (included in Shoreline Area of site) will be addressed as part of the future site cleanup under RCRA. EPA established PRGs in March 2014, and Respondents submitted a draft CMS work plan to EPA in Sept 2014. In 2017 EPA approved a work plan for a CO2 Injection Pilot Study to address high pH, and work will start in 2018. EPA will continue working with the property owner to conduct the pilot study, assess the current conditions of groundwater throughout the site, update the PRGs, and continue with the CMS. |
| A12.13.00 | Cleanup | RM 3.9-4.3 East (Slip 6) | Former Rhône-Poulenc Site | 12005 | 2150 | Investigate and address shoreline bank contamination from historical site operations and releases (e.g. application of vanillin black liquor solids to the shoreline bank for weed control). | High | EPA, Property owner/operator | In Progress | An investigation of shoreline bank contamination was completed Sept 2012. The Shoreline Area will be addressed as part of the future site cleanup under RCRA. In 2017 EPA approved a work plan for a CO2 Injection Pilot Study to address high pH, and work will start in 2018. EPA will continue working with the property owner to conduct the pilot study, assess the current conditions of groundwater throughout the site, update the PRGs, and continue with the CMS. |
| A12.14.00 | BMP Implementation | RM 3.9-4.3 East (Slip 6) | Former Rhône-Poulenc Site | 12005 | 2150 | Review the current SWPPP and Operations and Maintenance Plan. Make necessary changes and additions to prevent contaminants from potential upland sources (such as fuel leaks from damaged vehicles) from migrating to Slip 6 source control area sediments via the stormwater system. | High | Ecology, Property owner/operator | | West parcel is leased by Container Properties to Insurance Auto Auctions; activities are covered IAA's permit. |
| A12.21.00 | Environmental Sampling | RM 3.9-4.3 East (Slip 6) | Museum of Flight (MOF) | 12004 | 98798343 | Monitor stormwater and/or storm drain solids at MOF and former BDC properties in the vicinity of USTs and associated groundwater contamination. | High | Ecology, Property owner/operator | In Progress | Boeing is responsible for the former BDC property (west of East Marginal Way). Stormwater will be monitored under WQ AO 15600. Historical storm drain solids sampling data for the former BDC property will be reviewed under MTCA AO DE 16275. The presence of USTs at the former BDC property will be investigated by Boeing. |

Table B-2. Incomplete Action Items

| Action Item No. | Action Item Category | Source Control Area | Property/ Facility/ Outfall | Property Number | Facility/ Site ID | Action Item | Priority | Responsible Party | Status | Comments/Follow-On Actions |
|-----------------|------------------------|---|-----------------------------|-----------------|-------------------|---|----------|----------------------------------|-------------|---|
| A12.22.00 | Cleanup | RM 3.9-4.3 East (Slip 6) | Museum of Flight (MOF) | 12004 | 98798343 | Develop a plan to remove USTs and associated soil and groundwater contamination on the MOF property. | Medium | Ecology, Property owner/operator | | If any USTs are identified on the former BDC property, Boeing will be required to develop a UST removal and soil/GW investigation plan. Presence of USTs in the MOF property east of East Marginal Way needs to be investigated separately. |
| A12.23.00 | Cleanup | RM 3.9-4.3 East (Slip 6) | Museum of Flight (MOF) | 12004 | 98798343 | Identify the source and extent of groundwater contamination on the former BDC property, and conduct remedial action, as necessary. | High | Ecology, Property owner/operator | In Progress | Will be identified during the RI; remedial action will be conducted if needed. |
| A12.26.00 | Information Request | RM 3.9-4.3 East (Slip 6) | BDC - North | 12002 | 2101 | Investigate UST locations to determine whether any USTs are located within the Slip 6 drainage basin and whether any USTs present a source of contaminants to soil and/or groundwater. | Low | Boeing | In Progress | The drainage basin to the two outfalls flowing into Slip 6 (DC 14 and DC 15) includes Buildings 9-05, 9-07, 9-04, 9-77, 9-08 at the BDC. The RI will include investigation of the presence of USTs. |
| A13.02.00 | Environmental Sampling | RM 4.3-4.9 East (Boeing Developmental Center) | BDC Outfalls | 13001 | 2101 | Request Boeing to prepare a work plan for collection of subsurface sediment samples in the area of the LDW adjacent to the BDC outfalls. | Medium | Ecology/Boeing | In Progress | Subsurface sediment sampling will be conducted during the RI. |
| A13.06.00 | Cleanup | RM 4.3-4.9 East (Boeing Developmental Center) | BDC - Central | 13001 | 2101 | Continue to monitor RCRA cleanup activities to ensure contaminants present in groundwater as a result of historical releases are not entering the LDW. | Low | Ecology | In Progress | RCRA activities will be completed under Agreed Order DE-16275 as part of an RI/FS/CAP for the entire BDC Site. Cleanup activities will be completed with Ecology oversight |
| A13.08.00 | Information Request | RM 4.3-4.9 East (Boeing Developmental Center) | BDC - Central | 13001 | 2101 | Request additional information about the nature of BDC's emissions and air permit as they relate to deposition on impervious surfaces and the stormwater pathway to the LDW. | Low | Boeing | In Progress | Air sampling will be conducted under Agreed Order DE-16275 as needed to address the air deposition pathway. |
| A13.09.00 | Environmental Sampling | RM 4.3-4.9 East (Boeing Developmental Center) | BDC - Central | 13001 | 2101 | Request Boeing to collect at least one round of seep samples from the four known seepage locations to confirm that no contaminants are being discharged to the LDW via this transport pathway. | Medium | Boeing | In Progress | Seep sampling will be conducted under Agreed Order DE-16275 to address discharge of contaminants to the LDW via this pathway. |
| A13.10.01 | Cleanup | RM 4.3-4.9 East (Boeing Developmental Center) | BDC - Central | 13001 | 2101 | Implement the actions specified in Agreed Order 16275, including preparation of an RI/FS/DCAP and implementation of an Interim Action. | Medium | Boeing | In Progress | Actions specified under the agreed order include completion of ongoing RCRA cleanup activities. |
| A14.05.00 | Cleanup | RM 4.9 East (EAA-7: Norfolk CSO/SD) | BDC-South | 14004 | 4581384 | Continue sediment monitoring in the vicinity of the south storm drain sediment removal activities. | High | Boeing | In Progress | Boeing continues to voluntarily monitor sediment in the vicinity of the 2003 removal action. Samples were collected most recently in September 2017; results are slightly higher than in previous years. |
| A14.07.00 | Environmental Sampling | RM 4.9 East (EAA-7: Norfolk CSO/SD) | BDC-South | 14004 | 4581384 | Continue monitoring storm drain solids. | High | Boeing | In Progress | Boeing continues to collect samples of accumulated solids in the Vortechincs sediment trap unit. Most recent samples were collected in September 2017. Results are significantly higher than the previous year. |
| A14.08.00 | Environmental Sampling | RM 4.9 East (EAA-7: Norfolk CSO/SD) | BDC-South | 14004 | 4581384 | Determine need for cleanup of caulk and/or other building materials that may contribute PCBs to the south storm drain. | Medium | Ecology, Boeing | In Progress | Boeing continues to sample potential contaminant sources in the south storm drain. In 2017, Boeing collected solids samples from the Building 9-101 roof (0.072 to 0.19 mg/kg DW total PCBs), and water and wipe samples from a drain pipe inside the building (1.71 ug/L and 0.97 ug/wipe total PCBs, respectively). |
| A14.11.00 | Source Assessment | RM 4.9 East (EAA-7: Norfolk CSO/SD) | BDC-South | 14004 | 4581384 | The 2007 SCAP identified a possible historical barge operation at Parcel 0423049016. Determine whether groundwater and soil sampling are needed at this parcel to assess possible historical contamination. | Medium | Ecology, Boeing | In Progress | The 2007 SCAP noted a barge visible in a historical aerial photo. The barge is still present (now rotten and abandoned) in the LDW adjacent to the noted parcel. Boeing has identified a historical Phase 1 assessment for this parcel and is attempting to obtain a copy of that report. |
| A14.15.00 | Environmental Sampling | RM 4.9 East (EAA-7: Norfolk CSO/SD) | Military Flight Center | 14005 | 14532, 72362672 | Monitor stormwater for PCBs at discharge points to assess potential ongoing sources. | Medium | Boeing | In Progress | Under Administrative Order #10554 (dated 4/3/2014), Boeing is required to monitor for PCBs in stormwater monitoring is performed at all four designated outfall locations. In 2017, the maximum detected concentration of total PCBs was 0.096 ug/L. |
| A14.16.00 | Cleanup | RM 4.9 East (EAA-7: Norfolk CSO/SD) | Military Flight Center | 14005 | 14532, 72362672 | Discuss cleanup options for removal of caulk containing PCBs at less than 50 mg/kg. | Medium | Ecology, Boeing | | Boeing submitted a work plan to address PCBs in paint and caulk in April 2015; plans included application of a polymeric coating and installation of new exterior metal siding to encapsulate the materials that contain less than 50 mg/kg PCBs. Abatement of PCB-containing materials was expected to occur during late summer and fall of 2015; no information on the current status of this effort was available. |

Table B-2. Incomplete Action Items

| Action Item No. | Action Item Category | Source Control Area | Property/ Facility/ Outfall | Property Number | Facility/ Site ID | Action Item | Priority | Responsible Party | Status | Comments/Follow-On Actions |
|-----------------|------------------------|--|--|-----------------|-------------------|---|----------|----------------------------------|-------------|---|
| A14.20.00 | Environmental Sampling | RM 4.9 East (EAA-7: Norfolk CSO/SD) | Unified Grocers / Associated Grocers | 14003 | 73338176 | Sample monitoring wells located near the former truck shop to evaluate current groundwater flow and extent of the contaminant plume; determine if additional monitoring wells are needed. | Medium | Property owner | | |
| A14.21.00 | Source Assessment | RM 4.9 East (EAA-7: Norfolk CSO/SD) | Unified Grocers / Associated Grocers | 14003 | 73338176 | Re-evaluate the free product removal strategy to determine its source control effectiveness. | Medium | Property owner | | |
| A14.22.00 | Environmental Sampling | RM 4.9 East (EAA-7: Norfolk CSO/SD) | Unified Grocers / Associated Grocers | 14003 | 73338176 | Determine whether additional groundwater and soil assessment is needed for the maintenance building where UST removal activities took place in 1995. | Medium | Ecology | | |
| A14.27.00 | Environmental Sampling | RM 4.9 East (EAA-7: Norfolk CSO/SD) | Northwest Auto Wrecking | 14009 | 2287 | Conduct soil, groundwater, surface water, and sediment sampling, as appropriate, to evaluate potential historical sources. | Medium | Northwest Auto Wrecking | | Review sampling results and assess potential for sediment recontamination. |
| A14.28.00 | Data Evaluation | RM 4.9 East (EAA-7: Norfolk CSO/SD) | Northwest Auto Wrecking | 14009 | 2287 | Review results of soil, groundwater, surface water, and/or sediment sampling to assess potential for sediment recontamination. | Medium | Ecology | | |
| A14.33.00 | Environmental Sampling | RM 4.9 East (EAA-7: Norfolk CSO/SD) | Affordable Auto Wrecking | 14001 | 7163112 | Confirmed soil and surface water contamination with metals and petroleum products. Conduct surface water, soil, and groundwater sampling to assess the potential for sediment recontamination. | Medium | Property owner/operator | | Affordable Auto Wrecking ceased operations in 2013-2014. Site is now vacant. Confirmed soil and surface water contamination; groundwater contamination is likely. Listed on CSCSL as "awaiting cleanup." |
| A14.36.00 | Cleanup | RM 4.9 East (EAA-7: Norfolk CSO/SD) | Affordable Auto Wrecking | 14001 | 7163112 | Determine cleanup options for removal of historically-contaminated media, as appropriate. | Medium | Ecology, Property owner/operator | | Listed on CSCSL as "awaiting cleanup." |
| A14.38.00 | Inspection | RM 4.9 East (EAA-7: Norfolk CSO/SD) | Affordable Auto Wrecking | 14001 | 7163112 | Oversee and monitor discharges to the combined sewer system. | Medium | KCIW | | Site is vacant, but site runoff continues to discharge to sanitary sewer. |
| A14.39.00 | Environmental Sampling | RM 4.9 East (EAA-7: Norfolk CSO/SD) | Arco Gas Station (Pacific Truck School) | 14002 | 29429665 | Conduct soil sampling in the area adjacent to the former tank farm under the Voluntary Cleanup Program, to determine if soils are impacted and if remediation is necessary to control this potential contaminant pathway. | Medium | Arco | | Cleanup Site name is Easteys ARCO (CSID 5834). Listed as "cleanup started" but no other information available. SHA was completed in 2015. |
| A14.40.00 | Environmental Sampling | RM 4.9 East (EAA-7: Norfolk CSO/SD) | Arco Gas Station (Pacific Truck School) | 14002 | 29429665 | Conduct additional groundwater monitoring. | Medium | Arco | | Cleanup Site name is Easteys ARCO (CSID 5834). Listed as "cleanup started" but no other information available. |
| A14.41.00 | Data Evaluation | RM 4.9 East (EAA-7: Norfolk CSO/SD) | Arco Gas Station (Pacific Truck School) | 14002 | 29429665 | Based on results of soil and groundwater sampling, determine whether further actions are needed to address potential historical sources. | Medium | Ecology | | Cleanup Site name is Easteys ARCO (CSID 5834). Listed as "cleanup started" but no other information available. |
| A15.01.00 | Source Assessment | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | SW Dakota Street SD Outfalls (Outfalls 2148, 2149, 2150, and 2233) | NA | NA | Continue source tracing to identify potential sources of the sediment COCs reported above screening levels in storm drain structures in the SW Dakota Street SD basin. | Medium | SPU, Ecology | In Progress | <u>Outfall 2149</u> is the City's SW Dakota Street SD; it was relocated to the habitat swale to accommodate development on land adjacent to waterway. SW Dakota Street end was vacated to Port in 2012 (Ord # 123884). SPU cleaned this system in 2016 and continues to collect samples in this basin. SPU sampled the MH near the downstream end of the system in 2018. BEHP, benzyl alcohol, and benzoic acid exceeded the CSL. This MH is severely backwatered due to sediment accumulation in the habitat swale. SPU intends to attempt to install a trap near the high water line in 2019 to collect storm drain solids. <u>Outfall 2148</u> serves the Encore Oil property at 4034 West Marginal Way SW. <u>Outfall 2150</u> serves the Lipsett Co property just east of Encore. SPU GIS indicates that both of these drainage systems are privately owned. <u>Outfall 2233</u> is the outlet of the salt water habitat swale constructed by the Port in 1993-1994. |

Table B-2. Incomplete Action Items

| Action Item No. | Action Item Category | Source Control Area | Property/ Facility/ Outfall | Property Number | Facility/ Site ID | Action Item | Priority | Responsible Party | Status | Comments/Follow-On Actions |
|-----------------|----------------------|--|--|-----------------|-------------------|--|----------|-------------------|-------------|--|
| A15.02.00 | Source Assessment | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | SW Idaho Street SD Outfalls (Outfall 2147) | NA | NA | Continue source tracing to identify potential sources of the sediment COCs reported above screening levels in storm drain structures in the SW Idaho Street SD basin. | Medium | SPU, Ecology | In Progress | SPU jetted and cleaned the entire SW Idaho Street SD system in 2013 and continues to operate 3 sediment traps in this drainage system. 2018 samples exceeded the CSL for zinc (1,200 mg/kg), BEHP (6.5 mg/kg DW), cPAH (1.1 mg/kg DW), benzoic acid (2.4 mg/kg DW), and benzyl alcohol (1.1 mg/kg DW) at ID-ST1; and BEHP (1.9 mg/kg DW), 4-methylphenol (.71 mg/kg DW), benzoic acid (8.5 mg/kg DW), and benzyl alcohol (1.6 mg/kg DW) at ID-ST3. |
| A15.06.00 | Information Request | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | Riverside Mill Property | 15021 | 4091, 10931 | Request information from the property owner regarding the 1999 excavation and removal of soil contaminated with PCBs and lead, to evaluate the potential for sediment recontamination via the groundwater discharge pathway. | Medium | Ecology TCP | | |
| A15.09.00 | Inspection | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | Port of Seattle Terminal 103 | 15025 | 7754458 | Perform a facility inspection at CalPortland to verify compliance with applicable regulations and source control BMPs. | Low | Port of Seattle | | Port tenant. This NPDES-permitted site discharges directly to the waterway via Port-owned outfalls and/or sheet flow. Inspections of NPDES-permitted sites that do not affect the City MS4 are a low priority for SPU. Inspections are scheduled only after City NPDES obligations are met. As this is a low priority for SPU, Port should inspect this property as described in Section 7 of its SWMP. |
| A15.12.00 | Records Review | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | Port of Seattle Terminal 105 | 15026 | NA | Determine if the Liquid Disposal Corporation USTs have been removed from Terminal 105 park. | Medium | Port of Seattle | | |
| A15.13.00 | Information Request | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | Port of Seattle Terminal 105 | 15026 | 15026 | Request that the Port of Seattle and Ferguson Enterprises provide information to determine if PCB-bearing dredge spoils were removed from parcel 3530 prior to the construction of the warehouse over the disposal area. | Medium | Ecology | | |
| A15.14.00 | Source Assessment | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | Port of Seattle Terminal 105 | 15026 | 15026 | Assess the need for an environmental investigation at the Terminal 105 Park to characterize the nature and extent of soil and groundwater contaminated by PCBs, PAHs, and metals in order to determine the potential for sediment recontamination. | Medium | Ecology | | |
| A15.15.00 | Source Assessment | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | Encore Oils (former Pacific Rendering) | 15018 | 10287 | Assess the need for additional environmental investigations and/or cleanup of contaminated soil. | Medium | Ecology | | |
| A15.18.00 | Information Request | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | Ferguson Enterprises | 15008 | 18675 | Request that the Port of Seattle and Ferguson Enterprises provide information to determine if PCB-bearing dredge spoils were removed from parcel 3530 prior to the construction of the warehouse over the disposal area. | Medium | Ecology | | |
| A15.19.00 | Source Assessment | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | Ferguson Enterprises | 15008 | 18675 | Assess the need for additional environmental investigations and/or cleanup of contaminated soil and groundwater. | Medium | Ecology | | |
| A15.20.00 | BMP Implementation | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | General Recycling of Washington | 15011 | 18553 | Request that General Recycling update the facility SWPPP to include the chemical treatment upgrades to the stormwater treatment system. General Recycling will be required to provide the updated SWPPP to Ecology. | Medium | Ecology | | |
| A15.21.00 | Source Assessment | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | General Recycling of Washington | 15011 | 18553 | Assess the need for additional environmental investigations and/or cleanup of contaminated soil and groundwater. | Medium | Ecology | | |
| A15.24.00 | Source Assessment | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | Former Seaboard Lumber Property | 15022 | 88471591 | Assess the need for additional environmental investigations at Evergreen Trails and Herring's House Park to define the nature and extent of residual soil and groundwater contamination at the properties to determine if LDW sediment near the properties is or has the potential to become contaminated via the groundwater discharge and bank erosion pathways. | Medium | Ecology | | |

Table B-2. Incomplete Action Items

| Action Item No. | Action Item Category | Source Control Area | Property/ Facility/ Outfall | Property Number | Facility/ Site ID | Action Item | Priority | Responsible Party | Status | Comments/Follow-On Actions |
|-----------------|------------------------|--|------------------------------------|-----------------|--------------------|---|----------|-------------------------|--------|----------------------------|
| A15.25.00 | Source Assessment | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | Port of Seattle Terminal 107 | 15027 | NA | Determine the potential inputs to a pipe located near the ravine in the northern portion of the Terminal 107 Park. | Medium | Port of Seattle | | |
| A15.26.00 | Environmental Sampling | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | Port of Seattle Terminal 107 | 15027 | NA | Perform an environmental investigation to determine if soil and groundwater are contaminated due to historical industrial operations and filling activities. | Medium | Port of Seattle | | |
| A15.29.00 | Source Assessment | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | Former Fraser Properties | 15010 | 14392257, 72321478 | Assess the need for additional environmental investigations and/or cleanup of suspected soil and groundwater contamination at this property. | Low | Ecology | | |
| A15.32.00 | Information Request | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | Former Concrete Restoration | 15005 | 31119678 | Request additional information from Brys Auto Wrecking regarding the previous environmental investigations at the property to determine if LDW sediment COCs are present in soil and groundwater at concentrations indicating a potential for sediment recontamination. | Low | Ecology | | |
| A15.33.00 | Source Assessment | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | Former Concrete Restoration | 15005 | 9688 | Assess the need for additional investigations and/or cleanup of suspected soil and groundwater contamination at this property. | Low | Ecology | | |
| A15.34.00 | Information Request | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | West Seattle Estates | 15030 | 3858982 | Request information regarding cleanup and groundwater monitoring at West Seattle Estates to evaluate the potential for sediment recontamination via the groundwater discharge pathway. | Low | Ecology | | |
| A15.35.00 | Source Assessment | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | West Seattle Estates | 15030 | 3858982 | Assess the need for additional investigations and/or cleanup of soil and groundwater contamination at this property. | Low | Ecology | | |
| A15.36.00 | Information Request | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | Puget Park | 15019 | 2479 | Request information from Seattle Parks to determine if the leachate collection trench was installed down gradient of the Puget Park Lobe. | Low | Ecology | | |
| A15.37.00 | Source Assessment | RM 0.0-1.0 West (Spokane Street to Kellogg Island) | Puget Park | 15019 | 2479 | Assess the need for additional investigations and/or cleanup of soil and groundwater contamination at this property. | Low | Ecology | | |
| A16.01.00 | Information Request | RM 1.0-1.3 West (Kellogg Island to Lafarge Cement) | Lafarge North America Inc. Seattle | 16001 | 2132 | Request information from Lafarge regarding the status of Outfall 001/2139 and 004. | Medium | Ecology | | |
| A16.03.00 | Data Evaluation | RM 1.0-1.3 West (Kellogg Island to Lafarge Cement) | Lafarge North America Inc. Seattle | 16001 | 2132 | Review new sediment data from the 2009 Lafarge maintenance dredging and the 2011 surface sediment sampling conducted by Ecology to determine if additional sediment sampling is needed for sediment characterization. | Medium | Ecology | | |
| A16.06.00 | Environmental Sampling | RM 1.0-1.3 West (Kellogg Island to Lafarge Cement) | Lafarge North America Inc. Seattle | 16001 | 2132 | Request Lafarge to collect environmental data to determine if soil and groundwater are contaminated due to historical drum recycling and reclamation activities at the Lafarge property. | Medium | Ecology | | |
| A16.07.00 | Environmental Sampling | RM 1.0-1.3 West (Kellogg Island to Lafarge Cement) | Lafarge North America Inc. Seattle | 16001 | 2132 | Request Lafarge to collect additional seep samples to better characterize groundwater being discharged into the LDW. Seep samples will be analyzed for sediment COCs, including PCBs. | Medium | Ecology | | |
| A16.09.00 | Information Request | RM 1.0-1.3 West (Kellogg Island to Lafarge Cement) | Lafarge North America Inc. Seattle | 16001 | 2132 | Request Lafarge to provide additional information about the composition of material behind the bulkhead and whether or not bulkhead repairs were completed during 2006. | Medium | Ecology | | |
| A17.05.00 | Environmental Sampling | RM 1.3-1.6 West (Glacier Bay) | Alaska Marine Lines | 17001 | 17126 | Sample groundwater along shoreline to determine whether residual site contaminants are being discharged to Glacier Bay. | Medium | Property owner/operator | | |
| A17.06.00 | Information Request | RM 1.3-1.6 West (Glacier Bay) | Alaska Marine Lines | 17001 | 17126 | Confirm location of former USTs that were removed in 1990. | Low | Property owner/operator | | |

Table B-2. Incomplete Action Items

| Action Item No. | Action Item Category | Source Control Area | Property/ Facility/ Outfall | Property Number | Facility/ Site ID | Action Item | Priority | Responsible Party | Status | Comments/Follow-On Actions |
|-----------------|------------------------|--------------------------------|---|-----------------|-------------------|--|----------|--------------------------|-------------|---|
| A17.08.00 | Source Assessment | RM 1.3-1.6 West (Glacier Bay) | Alaska Marine Lines | 17001 | 17126 | Verify that remediation associated with filling of graving dock was completed and all conditions met. | Low | Ecology | | |
| A17.14.00 | Cleanup | RM 1.3-1.6 West (Glacier Bay) | Duwamish Shipyard | 17003 | 2071 | Conduct site investigations as specified in the Agreed Order Statement of Work. | High | Property owner/operator | In Progress | Revised RI Report was submitted in 2017. Ecology is working with the PLP to finalize the RI and move forward with the FS. |
| A17.15.00 | Cleanup | RM 1.3-1.6 West (Glacier Bay) | Duwamish Shipyard | 17003 | 2071 | Review site investigation results and assess potential for sediment recontamination and need for remedial actions. | High | Ecology | In Progress | Revised RI Report was submitted in 2017. Ecology is working with the PLP to finalize the RI and move forward with the FS. |
| A17.21.00 | Cleanup | RM 1.3-1.6 West (Glacier Bay) | Glacier Northwest | 17004 | 23881883 | Review site investigation results and assess potential for sediment recontamination and need for remedial actions. | High | Ecology | In Progress | Draft Remedial Investigation Report submitted to Ecology in 2015. Ecology is working with the PLP to complete the RI and move forward with the FS. |
| A17.29.00 | BMP Implementation | RM 1.3-1.6 West (Glacier Bay) | Chemithon | 17002 | 41953656 | Prepare and/or update the SWPPP and processes to ensure that site activities do not result in transport of contaminants to the LDW. | Low | Property owner/operator | | |
| A17.38.00 | Cleanup | RM 1.3-1.6 West (Glacier Bay) | N Terminal 115 (Former MRI Corporation) | 17006 | 2177 | Conduct Remedial Investigation as specified in Agreed Order No. 8099. | Medium | Port of Seattle | In Progress | Draft RI Report submitted to Ecology in October 2017. |
| A18.01.00 | Data Evaluation | RM 1.6-2.1 West (Terminal 115) | SW Kenny Street SD/POS SD 6132/Terminal 115 CSO (Outfall 2127) | NA | NA | Identify and evaluate potential sources of the sediment COCs reported above screening values in storm drain structures within the SW Kenny Street SD basin. | Medium | SPU, Ecology | In Progress | SPU cleaned the entire system in 2017. The near end-of-pipe sediment trap was retrieved in 2018. BEHP (2.98 mg/kg DW and benzyl alcohol (0.19 mg/kg DW) are the only chemicals that exceeded CSL post cleaning . Samples are collected annually and results are uploaded to EIM. |
| A18.02.00 | Data Evaluation | RM 1.6-2.1 West (Terminal 115) | Highland Park Way SW SD/POS 6162 (Outfall 2125) | NA | NA | Identify and evaluate potential sources of the sediment COCs reported above screening values in storm drain structures within the Highland Park Way SW SD basin. | Medium | SPU, Ecology | In Progress | SPU cleaned the Highland Park Way SW SD system in 2015 and will continue to maintain 2 sediment traps in this system (Outfall 2125). Of the 3 sediment trap samples collected in 2018, 2 exceeded the screening level for TPH-oil; 2 exceeded the CSL for zinc, 1 for benzoic acid, and 3 for benzyl alcohol. |
| A18.03.00 | Data Evaluation | RM 1.6-2.1 West (Terminal 115) | Highland Park Way SW SD/POS 6162 (Outfall 2125) | NA | NA | Review data from storm drain solids samples collected up gradient of Outfall 2125 in April and October 2010 and May 2011, and data from sand cover samples collected from the clean sand cover placed on the maintenance dredged area in Berth 1, to evaluate the potential for sediment recontamination. | Medium | Ecology, Port of Seattle | | |
| A18.04.00 | Data Evaluation | RM 1.6-2.1 West (Terminal 115) | West Michigan CSO (Outfall 2506) | NA | NA | Evaluate the 2009 King County effluent discharge data to assess whether the effluent discharges from the West Michigan CSO represent a potential source of contaminants to the sediments near the Terminal 115 source control area. | Medium | Ecology | | Sediment traps within combined sewer collection system within this basin were installed in 2019, to be retrieved in 2020. |
| A18.05.00 | Data Evaluation | RM 1.6-2.1 West (Terminal 115) | Terminal 115 - Port of Seattle Storm Drain Outfalls (Outfalls 2122, 2123, 2124, 2220, and POS 6146) | 18014 | 4040072 | Review data from storm drain solids samples collected up gradient of Outfalls 2123, 2124, and 2220 in April and October 2010 and May 2011; storm drain solids samples collected up gradient of Outfall 2128 in September 2011; and data from sand cover samples collected from the clean sand cover placed on the maintenance dredged area in Berth 1 to evaluate the potential for sediment recontamination. | Medium | Ecology, Port of Seattle | | |
| A18.06.00 | Environmental Sampling | RM 1.6-2.1 West (Terminal 115) | Terminal 115 - Port of Seattle Storm Drain Outfalls (Outfalls 2122, 2123, 2124, 2220, and POS 6146) | 18014 | 4040072 | Collect base flow samples from the portions of the Terminal 115 SD system that discharge to Outfalls 2128 and 2220 to determine if contaminants in base flow (i.e., groundwater draining into the storm drain system through French drains and groundwater drainage structures) are present at concentrations exceeding Washington State Water Quality Standards (WAC 173-201A) and/or the draft groundwater-to-sediment screening levels. | Medium | Port of Seattle | | |

Table B-2. Incomplete Action Items

| Action Item No. | Action Item Category | Source Control Area | Property/ Facility/ Outfall | Property Number | Facility/ Site ID | Action Item | Priority | Responsible Party | Status | Comments/Follow-On Actions |
|-----------------|------------------------|--------------------------------|---|-----------------|-------------------|--|----------|--------------------------|-------------|--|
| A18.07.00 | Cleanup | RM 1.6-2.1 West (Terminal 115) | Terminal 115 - Port of Seattle Storm Drain Outfalls (Outfalls 2122, 2123, 2124, 2220, and POS 6146) | 18014 | 4040072 | Negotiate an Agreed Order with the Port, to include Terminal-wide investigations to characterize the nature and extent of potential COC sources in fill material, soil, groundwater, and stormwater at Terminal 115, including specific areas identified in the Terminal 115 SCAP. | High | Ecology, Port of Seattle | In Progress | Ecology and the PLPs (Port of Seattle and Boeing) have completed MTCA Agreed Order negotiations to perform an RI/FS/CAP, and are expecting to sign the Order by the end of 2020. |
| A18.10.00 | BMP Implementation | RM 1.6-2.1 West (Terminal 115) | Terminal 115 - Port of Seattle Storm Drain Outfalls (Outfalls 2122, 2123, 2124, 2220, and POS 6146) | 18014 | 4040072 | Perform a video inspection of storm drain lines to identify areas where groundwater infiltrates the storm drain system. | High | Port of Seattle | | |
| A18.11.00 | Information Request | RM 1.6-2.1 West (Terminal 115) | Terminal 115 - Port of Seattle Storm Drain Outfalls (Outfalls 2122, 2123, 2124, 2220, and POS 6146) | 18014 | 4040072 | Provide information regarding discharges to the deck drains north of Berth 1 to Ecology. Information to be provided will include, at minimum, a description of BMPs employed to prevent pollution of the stormwater runoff that is conveyed to the deck drains. | High | Port of Seattle | | |
| A18.20.00 | Inspection | RM 1.6-2.1 West (Terminal 115) | Seattle Engineering Department Penn Yard | 18012 | NA | Perform a property inspection to determine current use of the property and determine if stormwater and/or spills may be conveyed to the LDW via sheet flow or groundwater discharge. | Medium | Ecology | | |
| A18.21.00 | Information Request | RM 1.6-2.1 West (Terminal 115) | Seattle Engineering Department Penn Yard | 18012 | NA | Request information from the City of Seattle Engineering Department regarding historical operations performed by the department to determine if operations may have resulted in releases of contaminants to soil and/or groundwater. | Medium | Ecology | | |
| A18.22.00 | Information Request | RM 1.6-2.1 West (Terminal 115) | Former Foss Environmental Services | 18006 | 36326474 | Request additional information regarding the status of the utility-owned pad-mounted electrical transformer from Haslund MP to determine if it remains at the property, and if so, to determine if it contains PCB-bearing fluid. | Medium | Ecology | | |
| A18.23.00 | Information Request | RM 1.6-2.1 West (Terminal 115) | Former Foss Environmental Services | 18006 | 36326474 | Request additional information from Haslund MP to determine the locations of storm drain lines on the former Foss Environmental property. | Medium | Ecology | | |
| A18.25.00 | Environmental Sampling | RM 1.6-2.1 West (Terminal 115) | Former Foss Environmental Services | 18006 | 36326474 | Request that Haslund MP perform an environmental investigation to characterize the nature and extent of potential sediment COCs in soil and groundwater beneath the property. Soil and groundwater contamination may be present due to historical operations by Boeing. | High | Ecology | | |
| A18.27.00 | Records Review | RM 1.6-2.1 West (Terminal 115) | Catholic Printery | 18003 | 14533 | Review the April 2010 local source control inspection report to determine if there is a potential for sediment recontamination via the stormwater pathway. | Medium | Ecology | | |
| A19.01.00 | Information Request | RM 2.1 West (1st Avenue S SD) | 1st Avenue S Bridge Drains (Outfalls 2505, 2507, 2510, 2512) | NA | NA | Request additional information from WSDOT regarding the quantity and quality of stormwater and solids discharged to the LDW through the bridge drains. | High | Ecology | | |
| A19.02.00 | Information Request | RM 2.1 West (1st Avenue S SD) | 1st Avenue S Storm Drain System | NA | NA | Request additional information on the configuration of pipes and drainage ditches in this area from WSDOT to support identification of potential contaminant sources to the 1st Avenue SD. | Low | Ecology | | |

Table B-2. Incomplete Action Items

| Action Item No. | Action Item Category | Source Control Area | Property/ Facility/ Outfall | Property Number | Facility/ Site ID | Action Item | Priority | Responsible Party | Status | Comments/Follow-On Actions |
|-----------------|------------------------|--|----------------------------------|-----------------|-------------------|---|----------|----------------------------------|-------------|--|
| A19.03.00 | Information Request | RM 2.1 West (1st Avenue S SD) | 1st Avenue S Engineered Wetlands | NA | NA | Request information regarding monitoring and maintenance of the engineered wetlands in the 1st Avenue S SD source control area from WSDOT in order to assess the potential for discharge of sediment COCs from the wetlands to LDW sediment. | Medium | Ecology | | |
| A19.04.00 | Environmental Sampling | RM 2.1 West (1st Avenue S SD) | 1st Avenue S Engineered Wetlands | NA | NA | Design a study to identify/evaluate sediment and water sampling locations at the confluence of the 1st Avenue S wetlands and the LDW, taking tidal fluctuations and accessibility into consideration. | Medium | Ecology | | If it is determined that sediment COCs are being released, determine what measures may be necessary to mitigate contaminant release to the LDW and re-evaluate the priority of source control actions for the upland properties within the 1st Avenue S SD basin. |
| A19.08.05 | Inspection | RM 2.1 West (1st Avenue S SD) | Vista Pro Automotive | 19012 | 96897184 | Perform an evaluation to determine if the facility is required to obtain coverage under the ISGP or is eligible for a CNE certificate. | Low | Ecology | | |
| A20.08.00 | Cleanup | RM 2.1-2.2 West (EAA-2: Trotsky Inlet) | Industrial Container Services | 20018 | 2154 | Evaluate the need for stormwater characterization (solids and whole water) from this facility if overflow occurs during heavy rainfall events. | Medium | Ecology/ KCIW | In Progress | To be addressed in accordance with Agreed Order No. DE-6720. All of the production areas at this site are plumbed to the sanitary sewer and are covered by a KCIW permit. Building roof drains discharge to ground. Site is lower than street, so roof runoff remains onsite. Site does not affect City MS4. KCIW is allowing contaminated stormwater to be treated and discharged to the sanitary sewer on an interim basis while RI/FS activities are being conducted. |
| A20.12.00 | Cleanup | RM 2.1-2.2 West (EAA-2: Trotsky Inlet) | Douglas Management Company | 20006 | 97573251 | Conduct cleanup as needed to eliminate sources of contaminants to EAA-2. | Medium | Property owner/operator, Ecology | In Progress | To be conducted in accordance with Agreed Order No. DE-8258. The RI Report was completed in 2019. A supplemental investigation for the draft FS is in progress. |
| A20.16.00 | Cleanup | RM 2.1-2.2 West (EAA-2: Trotsky Inlet) | Douglas Management Company | 20006 | 97573251 | If stormwater discharge to EAA-2 (including the Trotsky inlet to the south and the LDW shoreline to the north and east) is confirmed, assess the need for stormwater characterization (solids and whole water). Collect stormwater samples as needed. | Medium | Ecology/ Property owner/operator | | To be addressed in accordance with Agreed Order No. DE-8258. This is direct discharge. Does not affect City MS4. |
| A20.19.00 | Source Assessment | RM 2.1-2.2 West (EAA-2: Trotsky Inlet) | 2nd Avenue S SD | NA | NA | Continue source tracing to identify sources of phthalates and other COCs. | High | SPU | In Progress | In 2010, SPU jetted and cleaned all catch basins culverts, and pipes in the street that connect to this private drainage system. SPU has collected 12 samples in this system since cleaning. Chemicals that exceeded the CSL included copper (2 samples), mercury (4 samples), zinc (4 samples), TPH-oil (10 samples), cPAH (1 sample), BEHP (11 samples), other phthalates, PCBs (1 sample), 2-methylphenol (1 sample), 4-methylphenol (2 samples), benzoic acid (4 samples), and benzyl alcohol (7 samples). A diesel truck repair facility continues to be a source of oil to this drain. SPU has issued multiple NOV's to this facility. |
| A20.33.02 | Cleanup | RM 2.1-2.2 West (EAA-2: Trotsky Inlet) | Industrial Container Services | 20018 | 2154 | Conduct RI/FS, implement interim actions (as needed), and prepare draft CAP. | Medium | Industrial Container Services | In Progress | To be conducted in accordance with Agreed Order No. DE-6720. RI Report was completed in 2019. |
| A20.35.00 | Environmental Sampling | RM 2.1-2.2 West (EAA-2: Trotsky Inlet) | Douglas Management Company | 20006 | 97573251 | Conduct groundwater sampling along the LDW shoreline to assess the potential for sediment recontamination via groundwater transport. | Medium | Ecology | | To be addressed in accordance with Agreed Order No. DE-8258. The RI Report was completed in 2019. Shoreline groundwater samples have been collected from three wells; data is included in the RI Report. Supplemental sampling for the FS is in progress. |
| A20.36.00 | Data Evaluation | RM 2.1-2.2 West (EAA-2: Trotsky Inlet) | Boyer Towing | 20002 | 15947, 37926748 | Review source tracing data collected by SPU for the 2nd Avenue S storm drain basin to identify whether the Boyer Towing owned or leased parcels are a potential source of contaminants to the Trotsky Inlet and the LDW. | Medium | Ecology | In Progress | Preliminary review indicates phthalates and metals may be present at elevated concentrations. |
| A20.36.01 | Source Assessment | RM 2.1-2.2 West (EAA-2: Trotsky Inlet) | Boyer Towing | 20002 | 15947, 37926748 | Determine if additional storm drain samples are needed. | Medium | Ecology | | If connected, Boyer properties along 2nd Ave S would tie into the privately-owned 2nd Ave S SD system. Site does not affect City MS4. |
| A20.37.00 | Information Request | RM 2.1-2.2 West (EAA-2: Trotsky Inlet) | Boyer Towing | 20002 | 15947, 37926748 | Request additional data regarding potential soil contamination at Parcels F and G; evaluate the need for additional characterization. | Medium | Ecology | | Action item identified in Supplemental Data Gaps Report. |

Table B-2. Incomplete Action Items

| Action Item No. | Action Item Category | Source Control Area | Property/ Facility/ Outfall | Property Number | Facility/ Site ID | Action Item | Priority | Responsible Party | Status | Comments/Follow-On Actions |
|-----------------|------------------------|---------------------------------------|---|-----------------|-------------------|--|----------|----------------------|-------------|---|
| A21.01.00 | Source Assessment | RM 2.2-3.4 West (Riverside Drive) | 7 th Avenue S SD Outfall (Outfall 2112) | NA | NA | Continue source tracing to identify potential sources of the sediment COCs reported above screening levels in storm drain structures in the 7 th Avenue S SD basin. | Medium | SPU, Ecology | In Progress | SPU jetted and cleaned the entire 7th Ave S SD system in 2013 and continues to operate 3 sediment traps in this basin. SPU collected 13 trap samples between 2014 and 2018. Chemicals exceeding a CSL included cPAH (1 sample), BEHP (7 samples), dimethylphthalate (1 sample), 4-methylphenol (1 sample), benzoic acid (5 samples), and benzyl alcohol (10 samples). TPH-oil also exceeded the screening level (4 samples). |
| A21.03.00 | Inspection | RM 2.2-3.4 West (Riverside Drive) | Private Outfalls (Outfalls 2106, 2108, and 2113) | NA | NA | Conduct an inspection during a storm event to determine if the three unresolved outfalls (Outfalls 2106, 2108, and 2113) are operational or have been abandoned. | Medium | SPU | In Progress | Outfall 2113 is the City's S Webster Street SD. This outfall serves one catch basin located on S Riverside Dr. SPU sampled this CB in 2016. LPAH, HPAH, and BEHP exceeded the CSL. SPU will clean this CB in 2020. Outfall 2106 is an abandoned 24" pipe that is full of sediment and no longer functional. Outfall 2107 is no longer visible along the shoreline. SPU will double check during a low tide to confirm. |
| A21.04.00 | Source Assessment | RM 2.2-3.4 West (Riverside Drive) | Private Outfalls (Outfalls 2106, 2108, and 2113) | NA | NA | If discharge from these outfalls is observed, conduct dye testing to determine if storm drain lines are connected to the unresolved outfalls, and delineate the associated drainage areas. | Medium | Property Owners | | Outfall 2113 is the City's S Webster Street SD. This outfall serves one catch basin located on S Riverside Dr. Outfalls 2106 and 2108 remain unresolved. |
| A21.07.00 | Information Request | RM 2.2-3.4 West (Riverside Drive) | Independent Metals Plant 2 | 21032 | 16139 | Request drainage information from Independent Metals or the current operator at this property for Outfalls 2109 and 2111 to determine if the outfalls are operational and to identify the drainage areas associated with the outfalls, if any. | High | Ecology | | Independent Metals Plant 2 is no longer in business. Silver Bay Logging is the current operator. The site is on the CSCSL and is awaiting cleanup. |
| A21.08.00 | Inspection | RM 2.2-3.4 West (Riverside Drive) | Former Long Painting – 10 th Avenue S Facility | 21036 | 71678662 | Perform a facility inspection at Unity Electric to verify compliance with applicable regulations and BMPs. | Medium | SPU, King County | | All of the commercial parcels are in the City of Seattle and drain to the combined sewer system. The parcels in King County are either residential or vacant. |
| A21.09.00 | Information Request | RM 2.2-3.4 West (Riverside Drive) | American Civil Constructors Barge Removal Ramp | 20002 | NA | Request American Civil Constructors to provide information about the fill used for a barge removal ramp, to determine if the fill is a potential source of contaminants to adjacent sediments. | High | EPA, USACE | | |
| A21.13.00 | Inspection | RM 2.2-3.4 West (Riverside Drive) | Olympic Steel Door | 21050 | 45787437 | Request Olympic Steel Door, Redox, and All Metal Arts to obtain coverage under the ISGP or apply for a CNE. | Low | Ecology | | |
| A21.17.00 | Environmental Sampling | RM 2.2-3.4 West (Riverside Drive) | Independent Metals Plant 1 | 21030 | 9309618 | Request Independent Metals to obtain environmental data to determine if soil and groundwater is contaminated by metals from recycling operations and if COCs in soil and groundwater may be transported to the LDW. | Medium | Ecology | | Independent Metals Plant 1 is on the CSCSL and is awaiting cleanup with confirmed PCB contamination in soil and groundwater. |
| A22.01.01 | Environmental Sampling | RM 3.4-3.8 West (EAA-5: Terminal 117) | Adjacent Streets/Dallas Ave. | NA | NA | Continue monitoring of storm drain solids | High | SPU, Port of Seattle | In Progress | City of Seattle and Port of Seattle completed the long term maintenance and monitoring plan for EPA in 2018. Long term monitoring of storm drain solids near the outfall to be conducted as part of Seattle's SCIP. SPU installed a sediment trap in the downstream-most MH on the 17th Ave S SD in 2017. The trap was retrieved in 2018 but insufficient material had accumulated to allow chemical analysis. SPU collected 5 stormwater samples from the underdrains in one bioretention cell and one Filterra unit in 2018 to assess condition of the filter media. PCBs were not detected at 0.01 ug/L in any samples. Next round of underdrain sampling is scheduled for 2021. |
| A22.05.00 | Source Assessment | RM 3.4-3.8 West (EAA-5: Terminal 117) | South Park Marina | 22003 | 44653368 | Investigate sewer connections and discharge locations of storm drains and catch basins. | Low | Ecology | | Site maps show two outfalls from South Park Marina facility to the LDW; only one is identified in the facility's NPDES permit. This will be addressed as part of an RI under an upcoming Agreed Order. |

Table B-2. Incomplete Action Items

| Action Item No. | Action Item Category | Source Control Area | Property/ Facility/ Outfall | Property Number | Facility/ Site ID | Action Item | Priority | Responsible Party | Status | Comments/Follow-On Actions |
|-----------------|------------------------|--|-------------------------------------|-----------------|-------------------|--|----------|-------------------|-------------|---|
| A23.06.00 | Information Request | RM 3.8-4.2 West (Sea King Industrial Park) | Sea King Industrial Park | 23038 | NA | Sea King Industrial Park is not located within the S 96th Street SD basin, but discharges to a creek along S Director Street. Request information from the property owner regarding stormwater drainage features to evaluate the potential for contaminant transport to the LDW via stormwater discharge. | Low | Ecology | | |
| A23.08.00 | Information Request | RM 3.8-4.2 West (Sea King Industrial Park) | Sea King Industrial Park | 23038 | NA | Request information from the property owner regarding historical tenant operations to determine the potential for soil and/or groundwater contamination beneath the property. | Low | Ecology | | |
| A23.09.00 | Inspection | RM 3.8-4.2 West (Sea King Industrial Park) | KRS Marine | 23024 | 90355185 | Facility is adjacent to the LDW. Perform a source control inspection to verify compliance with applicable regulations and BMPs to prevent the release of contaminants to the LDW. | Low | Ecology | | |
| A24.01.00 | Information Request | RM 4.2-5.8 West (Restoration Areas) | Hamm Creek SD Basin | NA | NA | Request additional information from King County and the Cities of Burien and SeaTac to define the boundaries of the Hamm Creek SD basin in order to determine if the area to the east of Des Moines Memorial Drive between S 116th Way and S 124th Street and the area south of S 124th Street should be included in or excluded from the Restoration Areas source control area. | Medium | Ecology | In Progress | Based on Figure 3-3 in King County's Source Control Implementation Plan, the area in question is within the city of Burien. |
| A24.02.00 | Information Request | RM 4.2-5.8 West (Restoration Areas) | Outfall 3842 | NA | NA | Request additional information from the City of Tukwila to determine the drainage area associated with Outfall 3842. | Medium | Ecology | | |
| A24.04.00 | Environmental Sampling | RM 4.2-5.8 West (Restoration Areas) | Seattle City Light Power Substation | 24021 | 17593 | Request that SCL perform an environmental assessment to address the potential arsenic, mercury, benzo(a)pyrene, and BEHP contamination in fill material. | Medium | Ecology | | |
| A24.05.00 | Inspection | RM 4.2-5.8 West (Restoration Areas) | Boeing Parking Lot Property | 24004 | NA | Perform a source control inspection to verify compliance with applicable regulations and BMPs to prevent the release of contaminants to the LDW. | Low | Ecology | | |
| A24.08.00 | Environmental Sampling | RM 4.2-5.8 West (Restoration Areas) | USPS Seattle Distribution Center | 24025 | NA | Request that the Sabey Corporation collect groundwater data to assess the current concentrations of metals in groundwater beneath the property. | Low | Ecology | | |
| A24.09.00 | Records Review | RM 4.2-5.8 West (Restoration Areas) | USPS Seattle Distribution Center | 24025 | NA | Review the cleanup records associated with Atlas Demolition to assess the potential for sediment recontamination via the groundwater discharge pathway. | Low | Ecology | | |

**Appendix C:
SPU Source Control Inspections
(2018)**

Appendix C

SPU Source Control Inspections (2018)

| Facility | Address | Date Inspected | Inspection Type | Corrective Actions | | | | | Rank |
|--|----------------------------------|----------------|-----------------|--------------------|----|----|----|----|--------|
| | | | | Total | HW | IW | SP | SW | |
| Upper Reach | | | | | | | | | |
| RM 4.9 East (EAA-7: Norfolk CSO/SD) | | | | | | | | | |
| Becker Patrick | 9447 Martin Luther King Jr Way S | 5/1/2018 | Initial | 2 | 1 | | | 1 | Medium |
| | | 5/29/2018 | Follow Up | 0 | | | | | |
| Coluccio & Company LLC | 9600 Martin Luther King Jr Wy S | 4/3/2018 | Initial | 3 | | | | 3 | |
| | | 5/16/2018 | Follow Up | 0 | | | | | |
| Emerald Tree Service Inc | 9251 Martin Luther King Jr Way S | 5/29/2018 | Initial | 4 | | | 3 | 1 | Medium |
| Frank Coluccio Construction Co. - 9845 M L King Jr Way S | 9845 Martin Luther King Jr Way S | 4/3/2018 | Initial | 0 | | | | | High |
| Gaston Bros Excavating | 9639 Martin Luther King Jr Way S | 12/5/2018 | Initial | 2 | | | 1 | 1 | Medium |
| GTS Drywall Supply Co. | 9830 40th Avenue S | 2/12/2018 | Initial | 0 | | | | | |
| Jacks Auto Parts Inc | 9423 Martin Luther King Jr Way S | 5/2/2018 | Initial | 0 | | | | | |
| Marine Vacuum Service Inc | 9401 Martin Luther King Jr Way S | 6/21/2018 | Initial | 2 | | | 1 | 1 | Low |
| | | 7/19/2018 | Follow Up | 1 | | | 1 | | |
| Root Cause LLC | 9250 Martin Luther King Jr Way S | 5/29/2018 | Initial | 1 | | | | 1 | Medium |
| | | 7/30/2018 | Initial | 1 | 1 | | | | |
| | | 10/5/2018 | Follow Up | 1 | | | | 1 | |
| Swan USA Net, LLC | 8300 Military Road S | 11/5/2018 | Initial | 5 | | | | 5 | Medium |
| | | 12/17/2018 | Follow Up | 0 | | | | | |
| Van Asselt Elementary School | 8311 Beacon Avenue S | 7/26/2018 | Initial | 2 | | | 2 | | Low |
| | | 10/2/2018 | Follow Up | 0 | | | | | |
| | | 11/13/2018 | Follow Up | 0 | | | | | |
| RM 3.8-4.2 West (Sea King Industrial Park) | | | | | | | | | |
| Gary Merlino Construction Co. | 9125 10th Avenue S | 1/9/2018 | Initial | 1 | | | | 1 | High |
| | | 2/8/2018 | Follow Up | 0 | | | | | |
| King Electrical Mfg. Company | 821 S Barton Street | 1/17/2018 | Follow Up | 0 | | | | | Low |
| King Electrical Mfg. Company | 9131 10th Avenue S | 1/17/2018 | Follow Up | 0 | | | | | High |
| Petrocard Systems Inc. - 9014 14th Ave S | 9014 14th Avenue S | 3/1/2018 | Initial | 3 | | | 2 | 1 | Medium |
| | | 4/11/2018 | Follow Up | 0 | | | | | |
| Puget Sound Coatings LLC | 9220 8th Avenue S | 7/10/2018 | Initial | 7 | 1 | | | 6 | High |
| | | 10/10/2018 | Follow Up | 0 | | | | | |
| THC PARTNERS LLC | 9369 8th Avenue S | 12/20/2018 | Initial | 0 | | | | | Low |
| Middle Reach | | | | | | | | | |
| RM 2.8 East (EAA-3: Slip 4) | | | | | | | | | |
| Cedar Grove Composting, Inc | 7343 East Marginal Wy S | 1/10/2018 | Follow Up | 0 | | | | | Medium |
| RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | | | | | | | | | |
| Big Dipper Wax Works Inc. | 700 S Orchard Street | 11/8/2018 | Initial | 0 | | | | | Low |
| Sea Native USA Inc. | 745 S Myrtle Street | 9/24/2018 | Initial | 4 | 1 | | | 3 | Medium |
| | | 11/27/2018 | Follow Up | 0 | | | | | |
| Seattle Iron & Metals Corp | 601 S Myrtle Street | 1/26/2018 | Follow Up | 0 | | | | | High |
| RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) | | | | | | | | | |
| Ben Butler Property | 150 S River Street | 2/5/2018 | Initial | 2 | | | | 2 | None |
| | | 5/2/2018 | Follow Up | 0 | | | | | |
| Pike Brewing Co. | 6725 East Marginal Way S | 6/21/2018 | Initial | 3 | | | 1 | 2 | Medium |
| Seattle Distribution Center | 6701 East Marginal Way S | 6/21/2018 | Initial | 0 | | | | | Medium |
| Work Space Development LLC | 303 S River Street | 1/19/2018 | Initial | 1 | | | 1 | | Medium |
| WW Trailers Inc | 150 S River Street | 6/6/2018 | Initial | 5 | | | 3 | 2 | High |

Appendix C

SPU Source Control Inspections (2018)

| Facility | Address | Date Inspected | Inspection Type | Corrective Actions | | | | | Rank |
|---|--------------------------|----------------|-----------------|--------------------|----|----|----|----|--------|
| | | | | Total | HW | IW | SP | SW | |
| RM 1.7-2.0 East (Slip 2 to Slip 3) | | | | | | | | | |
| General Biodiesel Seattle LLC | 6333 1st Avenue S | 1/11/2018 | Initial | 2 | | 1 | | 1 | Medium |
| | | 3/1/2018 | Follow Up | 0 | | | | | |
| Samson Tug and Barge | 6361 1st Avenue S | 9/25/2018 | Initial | 5 | 1 | | | 4 | High |
| | | 10/26/2018 | Follow Up | 0 | | | | | |
| RM 2.2-3.4 West (Riverside Drive) | | | | | | | | | |
| Aces Four Construction Co. | 537 S Southern Street | 2/28/2018 | Initial | 3 | | | 3 | | Medium |
| Bartlett Tree Experts | 300 S Sullivan Street | 3/1/2018 | Initial | 2 | | | | 2 | Low |
| Beeline Tours LTD | 8110 7th Avenue S | 2/28/2018 | Initial | 7 | | | 3 | 4 | Medium |
| | | 4/9/2018 | Follow Up | 0 | | | | | |
| BFC Architectural Metals Inc. | 8300 7th Avenue S | 2/28/2018 | Initial | 1 | | | | 1 | Low |
| | | 4/13/2018 | Follow Up | 0 | | | | | |
| DMH Industrial Electric, Inc. | 7800 7th Avenue S | 3/16/2018 | Initial | 3 | | 1 | | 2 | Medium |
| | | 5/30/2018 | Follow Up | 0 | | | | | |
| Hazard Factory LLC | 7800 7th Avenue S | 3/31/2018 | Initial | 3 | | | | 3 | High |
| | | 5/30/2018 | Follow Up | 0 | | | | | |
| Lumenomics Inc | 7800 7th Avenue S | 4/2/2018 | Initial | 4 | | | 3 | 1 | Low |
| | | 5/30/2018 | Follow Up | 0 | | | | | |
| Machinists Inc | 516 S Chicago Street | 10/16/2018 | Initial | 1 | | | | 1 | Medium |
| | | 11/21/2018 | Follow Up | 0 | | | | | |
| Machinists Inc | 8201 7th Avenue S | 10/16/2018 | Initial | 0 | | | | | Low |
| Machinists Inc. | 500 S Portland Street | 10/16/2018 | Initial | 2 | | | | 2 | Medium |
| | | 11/21/2018 | Follow Up | 0 | | | | | |
| Machinists Inc. | 707 S Riverside Drive | 10/16/2018 | Initial | 0 | | | | | |
| Machinists Inc. | 7600 5th Avenue S | 10/16/2018 | Initial | 3 | 1 | | | 2 | High |
| | | 11/21/2018 | Follow Up | 0 | | | | | |
| Machinists Inc. | 8101 7th Avenue S | 10/16/2018 | Initial | 0 | | | | | Low |
| Modern Machine Co. | 524 S Southern Street | 4/12/2018 | Initial | 2 | | | 1 | 1 | High |
| Pacific Pile & Marine LP | 582 S Riverside Drive | 1/25/2018 | Initial | 1 | | | | 1 | High |
| | | 3/23/2018 | Follow Up | 0 | | | | | |
| Pacific Pile & Marine LP | 620 S Riverside Drive | 1/25/2018 | Initial | 1 | | | | 1 | Medium |
| | | 3/23/2018 | Follow Up | 0 | | | | | |
| Pacific Pile & Marine LP | 700 S Riverside Drive | 1/25/2018 | Initial | 1 | | | 1 | | High |
| | | 3/23/2018 | Follow Up | 0 | | | | | |
| Pacific Pile & Marine LP | 707 S Riverside Drive | 1/25/2018 | Initial | 1 | | | 1 | | Medium |
| | | 3/23/2018 | Follow Up | 0 | | | | | |
| Scenic Bound Tours Co. | 8221 7th Avenue S | 2/28/2018 | Initial | 3 | | | | 3 | Medium |
| | | 4/13/2018 | Follow Up | 0 | | | | | |
| The Gear Works Seattle Inc | 500 S Portland Street | 1/17/2018 | Initial | 0 | | | | | High |
| The Gear Works Seattle Inc | 516 S Chicago Street | 1/17/2018 | Initial | 0 | | | | | Medium |
| The Gear Works Seattle Inc. | 707 S Riverside Drive | 1/17/2018 | Initial | 0 | | | | | Medium |
| RM 2.1-2.2 West (EAA-2: Trotsky Inlet) | | | | | | | | | |
| Bill's Mobile Service | 7265 2nd Avenue S | 1/18/2018 | Initial | 3 | | | | 3 | High |
| | | 2/16/2018 | Follow Up | 0 | | | | | |
| Demolition Man Inc. | 8151 Occidental Avenue S | 1/26/2018 | Initial | 7 | | | 3 | 4 | High |
| | | 3/5/2018 | Follow Up | 0 | | | | | |
| | | 4/18/2018 | Follow Up | 0 | | | | | |
| Demolition Man Inc. | 8129 Occidental Avenue S | 1/25/2018 | Initial | 8 | 1 | | 3 | 4 | Medium |
| | | 3/5/2018 | Follow Up | 0 | | | | | |
| | | 4/18/2018 | Follow Up | 0 | | | | | |
| LBA Realty | 7272 West Marginal Way S | 8/10/2018 | Initial | 1 | | | | 1 | Low |
| North Star Ice Equipment Corporation | 8151 Occidental Avenue S | 1/25/2018 | Initial | 8 | | | 3 | 5 | Medium |
| | | 3/5/2018 | Follow Up | 0 | | | | | |

Appendix C
SPU Source Control Inspections (2018)

| Facility | Address | Date Inspected | Inspection Type | Corrective Actions | | | | | Rank |
|---|----------------------------------|----------------|-----------------|--------------------|----|----|----|----|--------|
| | | | | Total | HW | IW | SP | SW | |
| RM 2.1 West (1st Avenue S Storm Drain) | | | | | | | | | |
| Bay Area Concrete LLC | 7245 West Marginal Way SW | 7/27/2018 | Initial | 5 | 1 | | 1 | 3 | High |
| | | 10/19/2018 | Follow Up | 7 | 1 | | | 6 | |
| | | 12/7/2018 | Follow Up | 0 | | | | | |
| Beacon Sales Acquisition Inc. | 7901 1st Avenue S | 3/1/2018 | Initial | 3 | 2 | | | 1 | Medium |
| | | 4/10/2018 | Follow Up | 0 | | | | | |
| Christensen West LLC | 7800 Detroit Ave SW | 4/6/2018 | Follow Up | 0 | | | | | High |
| | | 5/3/2018 | Follow Up | 0 | | | | | |
| First Student Inc. - 8249 5th Ave S | 8249 5th Avenue S | 1/10/2018 | Initial | 3 | | | 1 | 2 | Medium |
| | | 2/16/2018 | Follow Up | 0 | | | | | |
| First Student Inc. -7739 1st Ave S | 7739 1st Avenue S | 1/10/2018 | Initial | 0 | | | | | Medium |
| Pacific Rim Trench & Shoring | 7745 1st Avenue S | 12/31/2018 | Initial | 9 | | | 1 | 8 | High |
| W.G. Clark Construction Co. | 7958 Occidental Avenue S | 3/2/2018 | Initial | 0 | | | | | Medium |
| Waste Management of WA Inc | 7201 West Marginal Way SW | 1/10/2018 | Follow Up | 0 | | | | | High |
| RM 1.6-2.1 West (Terminal 115) | | | | | | | | | |
| Emswiler Construction | 6045 West Marginal Way SW | 1/17/2018 | Follow Up | 0 | | | | | High |
| | | 1/17/2018 | Follow Up | 0 | | | | | |
| Gene Summy Lumber | 6000 West Marginal Way SW | 1/23/2018 | Follow Up | 0 | | | | | Medium |
| Lower Reach | | | | | | | | | |
| RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) | | | | | | | | | |
| A&H Restaurant Corporation | 1919 S Jackson Street | 12/11/2018 | Initial | 1 | | | 1 | | Medium |
| A1 Building Supply - 4408 4th Ave S | 4408 4th Avenue S | 10/17/2018 | Initial | 2 | | | 2 | | Low |
| ABM Janitorial Services Northwest | 2001 22nd Avenue S | 6/29/2018 | Initial | 5 | | | 3 | 2 | Low |
| Acco Engineered Systems Inc | 5300 Denver Avenue S | 1/9/2018 | Initial | 5 | 1 | | 3 | 1 | High |
| | | 2/28/2018 | Follow Up | 0 | | | | | |
| Affordable Tire & Brake II | 3300 Martin Luther King Jr Way S | 8/13/2018 | Initial | 2 | | | | 2 | High |
| Amy Bistro LLC | 4119 4th Avenue S | 11/28/2018 | Initial | 4 | | | 2 | 2 | Low |
| | | 12/26/2018 | Follow Up | 0 | | | | | |
| Attilio A Merlino and Associates Inc. | 4100 4th Avenue S | 1/26/2018 | Follow Up | 0 | | | | | Medium |
| AutoZone Stores Inc. | 306 23rd Avenue S | 9/12/2018 | Initial | 5 | | | 4 | 1 | Medium |
| Beyene Bereket N | 3800 Diagonal Avenue S | 3/8/2018 | Initial | 4 | | | 3 | 1 | Medium |
| | | 4/4/2018 | Follow Up | 0 | | | | | |
| Blokable Inc | 1136 Poplar Place S | 1/17/2018 | Initial | 1 | | | | 1 | Low |
| | | 2/12/2018 | Follow Up | 0 | | | | | |
| Buddha Bruddah LLC | 2201 Rainier Avenue S | 4/9/2018 | Initial | 4 | | | 3 | 1 | Low |
| | | 5/9/2018 | Follow Up | 0 | | | | | |
| Budget Batteries Inc. | 2006 Rainier Avenue S | 9/27/2018 | Initial | 0 | | | | | Medium |
| Catholic Community Services of King County | 100 23rd Avenue S | 11/5/2018 | Initial | 1 | | | | 1 | Low |
| | | 12/21/2018 | Follow Up | 0 | | | | | |
| Catholic Community Services of King County | 2329 Rainier Avenue S | 8/30/2018 | Initial | 4 | | | 1 | 3 | Low |
| | | 10/3/2018 | Follow Up | 4 | | | 1 | | |
| | | 11/8/2018 | Follow Up | 0 | | | | | |
| Cellco Partnerships | 3440 6th Avenue S | 12/7/2018 | Initial | 0 | | | | | Low |
| City Investors LLC | 306 23rd Avenue S | 9/12/2018 | Initial | 2 | | | 2 | | Low |
| | | 12/5/2018 | Follow Up | 0 | | | | | |
| Crosscut Hardwoods | 4100 1st Avenue S | 3/22/2018 | Initial | 5 | | | 1 | 4 | |
| | | 4/27/2018 | Follow Up | 0 | | | | | |

Appendix C
SPU Source Control Inspections (2018)

| Facility | Address | Date Inspected | Inspection Type | Corrective Actions | | | | | Rank |
|----------------------------------|--------------------------|----------------|-----------------|--------------------|----|----|----|----|--------|
| | | | | Total | HW | IW | SP | SW | |
| Dakota Street LLC | 655 S Andover Street | 12/7/2018 | Initial | 1 | | | | 1 | None |
| | | 12/26/2018 | Follow Up | 0 | | | | | |
| Daniel Smith Inc. | 4150 1st Ave S | 6/14/2018 | Initial | 1 | | | 1 | | |
| DTF Prep Seattle LLC | 4025 1st Avenue S | 5/10/2018 | Initial | 6 | | 1 | 3 | 2 | Low |
| | | 6/18/2018 | Follow Up | 2 | | | | 2 | |
| Dungeness Resources LLC | 2101 23rd Avenue S | 1/17/2018 | Follow Up | 0 | | | | | Medium |
| | | 2/12/2018 | Follow Up | 0 | | | | | |
| EH Enterprises Management Inc. | 3922 6th Avenue S | 10/31/2018 | Initial | 4 | | | 2 | 2 | Medium |
| | | 12/7/2018 | Follow Up | 0 | | | | | |
| Emerald City Bindery | 4809 Airport Way S | 11/6/2018 | Initial | 2 | | | | 2 | Low |
| | | 11/28/2018 | Follow Up | 0 | | | | | |
| Emerald City Cleaners Inc | 850 Rainier Avenue S | 11/5/2018 | Initial | 0 | | | | | Low |
| Golden Carriage Inc. | 1917 S Jackson Street | 12/11/2018 | Initial | 2 | | | 2 | | Low |
| Great Western Pacific Inc | 14 S Idaho Street | 2/2/2018 | Initial | 1 | | | | 1 | Low |
| | | 3/22/2018 | Follow Up | 0 | | | | | |
| Hat Rack Wines | 3861 1st Avenue S | 5/2/2018 | Initial | 0 | | | | | Low |
| Hudson Bay Insulation Co | 4800 Denver Avenue S | 2/1/2018 | Initial | 3 | | | 1 | 2 | Medium |
| | | 3/5/2018 | Follow Up | 0 | | | | | |
| IsGood Woodworks, LLC | 4660 East Marginal Way S | 11/8/2018 | Initial | 0 | | | | | Low |
| Island Detail | 308 14th Avenue S | 11/5/2018 | Initial | 0 | | | | | Low |
| Jergens Lawrence C | 417 18th Avenue S | 6/7/2018 | Initial | 0 | | | | | |
| Johnson & Barrow | 2203 23rd Avenue S | 7/2/2018 | Initial | 4 | | | 3 | 1 | Low |
| | | 7/20/2018 | Follow Up | 0 | | | | | |
| Johnson & Barrow Inc | 2024 21st Avenue S | 7/2/2018 | Initial | 6 | | | 3 | 3 | Medium |
| | | 7/20/2018 | Follow Up | 0 | | | | | |
| Johnson & Barrow Inc | 2202 22nd Avenue S | 12/14/2018 | Initial | 3 | 1 | | | 2 | Low |
| Kellans Autobody & Svcs Inc | 1501 S Dearborn Street | 1/23/2018 | Initial | 0 | | | | | |
| KT Building Supply Inc | 3623 6th Avenue S | 2/26/2018 | Initial | 0 | | | | | High |
| Lee Sang H | 3002 Beacon Avenue S | 12/12/2018 | Initial | 3 | | | | 3 | Medium |
| Lost Luggage | 3849 1st Avenue S | 5/2/2018 | Initial | 0 | | | | | Low |
| | | 9/21/2018 | Initial | 0 | | | | | |
| Lowes Home Improvement Warehouse | 2700 Rainier Avenue S | 1/16/2018 | Follow Up | 0 | | | | | High |
| | | 1/25/2018 | Follow Up | 0 | | | | | |
| M & M Auto Repair | 2116 22nd Avenue S | 10/30/2018 | Initial | 2 | | | 1 | 1 | Medium |
| | | 12/13/2018 | Follow Up | 0 | | | | | |
| Madonna Properties, LLC | 4660 East Marginal Way S | 11/8/2018 | Initial | 1 | | | | 1 | Low |
| | | 12/12/2018 | Follow Up | 0 | | | | | |
| Mediterranean Market Inc | 2307 Rainier Avenue S | 9/21/2018 | Initial | 0 | | | | | Low |
| Modelwerks Inc. | 655 S Andover Street | 10/5/2018 | Initial | 4 | | | 1 | 3 | Medium |
| | | 12/7/2018 | Follow Up | 0 | | | | | |
| Nguyen's Pharmacy | 2120 Rainier Avenue S | 8/28/2018 | Initial | 2 | | | | 2 | Low |
| | | 9/4/2018 | Follow Up | 0 | | | | | |
| Northwest Tofu Inc | 1911 S Jackson Street | 10/25/2018 | Initial | 4 | | | 2 | 2 | Low |
| | | 11/29/2018 | Follow Up | 0 | | | | | |
| O'Reilly Auto Parts #3697 | 2805 Rainier Avenue S | 6/19/2018 | Initial | 2 | | | | 2 | High |
| Pacific Tower | 1200 12th Avenue S | 4/10/2018 | Initial | 2 | | | | 2 | Medium |
| | | 5/24/2018 | Follow Up | 0 | | | | | |
| Pius Kitchen and Bath | 3623 6th Avenue S | 2/26/2018 | Initial | 1 | | | | 1 | High |
| Plymouth Poultry Co | 4604 4th Avenue S | 1/19/2018 | Initial | 4 | | | 3 | 1 | Low |
| Rodda Paint Co. | 3838 4th Avenue S | 12/19/2018 | Initial | 0 | | | | | Medium |
| S.A. Thompson LLC | 4604 4th Avenue S | 1/19/2018 | Initial | 2 | | | | 2 | None |
| | | 3/22/2018 | Follow Up | 0 | | | | | |
| Safelite Fulfillment Inc | 4005 6th Avenue S | 5/7/2018 | Initial | 5 | | | 3 | 2 | Medium |
| | | 6/18/2018 | Follow Up | 0 | | | | | |

Appendix C SPU Source Control Inspections (2018)

| Facility | Address | Date Inspected | Inspection Type | Corrective Actions | | | | | Rank |
|---|---------------------------------|----------------|-----------------|--------------------|----|----|----|----|--------|
| | | | | Total | HW | IW | SP | SW | |
| Saffron Spice | 1901 Rainier Avenue S | 3/2/2018 | Initial | 4 | | | 3 | 1 | Medium |
| | | 4/3/2018 | Follow Up | 0 | | | | | |
| Seaself Storage LLC | 1100 Poplar Place S | 12/10/2018 | Initial | 2 | | | 1 | 1 | Low |
| Seattle Rockeries & Construction | 2200 22nd Avenue S | 12/14/2018 | Initial | 2 | | | 2 | | Low |
| Seattle Towing LLC | 3834 4th Avenue S | 9/26/2018 | Initial | 2 | 1 | | 1 | | High |
| | | 10/31/2018 | Follow Up | 0 | | | | | |
| SFD - Fire Station #6 | 405 Martin Luther King Jr Way S | 8/30/2018 | Initial | 0 | | | | | Medium |
| SFD Fire Station #13 | 3601 Beacon Ave S | 8/30/2018 | Initial | 0 | | | | | Medium |
| Skyline Electric & MFG. Company | 3619 7th Avenue S | 3/28/2018 | Initial | 5 | | | 2 | 3 | Low |
| | | 5/15/2018 | Follow Up | 0 | | | | | |
| Snorkel Hot Tubs Inc | 4216 6th Avenue S | 10/8/2018 | Initial | 4 | | | 1 | 3 | Low |
| | | 11/6/2018 | Follow Up | 0 | | | | | |
| Song & Jenny Inc. | 4117 4th Avenue S | 11/6/2018 | Initial | 3 | | | 2 | 1 | Low |
| Southern Wine & Spirits of Washington LLC | 4101 1st Avenue S | 5/7/2018 | Initial | 3 | | | 1 | 2 | Medium |
| | | 6/18/2018 | Follow Up | 0 | | | | | |
| Teklesus Fshahaye A | 2114 22nd Avenue S | 10/30/2018 | Initial | 4 | 1 | | 1 | 2 | Medium |
| | | 12/13/2018 | Follow Up | 1 | | | | 1 | |
| The Dog Resort LLC | 629 S Industrial Way | 9/21/2018 | Initial | 5 | | | 1 | 4 | High |
| | | 11/19/2018 | Follow Up | 1 | | | | 1 | |
| Tung Enterprises Inc. | 2009 Rainier Avenue S | 3/21/2018 | Initial | 2 | | | | 2 | Medium |
| | | 5/4/2018 | Follow Up | 0 | | | | | |
| Uli's Famous Sausage Inc. | 843 Rainier Avenue S | 10/17/2018 | Initial | 4 | | | 2 | 2 | Low |
| | | 11/26/2018 | Follow Up | 0 | | | | | |
| United Parcel Service | 4201 6th Avenue S | 1/3/2018 | Initial | 1 | | | | 1 | Medium |
| Uwajimaya | 4601 6th Avenue S, Unit A | 10/9/2018 | Initial | 2 | | | 1 | 1 | Low |
| Walgreens #03632 | 2400 S Jackson Street | 11/1/2018 | Initial | 3 | | | 1 | 2 | Low |
| | | 12/5/2018 | Follow Up | 0 | | | | | |
| Waste Management of WA Inc | 70 S Alaska Street | 1/11/2018 | Initial | 0 | | | | | High |
| WSDOT - Signal Shop | 3700 9th Avenue S | 10/3/2018 | Initial | 7 | 1 | | 2 | 4 | Medium |
| | | 11/7/2018 | Follow Up | 0 | | | | | |
| RM 0.0-1.0 West (Spokane Street to Kellogg Island) | | | | | | | | | |
| Global Diving and Salvage Inc. | 3801 Marginal Place SW | 6/28/2018 | Initial | 0 | | | | | Medium |
| | | 7/25/2018 | Follow Up | 0 | | | | | |
| Global Diving and Salvage Inc. | 3840 West Marginal Way SW | 6/28/2018 | Initial | 4 | | | 1 | 3 | Medium |
| | | 7/25/2018 | Follow Up | 0 | | | | | |
| Global Diving and Salvage Inc. | 4025 West Marginal Way SW | 6/29/2018 | Initial | 0 | | | | | Medium |
| | | 7/25/2018 | Follow Up | 0 | | | | | |

**Appendix D:
King County Source Control Inspections
(2018)**

Table D-1. King County Industrial Waste Inspections in LDW Basin (2018)

| Facility | Authorization Type | Authorization Number | Inspection Date | CSO Basin |
|---|-------------------------------|----------------------|------------------------------------|----------------------------|
| Beckwith & Kuffel Inc. - Remediation Construction Project | Minor Discharge Authorization | 11795-01 | 1/17/2018 | 8th Avenue |
| Coast Crane Company | Minor Discharge Authorization | 788-03 | 4/6/2018 | 8th Avenue |
| Industrial Container Services - WA LLC | Permit | 7929-01 | 9/18/2018 | 8th Avenue |
| Kerry Inc. | Permit | 7854-02 | 5/25/2018 | 8th Avenue |
| Machinists, Inc. Plant 5 | Permit | 7892-01 | 7/13/2018 | 8th Avenue |
| Magnetic and Penetrant Services Co. | Permit | 7873-02 | 11/28/2018 | 8th Avenue |
| National Products Inc. | Permit | 7834-02 | 3/28/2018 | 8th Avenue |
| Seattle, City of - SPU - South Recycling and Disposal Station | NA | 400-04 | 7/10/2018 | 8th Avenue |
| Seattle, City of - SPU - Storm Drainage Basin Cleaning Decant Site | Major Discharge Authorization | 4425-01 | 7/17/2018 | 8th Avenue |
| Waste Management Inc. - Seattle | Minor Discharge Authorization | 785-04 | 3/9/2018 | 8th Avenue |
| Seafreeze Acquisition, LLC (AKA Lineage Logistics - Seattle Michigan) | Permit | 7896-01 | 2/14/2018 10/31/2018 | 8th Avenue or Terminal 115 |
| Art Brass Plating Inc. | Permit | 7722-05 | 11/15/2018 | Brandon |
| General Biodiesel Seattle LLC | NA | 400194-01 | 10/11/2018 | Brandon |
| Seadrunar Recycling | Letter of Authorization | 11430-01 | 9/26/2018 | Brandon |
| Georgetown Brewing Co. | Major Discharge Authorization | 4154-02 | 7/18/2018 | Brandon or Duwamish |
| Schwartz Brothers Bakery - Seattle | Major Discharge Authorization | 743-05 | 3/8/2018 | Duwamish |
| Seattle Barrel Co. | Permit | 7113-04 | 4/23/2018 5/21/2018 | Duwamish |
| Alaska Marine Lines Inc. | Minor Discharge Authorization | 459-05 | 10/10/2018 | Duwamish West |
| Lafarge - Seattle Plant | Permit | 7925-01 | 5/23/2018 | Duwamish West |
| TLP Management Services LLC | Permit | 7592-05 | 6/14/2018 | Duwamish West |
| Vigor Shipyards Inc. | Permit | 7782-07 | 2/7/2018 3/5/2018 10/15/2018 | Duwamish West |

Table D-1. King County Industrial Waste Inspections in LDW Basin (2018)

| Facility | Authorization Type | Authorization Number | Inspection Date | CSO Basin |
|---|-------------------------------|----------------------|-----------------|------------------------|
| Boeing Company - Plant 2 Facility | Permit | 7811-04 | 11/6/2018 | E Marginal |
| Boeing Commercial Airplane - North Field | Permit | 7594-06 | 10/25/2018 | E Marginal or Michigan |
| Penthouse Drapery Cleaners and Manufacturers Former Prop | Letter of Authorization | 1065-01 | 3/8/2018 | Hanford 1/2 or Lander |
| Rainier Commons LLC - Old Rainier Brewery Site | Permit | 7927-01 | 9/6/2018 | Hanford 1/2 or Lander |
| Atwood Adhesives, Inc. | Letter of Authorization | 11816-01 | 3/12/2018 | Michigan |
| Cascade Columbia Distribution | Major Discharge Authorization | 4156-02 | 7/17/2018 | Michigan |
| Ceradyne Inc., A 3M Company - Seattle | Permit | 7507-05 | 6/14/2018 | Michigan |
| Eco Chemical Inc. | Minor Discharge Authorization | 918-02 | 10/5/2018 | Michigan |
| Evergreen Tractor LLC | Letter of Authorization | 11008-02 | 3/8/2018 | Michigan |
| First South Properties | Major Discharge Authorization | 4472-01 | 5/23/2018 | Michigan |
| King County WTD - Georgetown Wet Weather Treatment Station | Major Discharge Authorization | 7939-01 | 5/24/2018 | Michigan |
| | | | 12/7/2018 | |
| | | | 12/20/2018 | |
| Marine Vacuum Service Inc. | Permit | 7676-06 | 10/18/2018 | Michigan |
| | | | 11/26/2018 | |
| Waste Management National Services - 8th Avenue South Reload Facility | Permit | 7928-02 | 6/28/2018 | Michigan |
| | | | 10/18/2018 | |
| Seattle, City of - SPU - West Seattle Decant Station | Major Discharge Authorization | 416-05 | 1/17/2018 | West Michigan |

Source: King County 2019 [11925]

Table D-2. King County Stormwater Services Inspections in LDW Basin (2018)

| Facility Name | Address | Inspection Date | Inspection Type | Notes |
|---|-----------------------------|--|-----------------|---|
| RM 3.8-4.2 West (Sea King Industrial Park) | | | | |
| Delta Marine | 1608 S 96th Street | 1/17/2018 4/4/2018 | Source Control | Final compliance after secondary containment, labeling, and covering issues were addressed. |
| Frog Hollow Corp. | 1425 S 93rd Street | 2/27/2018 4/4/2018 | Source Control | Improved storm drain cleaning and labeling and contaminated shop towel handling. |
| Goodyear Commercial Tire | 9411 8th Avenue S | 5/18/2018 6/11/2018 6/26/2018 7/19/2018 | Source Control | Conveyance system needed cleaning. |
| Graffix | 1312 S 96th Street | 1/10/2018 | Source Control | Follow-up inspection to address storm drain cleaning after labeling and storage issues. The condition of the S 96th St conveyance system is causing problems; referred to KC Roads Services Division for ongoing assistance. |
| NRC Environmental | 9520 10th Avenue S, Ste 150 | 1/2/2018 1/8/2018 | Source Control | Improved spill cleanup, scrap metal storage, and degreasing practices. |
| Pacific Northwest Motor Freight Lines | 515 S 96th Street | 1/8/2018 1/31/2018 | Source Control | Improved secondary containment, storm drain labeling, and spill response. |
| PSF Industries (PSF Mechanical) | 9322 14th Avenue S | 8/9/2018 8/23/2018 | Source Control | Joint inspection with Ecology. Improved spill cleanup, vehicle washing, stenciling, waste |
| Puget Sound Coatings | 9220 8th Avenue S | 1/10/2018 | Source Control | Final re-inspection with Ecology after addressing labeling and storage issues. Additional follow-up addressed with emailed photos. |
| Shell Gas Station & Bikini Espresso | 9525 14th Avenue S | 1/2/2018 1/12/2018 1/17/2018 1/23/2018 1/29/2018 2/15/2018 2/20/2018 3/2/2018 | Source Control | Espresso stand discharging wastewater to storm drain, improper grease handling, and storage of oil/gas mixture. Also painting contractor washed tools outside. System pumped out, espresso stand re-plumbed, and waste handling improved. |
| SimplexGrinnell | 9520 10th Avenue S, Ste 100 | 5/10/2018 5/30/2018 | Source Control | Joint inspection with Ecology. Improved waste handling and storage. |
| South 96th Business Park | 410 S 96th Street | 1/17/2018 1/23/2018 | Source Control | Improved sawdust sweeping after education for one of the business park tenants. |

Table D-2. King County Stormwater Services Inspections in LDW Basin (2018)

| Facility Name | Address | Inspection Date | Inspection Type | Notes |
|--|----------------------|-----------------|-----------------|--|
| RM 3.4-3.8 West (EAA-5: Terminal 117) | | | | |
| Terminal 117 Site | 8700 Dallas Avenue S | 1/25/2018 | Source Control | Confirmed removal from source control inspection schedule. |

Source: King County 2018, Table 3

**Appendix E:
Ecology Source Control Inspections
(2018)**

Table E-1. Ecology LDW Water Quality Inspections (2018)

| NPDES Permit No. | Facility Name | Address | Date Inspected | Ecology Findings |
|--|--|---------------------------|----------------|---|
| Upper Reach | | | | |
| RM 4.9 East (EAA-7: Norfolk CSO/SD) | | | | |
| WAR000150 | Boeing Military Flight Center | 10002 East Marginal Way S | 4/4/2018 | Compliance inspection-without sampling. Update SWPPP; update sampling plan to include discharges from the eight representative discharge locations; do not allow sheet flow to areas that infiltrate without AKART; clean up spills promptly; maintain treatment and source control BMPs; collect stormwater from/near the ramp and gate area and convey to treatment; prepare an Engineering Report; install inserts in all catch basins; document modifications to conveyance structures in the sampling plan. |
| RM 2.8-3.7 East (EAA-4: Boeing Plant 2/Jorgensen Forge) | | | | |
| WAR003231 | Jorgensen Forge Corp | 8531 East Marginal Way S | 1/24/2018 | Compliance inspection-without sampling. Include treatment system O&M manual in SWPPP. |
| RM 3.8-4.2 West (Sea King Industrial Park) | | | | |
| WAR003120 | Gary Merlino Construction | 9125 10th Avenue S | 11/28/2018 | Compliance inspection-without sampling. Ensure that spills and leaks are cleaned up immediately; ensure that spill kits are kept within 25 feet of fueling areas, including the O'Neill Plumbing yard. |
| Middle Reach | | | | |
| RM 2.8 East (EAA-3: Slip 4) | | | | |
| WAR302034 | Duwamish Reload Facility | 7400 8th Avenue S | 12/4/2018 | Compliance inspection-without sampling. Ensure all transloading activities include a spotter to minimize spills and ensure proper reporting; update SWPPP with revised operations structural source control BMPs; inspect spill plate and remove sediment and debris; address runoff of stormwater contacting dredge sediments and other debris; revise sampling plan to include additional monitoring location at spill plate; minimize or stop discharge of dredge sediments, water, or other materials from transloading activities. |
| RM 2.3-2.8 East (Seattle Boiler Works to Slip 4) | | | | |
| WA0031968 | Seattle Iron & Metals Corp | 601 S Myrtle Street | 2/15/2018 | Compliance follow-up inspection. |
| | | | 6/27/2018 | Compliance inspection-without sampling; inspection of barge and docks, and response to discharge of firefighting water related to June 26, 2018 fire at the facility. |
| WAR125002 | Seattle Iron & Metals Corp Truck Parking | 730 S Myrtle Street | 2/15/2018 | Compliance follow-up inspection. |

Table E-1. Ecology LDW Water Quality Inspections (2018)

| NPDES Permit No. | Facility Name | Address | Date Inspected | Ecology Findings |
|--|--|--------------------------|----------------|---|
| RM 2.2-3.4 West (Riverside Drive) | | | | |
| WAR301516 | Pacific Pile & Marine Main Yard | 700 Riverside Drive | 12/6/2018 | Compliance inspection-without sampling. Update SWPPP to include Level 1, 2, and 3 corrective actions implemented; update site map; update sampling plan to include monitoring location for equipment laydown yard; include all areas where fueling is conducted and address applicable BMPs; cover dumpster and scrap metal bins; repond to Ecology warning letter re: TSS exceedances and address outstanding Level 2/3 actions for copper, zinc, and turbidity. |
| WAR304003 | United Site Services of Nevada Inc Sea | 1024 S Elmgrove Street | 12/4/2018 | Compliance inspection-without sampling. Designate a representative discharge location to direct discharges from northern perimeter; starting 2019Q1, collect samples from new discharge location; obtain copies of all required permit-related paperwork and retain on-site; submit a plan for addressing Level 3 corrective action triggered in 2017; update SWPPP to accurately reflect site conditions; respond to Ecology warning letter re: TSS exceedances; improve housekeeping, cleanup up spills and leaks, and maintain spill kits. |
| RM 2.1-2.2 West (EAA-2: Trotsky Inlet) | | | | |
| WAR005598 | Boyer Logistics | 7318 4th Avenue S | 6/6/2018 | Compliance inspection-without sampling. No inspection report found in PARIS. |
| Lower Reach | | | | |
| RM 1.2-1.7 East (St. Gobain to Glacier Northwest) | | | | |
| WAR000056 | Certainteed Gypsum | 5931 East Marginal Way S | 12/11/2018 | Compliance inspection-without sampling. Immediately cleanup up and properly dispose of accumulated gypsum on the bank of the LDW. Stop discharge of gypsum to the LDW (direct and indirect) from the conveyor belt and area beneath the conveyor belt. Ensure that all chemical liquids are stored on an impervious service surrounded by a containment berm or dike. Starting 2019Q1, collect quarterly discharge samples of runoff to the LDW from the portion of the bank beneath the conveyor belt. Submit a DMR for 2018Q3. |
| WAR001134 | Ardagh Glass | 5801 East Marginal Way S | 11/20/2018 | Compliance inspection-without sampling. Inspect catch basin treatment BMPs, remove debris, replace treatment media; clean up spills immediately; conduct washing activities in areas where washwater can be collected and properly disposed of; develop a plan to control sediment, dust, and particulate debris on-site; update the SWPPP; store containers within secondary containment; respond to Ecology warning letter re: TSS exceedances; conduct additional discharge sampling for 2018Q4. |

Table E-1. Ecology LDW Water Quality Inspections (2018)

| NPDES Permit No. | Facility Name | Address | Date Inspected | Ecology Findings |
|---|--|----------------------|----------------|--|
| RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) | | | | |
| WAR004614 | Lee & Eastes Tank Lines Inc | 2418 Airport Way S | 12/12/2018 | Technical assistance visit. |
| WAR009970 | Lighthouse for the Blind | 2501 S Plum Street | 12/12/2018 | Compliance inspection-without sampling. Stop discharge of process wastewater to SW drainage system; respond to Warning Letter re: TSS exceedances; report future TSS exceedances; implement source control BMPs to control dust/debris; clean up spills and leaks immediately; complete a Level 3 corrective action in response to 2018 copper exceedances; retain permit-related documents onsite. |
| WAR011326 | MacMillan Piper Inc Airport Way | 655 S Edmunds Street | 11/28/2018 | Compliance inspection-without sampling. Update SWPPP to include Level 1, 2, and 3 corrections implemented; ensure vacuum sweeping to address accumulation of sediment and debris; update SWPPP to include BMPs for managing grain spills; maintain a spill log; review of site operations and BMPs to minimize TSS effluent limit exceedances. |
| WAR301360 | NW Container Services Seattle Intermodal Yard | 635 S Edmunds Street | 11/28/2018 | Compliance inspection-without sampling. Stop discharge of process wastewater to SW drainage system; store equipment with fuel tanks on impervious surface within secondary containment; update SWPPP to include BMPs for managing grain spills; provide update on installation status of treatment system in drainage basin 1; submit an O&M manual for treatment system; respond to Ecology warning letter re: TSS exceedances. |
| WAR001155 | Union Pacific Railroad Co Dawson St | 402 S Dawson Street | 3/6/2018 | Compliance inspection-without sampling. Update SWPPP; store liquids on impervious surface within proper secondary containment; prevent maintenance wastes and fluids from getting on pavement; monitor all SW drainage systems; vacuum paved surfaces at least once per quarter; prohibit washwater from entering storm drains or surface waters; correct DMRs back to 2016. |

AKART = all known, available and reasonable methods of prevention, control and treatment

BMP = best management practice

DMR = discharge monitoring report

EAA = Early Action Area

LDW = Lower Duwamish Waterway

NPDES = National Pollutant Discharge Elimination System

O&M = operations and maintenance

RM = river mile

SWPPP = Stormwater Pollution Prevention Plan

TSS = total suspended solids

Table E-2. Ecology LDW Urban Waters Inspections (2018)

| Facility Name | Address | Date Inspected |
|---|-----------------------------------|----------------|
| Upper Reach | | |
| RM 4.9 East (EAA-7: Norfolk CSO/SD) | | |
| Fairn & Swanson Inc. | 9875 40th Avenue S | 11/27/2018 |
| Frank Colluccio Construction | 9600 Martin Luther King Jr Way S | 4/3/2018 |
| Jack's Payless Auto Parts | 9423 Martin Luther King Jr Way S | 5/1/2018 |
| Supervalu | 3301 S Norfolk Street | 5/3/2018 |
| Catalyst Workplace Activation | 10848 East Marginal Way S | 8/30/2018 |
| Otto Rosenau & Associates | 6467 Martin Luther King Jr Way S | 5/15/2018 |
| System Seven Repair | 10831 Tukwila International Blvd | 10/18/2018 |
| RM 3.9-4.3 East (Slip 6) | | |
| Insurance Auto Auctions | 8801 East Marginal Way S | 4/24/2018 |
| RM 4.2-5.8 West (Restoration Areas) | | |
| Aussie Machine | 12446 Des Moines Memorial Drive S | 4/26/2018 |
| Chavez Auto Repair | 12025 Des Moines Memorial Drive S | 8/2/2018 |
| Glendale Heating and Air Conditioning | 12462 Des Moines Memorial drive S | 11/7/2018 |
| Southern Heights Elementary School | 11249 14th Avenue S | 2/9/2018 |
| RM 3.8-4.2 West (Sea King Industrial Park) | | |
| Goodyear Commercial Tire & Svc | 9411 8th Avenue S | 5/10/2018 |
| PSF Mechanical | 9322 14th Avenue S | 8/9/2018 |
| Simplex Grinnell | 9520 10th Avenue S | 5/10/2018 |
| RM 3.4-3.8 West (EAA-5: Terminal 117) | | |
| Tire Factory Seattle | 8510 Dallas Avenue S | 2/1/2018 |
| Middle Reach | | |
| RM 2.8 East (EAA-3: Slip 4) | | |
| Alaska Logistics | 7400 8th Avenue S | 9/14/2018 |
| Deke River Merchandising | 1900 S Corgiat Drive | 5/8/2018 |
| Eco Chemical | 6600 Ursula Place S | 6/13/2018 |
| Envelope Converting Service | 6603 Ursula Place S | 10/16/2018 |
| Linescape of Washington | 6606 Ursula Place S | 10/4/2018 |
| RM 2.0-2.3 East (Slip 3 to Seattle Boiler Works) | | |
| Open Square | 303 S River Street | 1/19/2018 |
| RM 2.2-3.4 West (Riverside Drive) | | |
| Cain Bolt & Gasket | 7724 7th Avenue S | 4/26/2018 |
| Custom Crating Company | 233 S Holden Street | 5/3/2018 |
| Evergreen Refrigeration | 727 S Kenyon Street | 9/20/2018 |
| Federal Marine & Defense Services | 8000 5th Avenue S | 8/2/2018 |
| Gear Works Seattle | 500 S Portland Street | 2/6/2018 |
| Modern Machine | 519 S Elmgrove Street | 4/12/2018 |
| Modern Machine | 524 S Southern Street | 1/26/2018 |
| National Products | 1017 S Elmgrove Street | 2/15/2018 |
| Pacific Pile & Marine Main Yard | 700 Riverside Drive | 2/1/2018 |
| Pacific Pile & Marine | 582 S Riverside Drive | 2/1/2018 |
| Rasmussen Equipment Company | 8727 5th Avenue S | 11/20/2018 |
| West Coast Wire Rope & Rigging | 7777 7th Avenue S | 9/4/2018 |
| Elliott Paint Company | 11206 Des Moines Memorial Drive | 8/23/2018 |
| RM 2.1-2.2 West (EAA-2: Trotsky Inlet) | | |
| Alaska Marine Lines | 7100 1st Avenue S | 1/23/2018 |
| RM 2.1 West (1st Avenue S Storm Drain) | | |
| Demolition Man | 8151 Occidental Avenue S | 1/26/2018 |
| North Star Ice Equipment | 8151 Occidental Avenue S | 1/26/2018 |
| Seaport Petroleum | 7800 Detroit Avenue SW | 3/23/2018 |

Table E-2. Ecology LDW Urban Waters Inspections (2018)

| Facility Name | Address | Date Inspected |
|---|--------------------------|----------------|
| Lower Reach | | |
| RM 1.0-1.2 East (KC Lease Parcels) | | |
| Balancing Service Co | 5512 6th Avenue S | 9/4/2018 |
| Dorse Air Products | 5000 1st Avenue S | 11/7/2018 |
| McKinstry Co | 5005 3rd Avenue S | 4/10/2018 |
| RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) | | |
| Asa Mercer Middle School | 1600 S Columbian Way | 9/14/2018 |
| Daniel Smith Inc | 4150 1st Avenue S | 6/14/2018 |
| DCG One Seattle | 4401 East Marginal Way S | 4/10/2018 |
| DHL Express | 4450 East Marginal Way S | 4/10/2018 |
| Global Fulfillment | 4 S Idaho Street | 10/4/2018 |
| Metal Solutions | 5212 6th Avenue S | 9/4/2018 |
| Paramount Services | 423 S Horton Street | 11/27/2018 |
| Recology CleanScapes | 4401 East Marginal Way S | 1/23/2018 |
| Redsoul | 3433 Airport Way S | 2/15/2018 |
| RH Brown Company | 12 S Idaho Street | 9/20/2018 |
| Tube Art Group | 920 S Bayview Street | 4/26/2018 |
| Seattle University | Broadway & East Madison | 4/19/2018 |
| Westcoast Auto Body | 3815 Rainier Avenue S | 2/9/2018 |

Note: An Urban Waters inspection was conducted on 5/8/2018 at NW Truck Transmission; an address for this facility could not be determined.

EAA = Early Action Area
 RM = river mile

Table E-3. Ecology LDW HWTR Inspections (2018)

| EPA ID No. | Facility Name | Address | Date Inspected |
|---|--|------------------------------------|----------------|
| Upper Reach | | | |
| RM 3.8-4.2 West (Sea King Industrial Park) | | | |
| WAD009286881 | Ace Galvanizing | 429 S 96th Street | 8/29/2018 |
| WAH000013730 | Sherwin Williams Store 4317 | 9530 10th Avenue S | 8/29/2018 |
| Middle Reach | | | |
| RM 2.8 East (EAA-3: Slip 4) | | | |
| WAD980974521 | Marine Vacuum Service | 1516 S Graham Street | 3/29/2018 |
| RM 2.2-3.4 West (Riverside Drive) | | | |
| WAH000000125 | Modern Machine | 524 S Southern Street | 10/30/2018 |
| RM 2.1-2.2 West (EAA-2: Trotsky Inlet) | | | |
| WAD000066084 | Industrial Container Services | 7152 1st Avenue S | 8/1/2018 |
| RM 1.6-2.1 West (Terminal 115) | | | |
| WAH000011486 | Northland Services Inc Transfer Facility | 6700 West Marginal Way SW | 3/6/2018 |
| Lower Reach | | | |
| RM 1.0-1.2 East: Combined Sewer Area (Brandon CSO) | | | |
| WAH000046534 | Art Brass Aerospace Finishing | 313 S Findlay | 2/6/2018 |
| WAD981772957 | Art Brass Plating | 5516 3rd Avenue S | 2/6/2018 |
| WAD009245465 | Capital Industries | 5801 3rd Avenue S | 6/28/2018 |
| RM 0.1-0.9 East (EAA-1: Duwamish/Diagonal Way) | | | |
| WAD009282278 | Lighthouse for the Blind | 2501 S Plum Street | 5/8/2018 |
| WAD027470111 | Seattle Barrel | 4716 Airport Way | 4/23/2018 |
| None | Seattle Barrel | 7th Avenue S & S Snoqualmie Street | 4/23/2018 |

CSO = combined sewer overflow

EAA = Early Action Area

HWTR = Hazardous Waste & Toxics Reduction

RM = river mile

**Appendix F:
SPU Source Tracing Data
(2018)**

**Appendix F-1.
SPU Source Tracing Sample Locations (2018)**

| Station ID | Sample No. | Date | Type | Sewer Type | Source Control Area | Outfall | Location | X Coordinate | Y Coordinate |
|---------------------|-----------------------|------------|------------|------------|---------------------|---------------------|---|--------------|--------------|
| UPPER REACH | | | | | | | | | |
| MH5 | MKJ-041318-1 | 4/13/2018 | Grab | SD | RM 4.9 East | Norfolk CSO/SD | MH SE corner 9901 MLK Jr Way S | 1283219.82 | 189957.64 |
| NST1 | NST1-041618 | 4/16/2018 | SedTrap | SD | RM 4.9 East | Norfolk CSO/SD | 60-in line west of MLK Way | 1283043.33 | 189358.24 |
| NST1 | NST1-041618-G | 4/16/2018 | Grab | SD | RM 4.9 East | Norfolk CSO/SD | 60-in line west of MLK Way | 1283043.33 | 189358.24 |
| NST3 | NST3-041618 | 4/16/2018 | SedTrap | SD | RM 4.9 East | Norfolk CSO/SD | Ditch at MLK Way and Boeing Access Rd | 1283147.01 | 188728.61 |
| NST4 | NST4-041718 | 4/17/2018 | SedTrap | SD | RM 4.9 East | Norfolk CSO/SD | S Norfolk St at SE corner KC Airport | 1280697.58 | 190890.74 |
| MH47 | CEW-101218-4 | 10/12/2018 | Grab | SD | RM 3.9-4.3 East | KCIA SD#1 | | 1279234.15 | 196772.27 |
| RCB85 | MBS-121818-1 | 12/18/2018 | Grab | SD | RM 3.4-3.8 West | 17th Ave S SD | | 1274886.08 | 195466.88 |
| RCB76 | MBS-121818-2 | 12/18/2018 | Grab | SD | RM 3.4-3.8 West | 17th Ave S SD | Presettling Cell on Bioretention Cell D | 1275187.09 | 195461.78 |
| MH41 | CEW-073118-1 | 7/31/2018 | Grab | SD | RM 3.8-4.2 West | S 96th St SD | Maintenance hole along 10th Avenue S, between S Barton and S Cambridge Street | 1272995.33 | 193178.65 |
| MIDDLE REACH | | | | | | | | | |
| MH23 | MKJ-061218-1 | 6/12/2018 | Grab | SD | RM 2.8 East | Georgetown SD | MH to east of motel | 1273477.64 | 199762.41 |
| MH32 (SL4-T6) | SL4-T6-041718 | 4/17/2018 | SedTrap | SD | RM 2.8 East | I-5 SD (Slip 4) | MH at Airport Way S and S Hardy St | 1274989.40 | 202834.00 |
| MH32 (SL4-T6) | SL4-T6-041718-G | 4/17/2018 | Grab | SD | RM 2.8 East | I-5 SD (Slip 4) | MH at Airport Way S and S Hardy St | 1274989.40 | 202834.00 |
| MH100 | MKJ-052518-6 | 5/25/2018 | Grab | SD | RM 2.3-2.8 East | S Myrtle St SD | MH at W end S Myrtle St opposite Seattle Iron and Metals | 1271369.99 | 200335.70 |
| MYR-ST1 | SMYRTLE_NORTON_053118 | 5/31/2018 | SedTrap | SD | RM 2.3-2.8 East | S Myrtle St SD | Sediment trap test location | 1271648.79 | 200328.28 |
| MYR-ST1 | SMYRTLE_RORY_053118 | 5/31/2018 | SedTrap | SD | RM 2.3-2.8 East | S Myrtle St SD | Sediment trap test location | 1271648.79 | 200328.28 |
| MYR-ST1 | SMYRTLE_TRENT_053118 | 5/31/2018 | SedTrap | SD | RM 2.3-2.8 East | S Myrtle St SD | Sediment trap test location | 1271648.79 | 200328.28 |
| ODS58 | CEW-020518-1 | 2/5/2018 | SurfDebris | SD | RM 2.0-2.3 East | S River St SD | Site of V. Van Dyke Heavy Hauling, two CB lids in storage yard, East side. | 1270166.94 | 202047.78 |
| MH211 | MKJ-052518-5 | 5/25/2018 | Grab | SD | RM 2.0-2.3 East | S River St SD | Last MH on line | 1269926.63 | 201715.30 |
| MH223 | MKJ-052518-7 | 5/25/2018 | Grab | SD | RM 2.0-2.3 East | S Brighton St SD | Immediately u/s of MH222 | 1270726.75 | 201133.36 |
| MH38 | MKJ-052518-2 | 5/25/2018 | Grab | SD | RM 1.7-2.0 East | Head of Slip 2 | Private MH between truck shop B and Slip 2. | 1269647.52 | 203488.33 |
| MH39 | MKJ-052518-3 | 5/25/2018 | Grab | SD | RM 1.7-2.0 East | 1st Ave S (East) SD | Under Northbound lanes of 1st Ave S bridge, south of Michigan | 1269705.30 | 201995.80 |
| MH39 | MKJ-052518-4 | 5/25/2018 | Grab | SD | RM 1.7-2.0 East | 1st Ave S (East) SD | Under Northbound lanes of 1st Ave S bridge, south of Michigan | 1269705.30 | 201995.80 |
| 7th-ST1 | 7TH-ST1-041818 | 4/18/2018 | SedTrap | SD | RM 2.2-3.4 West | 7th Ave S SD | 7th Ave S at S Portland St, SPU #599721 | 1271845.54 | 198135.36 |
| 7th-ST1 | 7TH-ST1-041818-G | 4/18/2018 | Grab | SD | RM 2.2-3.4 West | 7th Ave S SD | 7th Ave S at S Portland St, SPU #599721 | 1271845.54 | 198135.36 |
| 7th-ST2 | 7TH-ST2-041718 | 4/17/2018 | SedTrap | SD | RM 2.2-3.4 West | 7th Ave S SD | 4th Ave S at S Barton St, next to P-Patch, SPU #878755 | 1270702.00 | 193616.50 |
| 7th-ST2 | 7TH-ST2-041718-G | 4/17/2018 | Grab | SD | RM 2.2-3.4 West | 7th Ave S SD | 4th Ave S at S Barton St, next to P-Patch, SPU #878755 | 1270702.00 | 193616.50 |
| 7th-ST3 | 7TH-ST3-041918 | 4/19/2018 | SedTrap | SD | RM 2.2-3.4 West | 7th Ave S SD | S Southern St just W of 7th Ave S, SPU #599941 | 1271346.96 | 196842.03 |
| CB154 | CEW-021518-2 | 2/15/2018 | Grab | SD | RM 2.2-3.4 West | 7th Ave S SD | 7800 7th Ave S | 1271962.93 | 197815.58 |
| ODS60 | MKJ-062018-3 | 6/20/2018 | SurfDebris | SD | RM 2.2-3.4 West | 7th Ave S SD | | 1271791.98 | 198552.55 |
| 1st-ST1 | 1ST-ST1-041918 | 4/19/2018 | SedTrap | SD | RM 2.1 West | 1st Ave S SD | 1st Ave S pond, N side of S Holden St--SR99 inlet | 1269988.18 | 198544.26 |
| 1st-ST2 | 1ST-ST2-041918 | 4/19/2018 | SedTrap | SD | RM 2.1 West | 1st Ave S SD | 1st Ave S pond, N side of S Holden St--SR509 inlet, SPU #786737 | 1269790.80 | 198570.70 |

Appendix F-1.
SPU Source Tracing Sample Locations (2018)

| Station ID | Sample No. | Date | Type | Sewer Type | Source Control Area | Outfall | Location | X Coordinate | Y Coordinate |
|--------------------|-------------------|------------|------------|------------|---------------------|-------------------------|---|--------------|--------------|
| 1st-ST3 | 1ST-ST3-041818 | 4/18/2018 | SedTrap | SD | RM 2.1 West | 1st Ave S SD | SW Kenyon St at 4th Ave SW, SPU #714106 | 1267991.38 | 197680.32 |
| 1st-ST3 | 1ST-ST3-041818-G | 4/18/2018 | Grab | SD | RM 2.1 West | 1st Ave S SD | SW Kenyon St at 4th Ave SW, SPU #714106 | 1267991.38 | 197680.32 |
| CB325 | MKJ-041018-1 | 4/10/2018 | Grab | SD | RM 2.1 West | 1st Ave S SD | CB mid building west side | 1269178.60 | 197522.80 |
| CB326 | MKJ-041018-2 | 4/10/2018 | Grab | SD | RM 2.1 West | 1st Ave S SD | CB at SW corner of bldg to west of ramp | 1269210.69 | 197348.98 |
| HP-ST4 | HP-ST4-041718 | 4/17/2018 | SedTrap | SD | RM 1.6-2.1 West | Highland Park Way SW SD | Northwest corner of W Marginal and Highland Pk Wy, SPU #599241 | 1267618.04 | 200796.20 |
| HP-ST6 | HP-ST6-041818 | 4/18/2018 | SedTrap | SD | RM 1.6-2.1 West | Highland Park Way SW SD | SW Michigan St just east of W Marginal Wy S, SPU #599219 | 1268086.32 | 200870.80 |
| HP-ST6 | HP-ST6-041818-G | 4/18/2018 | Grab | SD | RM 1.6-2.1 West | Highland Park Way SW SD | SW Michigan St just east of W Marginal Wy S, SPU #599219 | 1268086.32 | 200870.80 |
| MH36 | CEW-011218-3 | 1/12/2018 | Grab | SD | RM 1.6-2.1 West | Highland Park Way SW SD | In pond @outfall from Waste Management Eastmont | 1268296.24 | 200146.63 |
| RCB84 | CEW-011218-1 | 1/12/2018 | Grab | SD | RM 1.6-2.1 West | Highland Park Way SW SD | North Bound Lane of W Marginal Way SW | 1268281.56 | 200324.03 |
| RCB84 | CEW-011218-2 | 1/12/2018 | Grab | SD | RM 1.6-2.1 West | Highland Park Way SW SD | North Bound Lane of W Marginal Way SW | 1268281.56 | 200324.03 |
| KN-ST1 | KN-ST1-041918 | 4/19/2018 | SedTrap | SD | RM 1.6-2.1 West | SW Kenny St SD/T115 CSO | Eastern end of S Kenny St, on T115, SPU #598644 | 1268138.36 | 203628.91 |
| LOWER REACH | | | | | | | | | |
| CB309 | CEW-012418-1 | 1/24/2018 | Grab | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | North loading dock catch basin | 1271232.61 | 208602.16 |
| CB322 | CEW-012418-2 | 1/24/2018 | Grab | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | Wet Vault & Pump Chamber in triangle south of building | 1271200.02 | 208278.37 |
| CB323 | CEW-021518-1 | 2/15/2018 | Grab | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | Composite sample in loading dock of 2 cbs adjacent to ODS with PCB detection. | 1270057.24 | 210313.51 |
| CB324 | MKJ-021518-1 | 2/15/2018 | Grab | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | Storage location for scrap/salvage wood. | 1268045.66 | 209591.96 |
| CB331 | CEW-101218-2 | 10/12/2018 | Grab | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | | 1273257.75 | 211583.52 |
| CB331 | CEW-101218-3 | 10/12/2018 | Grab | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | | 1273257.75 | 211583.52 |
| MH18 | MKJ-021518-4 | 2/15/2018 | Grab | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | 6th Ave S and S Snoqualmie St | 1271741.79 | 208576.18 |
| MH18 | MKJ-021518-5 | 2/15/2018 | Grab | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | 6th Ave S and S Snoqualmie St | 1271741.79 | 208576.18 |
| MH208 | NCH-101918-1 | 10/19/2018 | Grab | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | MH u/s of MH 18 on S Snoqualmie St | 1272356.61 | 208570.08 |
| MH231 | MKJ-021518-6 | 2/15/2018 | Grab | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | MH at S Alaska St and 6th Ave S | 1271739.97 | 208296.78 |
| MH231 | NCH-101918-2 | 10/19/2018 | Grab | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | MH at S Alaska St and 6th Ave S | 1271739.97 | 208296.78 |
| MH40 | CEW-51518-1 | 5/15/2018 | Grab | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | Maintenance Hole in Parking Lot/Loading dock | 1271615.25 | 211126.87 |
| MH46 | CEW-101218-1 | 10/12/2018 | Grab | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | | 1273142.18 | 211630.71 |
| ODS59 | CEW-51518-2 | 5/15/2018 | SurfDebris | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | North Fence line of Skyline Electric at Sump Pump Discharge | 1272316.15 | 211855.66 |
| RCB60 | CEW-031218-1 | 3/12/2018 | Grab | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | West of intersection, north side of Diagonal Ave S | 1271587.66 | 211174.27 |
| ST1 | ST1-041818 | 4/18/2018 | SedTrap | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | Sediment Trap 1: E Marginal Wy and S Oregon St | 1268420.84 | 209048.79 |
| ST1 | ST1-041818-G | 4/18/2018 | Grab | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | Sediment Trap 1: E Marginal Wy and S Oregon St | 1268420.84 | 209048.79 |
| DIAGNORTON | DIAGNORTON_072318 | 7/23/2018 | SedTrap | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | Sediment Trap 2: Airport Way S and 6th Ave S (I-5 SB RP) | 1272836.86 | 211846.87 |

Appendix F-1.
SPU Source Tracing Sample Locations (2018)

| Station ID | Sample No. | Date | Type | Sewer Type | Source Control Area | Outfall | Location | X Coordinate | Y Coordinate |
|------------|------------------|-----------|---------|------------|---------------------|-----------------------|---|--------------|--------------|
| DIAGRORY | DIAGRORY_072318 | 7/23/2018 | SedTrap | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | Sediment Trap 2: Airport Way S and 6th Ave S (I-5 SB RP) | 1272836.86 | 211846.87 |
| DIAGSIFT | DIAGSIFT_072318 | 7/23/2018 | SedTrap | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | Sediment Trap 2: Airport Way S and 6th Ave S (I-5 SB RP) | 1272836.86 | 211846.87 |
| DIAGTRENT | DIAGTRENT_072318 | 7/23/2018 | SedTrap | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | Sediment Trap 2: Airport Way S and 6th Ave S (I-5 SB RP) | 1272836.86 | 211846.87 |
| ST7 | ST7-041918 | 4/19/2018 | SedTrap | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | Sediment Trap 7: S Dakota St and 6th Ave S | 1271722.72 | 210480.65 |
| ST7 | ST7-041918-G | 4/19/2018 | Grab | SD | RM 0.1-0.9 East | Diagonal Ave S CSO/SD | Sediment Trap 7: S Dakota St and 6th Ave S | 1271722.72 | 210480.65 |
| RCB312 | MKJ-052518-1 | 5/25/2018 | Grab | SD | RM 0.1-0.9 East | S Nevada St SD | Composite sample of right-of-way catch basins and inline sediment | 1267521.16 | 210048.13 |
| ID-ST1 | ID-ST1-041818 | 4/18/2018 | SedTrap | SD | RM 0.0-1.0 West | SW Idaho St SD | 18th Ave SW and S Hudson St, SPU #598047 | 1264220.16 | 206583.52 |
| ID-ST2 | ID-ST2-041918 | 4/19/2018 | SedTrap | SD | RM 0.0-1.0 West | SW Idaho St SD | SW Idaho St just east of W Marginal Wy S, SPU #597411 | 1265352.84 | 209905.60 |
| ID-ST3 | ID-ST3-041818 | 4/18/2018 | SedTrap | SD | RM 0.0-1.0 West | SW Idaho St SD | North end of 19th Ave SW at SW Dawson St | 1263879.13 | 206423.86 |
| RCB200a | MKJ-061218-2 | 6/12/2018 | Grab | SD | RM 0.0-1.0 West | SW Dakota St SD | SW Dakota St just east of W Marginal Wy SW | 1265107.54 | 210662.85 |

SedTrap - sediment trap

SurfDebris - surface debris/soil around storm drain structure

CB - catch basin

CSO - combined sewer overflow

KCIA - King County International Airport

MH - maintenance hole

SD - storm drain

**Appendix F-2
SPU Source Tracing Data 2018**

| Station ID | Outfall | Date Sampled | Sample Type | Total Organic Carbon (%) | Arsenic (mg/kg) | Barium (mg/kg) | Cadmium (mg/kg) | Chromium (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Mercury (mg/kg) | Selenium (mg/kg) | Silver (mg/kg) | Zinc (mg/kg) | Diesel Range HC* (mg/kg) | Motor Oil Range HC* (mg/kg) | Aroclor 1242 (ug/kg) | Aroclor 1248 (ug/kg) | Aroclor 1254 (ug/kg) | Aroclor 1260 (ug/kg) | Total PCB Aroclors (ug/kg) |
|---------------------|-------------------------|--------------|-------------|--------------------------|-----------------|----------------|-----------------|------------------|----------------|--------------|-----------------|------------------|----------------|--------------|--------------------------|-----------------------------|----------------------|----------------------|----------------------|----------------------|----------------------------|
| SCO | | | | -- | 57 | -- | 5.1 | 260 | 390 | 450 | 0.41 | -- | 6.1 | 410 | 2,000 | 2,000 | -- | -- | -- | -- | 130 |
| CSL/RAL/Method A | | | | -- | 93 | -- | 6.7 | 270 | 390 | 530 | 0.59 | -- | 6.1 | 960 | 2,000 | 2,000 | -- | -- | -- | -- | 1,000 |
| UPPER REACH | | | | | | | | | | | | | | | | | | | | | |
| MH5 | Norfolk CSO/SD | 4/13/2018 | Grab | 6.7 | 13 | na | na | na | 160 | 71 | 0.14 | na | na | 720 | 2,200 | 6,700 | 19 U | 19 U | 19 U | 64 | 64 |
| NST1 | Norfolk CSO/SD | 4/16/2018 | SedTrap | 8.95 | 15 | na | na | na | 130 | 58 | 0.20 | na | na | 600 | 880 | 3,100 | 19 U | 19 U | 120 | 36 | 160 |
| NST1 | Norfolk CSO/SD | 4/16/2018 | Grab | 6.51 | 15 | na | na | na | 130 | 80 | 0.16 | na | na | 930 | 890 | 2,900 | 20 U | 130 | 230 | 120 | 480 |
| NST3 | Norfolk CSO/SD | 4/16/2018 | SedTrap | 3.27 | 6.1 U | na | na | na | 31 | 14 | 0.033 U | na | na | 170 | 120 | 1,100 | 18 U | 18 U | 18 U | 18 U | 18 U |
| NST4 | Norfolk CSO/SD | 4/17/2018 | SedTrap | 3.72 | 36 U | na | na | na | 85 | 290 | 0.19 U | na | na | 300 | 570 | 870 | 30 U | 30 U | 55 | 52 | 110 |
| MH47 | KCIA SD#1 | 10/12/2018 | Grab | 3.81 | 8.3 | na | na | na | 43 | 88 | 0.058 | na | na | 170 | 51 | 310 | 20 U | 19 | 18 | 15 | 52 |
| RCB85 | 17th Ave S SD | 12/18/2018 | Grab | 6.65 | 19 U | na | na | na | 150 | 61 | 0.088 J | na | na | 600 | 750 | 3,600 | 20 U | 20 U | 180 | 270 | 450 |
| RCB76 | 17th Ave S SD | 12/18/2018 | Grab | 7.5 | 12 | na | na | na | 94 | 29 | 0.047 U | na | na | 500 | 690 | 3,200 | 20 U | 20 U | 45 J | 63 | 110 J |
| MH41 | S 96th St SD | 7/31/2018 | Grab | 5.18 | 38 | na | na | 800 | 62 | 86 | 0.065 U | na | na | 800 | 130 U | 750 | 20 U | 20 U | 20 U | 20 U | 20 U |
| MIDDLE REACH | | | | | | | | | | | | | | | | | | | | | |
| MH23 | Georgetown SD | 6/12/2018 | Grab | 9.42 | 7.9 U | na | na | na | 87 | 66 | 0.085 | na | na | 430 | 360 | 2,400 | 19 U | 68 | 98 | 87 | 250 |
| MH32 (SL4-T6) | I-5 S (Slip 4) | 4/17/2018 | SedTrap | 3.1 | 16 | na | na | na | 24 | 4.7 | 0.037 | na | na | 41 | 270 | 1,900 | 18 U | 28 | 32 | 29 | 89 |
| MH32 (SL4-T6) | I-5 S (Slip 4) | 4/17/2018 | Grab | 1.51 | 13 U | na | na | na | 77 | 140 | 0.029 | na | na | 180 | 58 U | 360 | 19 U | 19 U | 19 U | 19 U | 19 U |
| MH100 | S Myrtle St SD | 5/25/2018 | Grab | 8.37 | 17 U | na | na | na | 440 | 500 J | 1.4 | na | na | 2,900 | 810 | 2,500 | 19 U | 400 | 470 | 170 | 1,000 |
| SMYRTLE_NORTON | S Myrtle St SD | 5/31/2018 | SedTrap | na | 13 | 360 | 7.1 | 120 | 540 | 540 | na | 1.5 J | 2.3 | 3,300 | na | na | 20 U | 1,200 | 860 | 310 | 2,400 |
| SMYRTLE_RORY | S Myrtle St SD | 5/31/2018 | SedTrap | na | 15 | 330 | 8.9 | 920 | 620 | 620 | na | 1.8 J | 2.6 | 4,000 | na | na | 20 U | 1,400 | 1,100 | 440 | 2,900 |
| SMYRTLE_TRENT | S Myrtle St SD | 5/31/2018 | SedTrap | na | 17 | 310 | 6.0 | 1,700 | 660 | 560 | na | 1.4 J | 2.9 | 3,200 | na | na | 20 U | 1,100 | 980 | 340 | 2,400 |
| ODS58 | S River St SD | 2/5/2018 | SurfDebris | 5.05 | 25 | na | na | na | 230 | 240 | 0.043 | na | na | 1,000 | 2,300 | 4,200 | 20 U | 20 U | 30 | 30 U | 30 |
| MH211 | S River St SD | 5/25/2018 | Grab | 6.54 | 15 | na | na | na | 110 | 68 J | 0.098 | na | na | 460 | 760 | 2,900 | 19 U | 35 | 56 | 54 | 150 |
| MH223 | S Brighton St SD | 5/25/2018 | Grab | 3.12 | 30 | na | na | na | 160 | 150 J | 0.27 | na | na | 970 | 940 | 3,400 | 20 U | 100 | 97 | 140 | 340 |
| MH38 | Head of Slip 2 | 5/25/2018 | Grab | 0.53 | 15 | na | na | na | 63 | 80 J | 0.028 | na | na | 200 | 150 | 490 | 19 U | 19 U | 27 | 20 U | 27 |
| MH39 | 1st Ave S (East) SD | 5/25/2018 | Grab | 6.8 | 23 | na | na | na | 190 | 120 J | 0.13 | na | na | 1,000 | 720 | 3,100 | 19 U | 68 | 150 | 110 | 330 |
| MH39 | 1st Ave S (East) SD | 5/25/2018 | Grab | 7.65 | 13 | na | na | na | 160 | 110 J | 0.13 | na | na | 880 | 650 | 2,800 | 20 U | 54 | 91 | 72 | 220 |
| 7th-ST1 | 7th Ave S SD | 4/18/2018 | SedTrap | 4.83 | 20 | na | na | na | 160 | 97 | 0.18 | na | na | 610 | 1,000 | 3,100 | 20 U | 67 | 91 | 63 | 220 |
| 7th-ST1 | 7th Ave S SD | 4/18/2018 | Grab | 0.94 | 7.3 U | na | na | na | 39 | 16 | 0.053 | na | na | 130 | 130 | 550 | 18 U | 18 U | 21 | 19 | 40 |
| 7th-ST2 | 7th Ave S SD | 4/17/2018 | SedTrap | 3.45 | 8.7 | na | na | na | 13 | 10 | 0.037 U | na | na | 86 | 11 | 51 | 18 U | 18 U | 18 U | 18 U | 18 U |
| 7th-ST2 | 7th Ave S SD | 4/17/2018 | Grab | 0.23 | 5.9 | na | na | na | 17 | 4.7 | 0.022 U | na | na | 52 | 5.9 U | 18 | 20 U | 20 U | 20 U | 20 U | 20 U |
| 7th-ST3 | 7th Ave S SD | 4/19/2018 | SedTrap | 9.22 | 24 | na | na | na | 97 | 69 | 0.17 | na | na | 560 | 390 | 2,100 | 20 U | 20 U | 20 U | 43 | 43 |
| CB154 | 7th Ave S SD | 2/15/2018 | Grab | 7.04 | 17 | na | na | na | 640 | 130 | 0.11 | na | na | 750 | 2,300 | 7,800 | 95 U | 480 | 670 | 310 J | 1,500 J |
| ODS60 | 7th Ave S SD | 6/20/2018 | SurfDebris | na | 12 | 120 | 0.72 | 30 | 39 | 99 | 0.092 | 5.7 U | 0.34 U | 140 | 7.7 | 52 | 19 U | 19 U | 19 U | 19 | 19 |
| 1st-ST1 | 1st Ave S SD | 4/19/2018 | SedTrap | 7.5 | 14 | na | na | na | 230 | 98 | 0.17 | na | na | 1,200 | 1,600 | 8,700 | 19 UJ | 19 UJ | 84 J | 68 J | 150 J |
| 1st-ST2 | 1st Ave S SD | 4/19/2018 | SedTrap | 7.46 | 13 U | na | na | na | 83 | 84 | 0.24 | na | na | 380 | 310 | 2,100 | 19 U | 19 | 49 | 47 | 120 |
| 1st-ST3 | 1st Ave S SD | 4/18/2018 | SedTrap | 3.32 | 5.5 U | na | na | na | 70 | 8.1 | 0.028 U | na | na | 230 | 85 | 630 | 18 U | 18 U | 18 U | 18 U | 18 U |
| 1st-ST3 | 1st Ave S SD | 4/18/2018 | Grab | 1.16 | 5.7 U | na | na | na | 25 | 37 | 0.024 U | na | na | 150 | 62 U | 390 | 18 U | 18 U | 18 U | 18 U | 18 U |
| CB325 | 1st Ave S SD | 4/10/2018 | Grab | 2.44 | 6.8 U | na | na | na | 36 | 15 | 0.030 U | na | na | 260 | 250 | 1,400 | 19 U | 19 U | 19 U | 19 U | 19 U |
| CB326 | 1st Ave S SD | 4/10/2018 | Grab | 10.1 | 11 U | na | na | na | 88 | 32 | 0.061 | na | na | 760 | 710 | 4,200 | 20 U | 20 U | 29 | 20 U | 29 |
| HP-ST4 | Highland Park Way SW SD | 4/17/2018 | SedTrap | 4.7 | 7.9 U | na | na | na | 46 | 37 | 0.041 U | na | na | 160 | 120 | 770 | 19 U | 19 U | 20 | 19 U | 20 |
| HP-ST6 | Highland Park Way SW SD | 4/18/2018 | SedTrap | 8.33 | 47 | na | na | na | 110 | 170 | 0.21 | na | na | 800 | 460 | 2,500 | 19 U | 100 | 84 | 54 | 240 |
| HP-ST6 | Highland Park Way SW SD | 4/18/2018 | Grab | 1.64 | 17 | na | na | na | 83 | 110 | 0.14 | na | na | 490 | 540 | 2,200 | 19 U | 88 | 76 | 50 | 210 |
| KN-ST1 | Highland Park Way SW SD | 4/19/2018 | SedTrap | 3.28 | 14 | na | na | na | 55 | 34 | 0.12 | na | na | 300 | 340 | 1,700 | 19 U | 31 | 45 | 24 | 100 |
| MH36 | Highland Park Way SW SD | 1/12/2018 | Grab | 9.1 | 43 | na | na | na | 120 | 260 J | 0.23 | na | na | 490 | 500 | 2,400 | 20 U | 100 | 140 | 92 | 330 |
| RCB84 | Highland Park Way SW SD | 1/12/2018 | Grab | 7.1 | 16 | na | na | na | 160 | 180 J | 0.20 | na | na | 770 | 1,000 | 5,500 | 20 U | 66 | 65 | 51 J | 180 J |
| RCB84 | SW Kenny ST SD/T115 CSO | 1/12/2018 | Grab | 8.23 | 15 | na | na | na | 160 | 140 J | 0.22 | na | na | 660 | 1,200 | 6,700 | 19 U | 60 | 78 | 66 J | 200 J |
| LOWER REACH | | | | | | | | | | | | | | | | | | | | | |
| CB309 | Diagonal Ave S CSO/SD | 1/24/2018 | Grab | 2.82 | 14 | na | na | na | 130 J | 45 | 0.064 | na | na | 520 | 420 | 2,400 | 20 U | 29 | 73 | 33 | 140 |
| CB322 | Diagonal Ave S CSO/SD | 1/24/2018 | Grab | 2.97 | 35 | na | na | na | 140 J | 57 | 0.065 | na | na | 690 | 710 | 3,300 | 19 U | 170 | 100 | 42 | 310 |
| CB323 | Diagonal Ave S CSO/SD | 2/15/2018 | Grab | 3.97 | 16 | na | na | na | 130 | 520 | 0.13 | na | na | 730 | 330 | 2,100 | 99 U | 180 | 320 | 130 | 630 |
| CB324 | Diagonal Ave S CSO/SD | 2/15/2018 | Grab | 3.65 | 150 | na | na | na | 280 | 210 | 0.18 | na | na | 1,700 | 940 | 3,100 | 135 | 20 U | 76 | 120 J | 330 J |
| CB331 | Diagonal Ave S CSO/SD | 10/12/2018 | Grab | 5.47 | 8.9 | na | na | na | 110 | 92 | 0.085 | na | na | 850 | 430 | 2,700 | 20 U | 50 | 40 | 31 | 120 |
| CB331 | Diagonal Ave S CSO/SD | 10/12/2018 | Grab | 9.66 | 9.5 | na | na | na | 150 | 95 | 0.087 | na | na | 1,000 | 420 | 2,700 | 20 U | 50 | 35 | 32 | 120 |

**Appendix F-2
SPU Source Tracing Data 2018**

| Station ID | Outfall | Date Sampled | Sample Type | Total Organic Carbon (%) | Arsenic (mg/kg) | Barium (mg/kg) | Cadmium (mg/kg) | Chromium (mg/kg) | Copper (mg/kg) | Lead (mg/kg) | Mercury (mg/kg) | Selenium (mg/kg) | Silver (mg/kg) | Zinc (mg/kg) | Diesel Range HC* (mg/kg) | Motor Oil Range HC* (mg/kg) | Aroclor 1242 (ug/kg) | Aroclor 1248 (ug/kg) | Aroclor 1254 (ug/kg) | Aroclor 1260 (ug/kg) | Total PCB Aroclors (ug/kg) |
|------------------|-----------------------|--------------|-------------|--------------------------|-----------------|----------------|-----------------|------------------|----------------|--------------|-----------------|------------------|----------------|--------------|--------------------------|-----------------------------|----------------------|----------------------|----------------------|----------------------|----------------------------|
| SCO | | | | -- | 57 | -- | 5.1 | 260 | 390 | 450 | 0.41 | -- | 6.1 | 410 | 2,000 | 2,000 | -- | -- | -- | -- | 130 |
| CSL/RAL/Method A | | | | -- | 93 | -- | 6.7 | 270 | 390 | 530 | 0.59 | -- | 6.1 | 960 | 2,000 | 2,000 | -- | -- | -- | -- | 1,000 |
| MH18 | Diagonal Ave S CSO/SD | 2/15/2018 | Grab | 4.63 | 30 | na | na | na | 270 | 420 | 4.7 | na | na | 660 | 1,800 | 4,800 | 31,000 | 200 U | 13,000 | 1,900 | 46,000 |
| MH18 | Diagonal Ave S CSO/SD | 2/15/2018 | Grab | 6.16 | 28 | na | na | na | 250 | 384 | 4.3 | na | na | 630 | 1,900 | 5,100 | 29,000 | 980 U | 13,000 | 2,400 | 44,000 |
| MH208 | Diagonal Ave S CSO/SD | 10/19/2018 | Grab | 2.12 | 10 | na | na | na | 60 | 90 | 0.51 | na | na | 630 | na | na | 18 U | 71 | 120 | 49 | 240 |
| MH231 | Diagonal Ave S CSO/SD | 2/15/2018 | Grab | 0.71 | 9.4 | na | na | na | 49 | 12 | 0.023 | na | na | 180 | 90 | 520 | 28 | 19 U | 19 U | 19 U | 28 |
| MH231 | Diagonal Ave S CSO/SD | 10/19/2018 | Grab | 11.5 | 11 | na | na | na | 97 | 63 | 0.064 | na | na | 1,100 | 890 | 4,400 | 19 U | 49 | 45 | 120 | 210 |
| MH40 | Diagonal Ave S CSO/SD | 5/15/2018 | Grab | 6.45 | 15 | na | na | na | 150 J | 330 | 0.11 | na | na | 1,400 J | 50 U | 420 | 20 U | 30 | 62 | 70 | 160 |
| MH46 | Diagonal Ave S CSO/SD | 10/12/2018 | Grab | 3.28 | 130 | na | na | na | 65 | 42 | 0.059 | na | na | 870 | 68 | 500 | 20 U | 28 | 31 | 15 | 74 |
| ODS59 | Diagonal Ave S CSO/SD | 5/15/2018 | SurfDebris | 4.69 | 25 U | na | na | na | 140 J | 110 | 0.22 | na | na | 570 J | 510 | 1,900 | 19 U | 19 U | 100 | 460 | 560 |
| RCB60 | Diagonal Ave S CSO/SD | 3/12/2018 | Grab | 6.74 | 22 | na | na | na | 130 | 85 | 0.34 | na | na | 390 | 690 | 4,100 | 19 U | 49 J | 94 | 190 | 330 J |
| ST1 | Diagonal Ave S CSO/SD | 4/18/2018 | SedTrap | 5.39 | 16 | na | na | na | 150 | 68 | 0.13 | na | na | 580 | 660 | 3,300 | 20 U | 77 | 120 | 62 | 260 |
| ST1 | Diagonal Ave S CSO/SD | 4/18/2018 | Grab | 0.4 | 6.0 U | na | na | na | 35 | 11 | 0.039 | na | na | 120 | 60 U | 260 | 20 U | 20 U | 20 U | 20 U | 20 U |
| DIAGNORTON | Diagonal Ave S CSO/SD | 7/23/2018 | SedTrap | 4.94 | 8.2 U | na | na | na | 97 | 56 | 0.039 U | na | na | 320 | 430 | 2,100 | 24 U | 57 | 47 | 22 J | 130 J |
| DIAGRORY | Diagonal Ave S CSO/SD | 7/23/2018 | SedTrap | 6.57 | 6.5 J | na | 0.72 | na | 96 J | 60 | 0.058 | na | na | 360 | 500 | 2,900 | 20 u | 45 | 39 | 19 J | 100 J |
| DIAGSIFT | Diagonal Ave S CSO/SD | 7/23/2018 | SedTrap | 2.94 | 4.7 J | na | 0.63 | na | 69 J | 46 | 0.039 U | na | na | 320 | 270 | 1,700 | 18 u | 44 | 56 | 24 | 120 |
| DIAGTRENT | Diagonal Ave S CSO/SD | 7/23/2018 | SedTrap | 6.86 | 9.7 J | na | 1.2 | na | 170 J | 93 | 0.095 | na | na | 620 | 750 | 4,400 | 19 u | 83 | 110 | 52 | 250 |
| ST7 | Diagonal Ave S CSO/SD | 4/19/2018 | SedTrap | 2.4 | 10 | na | na | na | 71 | 39 | 0.053 | na | na | 310 | 1,600 | 4,600 | 19 U | 43 | 78 | 38 J | 160 J |
| ST7 | Diagonal Ave S CSO/SD | 4/19/2018 | Grab | 0.77 | 15 U | na | na | na | 39 | 17 | 0.022 U | na | na | 140 | 64 U | 470 | 18 U | 18 U | 18 U | 18 U | 18 U |
| RCB312 | S Nevada St SD | 5/25/2018 | Grab | 11.1 | 14 | na | na | na | 110 | 116 J | 0.061 | na | na | 1,000 | 940 | 3,700 | 20 U | 20 U | 470 | 160 | 630 |
| ID-ST1 | SW Idaho St SD | 4/18/2018 | SedTrap | 12.2 | 18 | na | na | na | 120 | 66 | 0.18 | na | na | 1,200 | na | na | 20 U | 67 J | 180 | 90 | 340 J |
| ID-ST2 | SW Idaho St SD | 4/19/2018 | SedTrap | 3.24 | 8.3 | na | na | na | 32 | 21 | 0.057 | na | na | 190 | 44 | 320 | 19 U | 150 | 150 | 22 | 320 |
| ID-ST3 | SW Idaho St SD | 4/18/2018 | SedTrap | 5.83 | 19 | na | na | na | 46 | 60 | 0.13 | na | na | 260 | 120 | 820 | 19 U | 20 U | 20 U | 20 U | 20 U |
| RCB200a | SW Dakota St SD | 6/12/2018 | Grab | 8.87 | 17 U | na | na | na | 140 | 110 | 0.17 | na | na | 930 | 610 | 3,100 | 20 U | 84 | 120 | 57 | 260 |

Screening levels are listed in Table 2-4.

Sample results is above the CSL/RAL/Method A screening level

Sample result is above the SCO but below the CSL

Analyte was not detected, but detection limit is above the SCO

Detections are shown in **bold font**.

Only analytes detected in at least one sample are shown.

J - estimated

U - not detected

R - rejected

na - not analyzed

Appendix F-2
SPU Source Tracing Data 2018

| Station ID | Outfall | Date Sampled | Sample Type | 1-Methyl-naphthalene (ug/kg) | 2-Methyl-naphthalene (ug/kg) | Acenaphthene (ug/kg) | Acenaphthylene (ug/kg) | Anthracene (ug/kg) | Fluorene (ug/kg) | Naphthalene (ug/kg) | Phenanthrene (ug/kg) | Total LPAHs (ug/kg) | Benzo(a)anthracene (ug/kg) | Benzo(a)pyrene (ug/kg) | Benzo(g,h,i)perylene (ug/kg) | Total Benzo-fluoranthenes (ug/kg) | Chrysene (ug/kg) | Dibenzo(a,h)anthracene (ug/kg) | Fluoranthene (ug/kg) | Indeno(1,2,3-cd)pyrene (ug/kg) |
|---------------------|-------------------------|--------------|-------------|------------------------------|------------------------------|----------------------|------------------------|--------------------|------------------|---------------------|----------------------|---------------------|----------------------------|------------------------|------------------------------|-----------------------------------|------------------|--------------------------------|----------------------|--------------------------------|
| SCO | | | | -- | 670 | 500 | 1,300 | 960 | 540 | 2,100 | 1,500 | 5,200 | 1,300 | 1,600 | 670 | 3,200 | 1,400 | 230 | 1,700 | 600 |
| CSL/RAL/Method A | | | | -- | 670 | 500 | 1,300 | 960 | 540 | 2,100 | 1,500 | 5,200 | 1,600 | 1,600 | 720 | 3,600 | 2,800 | 230 | 2,500 | 690 |
| UPPER REACH | | | | | | | | | | | | | | | | | | | | |
| MH5 | Norfolk CSO/SD | 4/13/2018 | Grab | 200 U | 200 U | 200 U | 200 U | 100 J | 50 J | 74 J | 410 | 630 J | 420 | 550 | 280 | 1,200 | 720 | 200 U | 1,100 | 190 J |
| NST1 | Norfolk CSO/SD | 4/16/2018 | SedTrap | 99 U | 43 J | 99 U | 99 U | 100 | 99 U | 62 J | 390 | 550 J | 270 | 280 | 490 | 680 | 490 | 99 U | 750 | 230 |
| NST1 | Norfolk CSO/SD | 4/16/2018 | Grab | 47 J | 76 J | 99 U | 49 J | 210 | 110 | 99 J | 1,000 | 1,500 J | 800 | 1,100 | 790 | 2,100 | 1,400 | 230 | 2,400 | 560 |
| NST3 | Norfolk CSO/SD | 4/16/2018 | SedTrap | 96 U | 96 U | 96 U | 96 U | 96 U | 96 U | 96 U | 67 J | 67 J | 88 J | 130 | 110 | 280 | 140 | 96 U | 200 | 96 U |
| NST4 | Norfolk CSO/SD | 4/17/2018 | SedTrap | 300 U | 300 U | 300 U | 300 U | 300 U | 300 U | 300 U | 200 J | 200 J | 170 J | 260 J | 200 J | 710 | 330 | 300 U | 460 | 170 J |
| MH47 | KCIA SD#1 | 10/12/2018 | Grab | 20 U | 20 U | 19 J | 9.7 J | 140 | 35 | 11 J | 470 | 690 J | 410 | 370 | 160 | 800 | 580 | 70 | 950 | 150 |
| RCB85 | 17th Ave S SD | 12/18/2018 | Grab | 98 U | 51 J | 98 U | 98 U | 51 J | 98 U | 66 J | 310 | 430 J | 230 | 320 | 400 | 1,000 | 590 | 110 | 730 | 290 |
| RCB76 | 17th Ave S SD | 12/18/2018 | Grab | 96 U | 96 U | 96 U | 96 U | 96 U | 96 U | 60 J | 200 | 260 J | 450 | 550 | 410 | 1,700 | 1,500 | 120 | 360 | 300 |
| MH41 | S 96th St SD | 7/31/2018 | Grab | 43 J | 40 J | 350 | 55 J | 52 J | 320 | 32 J | 360 | 1,200 J | 90 J | 130 | 150 | 290 | 260 | 40 J | 180 | 76 J |
| MIDDLE REACH | | | | | | | | | | | | | | | | | | | | |
| MH23 | Georgetown SD | 6/12/2018 | Grab | 98 U | 41 J | 110 | 35 J | 400 | 150 | 90 J | 2,530 | 3,300 J | 1,800 | 2,000 | 1,500 | 4,600 | 2,800 | 430 | 4,700 | 1,400 |
| MH32 (SL4-T6) | I-5 S (Slip 4) | 4/17/2018 | SedTrap | 99 U | 99 U | 99 U | 99 U | 61 J | 31 J | 42 J | 310 | 440 J | 250 | 270 | 110 | 640 | 340 | 99 U | 740 | 99 U |
| MH32 (SL4-T6) | I-5 S (Slip 4) | 4/17/2018 | Grab | 19 U | 19 U | 6.6 J | 19 U | 19 U | 5.1 J | 19 U | 29 | 41 J | 10 J | 16 J | 18 J | 35 J | 23 | 19 U | 30 | 9.5 J |
| MH100 | S Myrtle St SD | 5/25/2018 | Grab | 47 J | 110 | 30 J | 53 J | 100 | 47 J | 130 | 390 | 750 | 310 | 380 | 430 | 930 | 500 | 100 | 510 | 290 |
| SMYRTLE_NORTON | S Myrtle St SD | 5/31/2018 | SedTrap | 210 J | 420 J | 160 J | 190 J | 290 J | 380 J | 190 J | 1,100 J | 2,300 J | 680 J | 640 J | 920 J | 1,200 J | 1,100 J | 220 J | 1,500 J | 500 J |
| SMYRTLE_RORY | S Myrtle St SD | 5/31/2018 | SedTrap | 130 J | 250 J | 240 UJ | 240 UJ | 290 J | 230 J | 150 J | 750 J | 1,400 J | 660 J | 600 J | 820 J | 1,400 J | 1,100 J | 250 J | 1,300 J | 480 J |
| SMYRTLE_TRENT | S Myrtle St SD | 5/31/2018 | SedTrap | 250 UJ | 240 J | 140 J | 140 J | 230 J | 190 J | 160 J | 630 J | 1,500 J | 530 J | 520 J | 680 J | 1,100 J | 830 J | 210 J | 1,000 J | 420 J |
| ODS58 | S River St SD | 2/5/2018 | SurfDebris | 120 | 160 | 1,700 | 240 | 12,000 | 2,600 | 590 B | 101,000 | 120,000 | 92,000 | 81,000 | 66,000 | 170,000 | 120,000 | 14,000 | 270,000 | 58,000 |
| MH211 | S River St SD | 5/25/2018 | Grab | 94 U | 30 J | 94 U | 39 J | 120 | 43 J | 47 J | 280 | 530 | 410 | 440 | 450 | 1,300 | 830 | 110 | 980 | 320 |
| MH223 | S Brighton St SD | 5/25/2018 | Grab | 95 U | 33 J | 78 J | 36 J | 120 | 120 | 47 J | 440 | 840 | 280 | 240 | 230 | 760 | 600 | 55 J | 860 | 160 |
| MH38 | Head of Slip 2 | 5/25/2018 | Grab | 55 J | 66 J | 94 U | 94 U | 94 U | 94 U | 140 | 65 J | 210 | 94 U | 94 U | 54 J | 190 U | 40 J | 94 U | 54 J | 94 U |
| MH39 | 1st Ave S (East) SD | 5/25/2018 | Grab | 94 U | 72 J | 28 J | 39 J | 150 | 65 J | 110 | 410 | 800 | 460 | 380 | 530 | 1,000 | 890 | 86 J | 810 | 300 |
| MH39 | 1st Ave S (East) SD | 5/25/2018 | Grab | 30 J | 73 J | 93 U | 37 J | 89 J | 63 J | 93 | 370 | 650 | 290 | 310 | 460 | 830 | 610 | 87 J | 660 | 240 |
| 7th-ST1 | 7th Ave S SD | 4/18/2018 | SedTrap | 96 U | 41 J | 80 J | 96 U | 86 J | 96 U | 49 J | 360 | 580 | 220 | 320 | 280 | 670 | 490 | 96 U | 720 | 220 |
| 7th-ST1 | 7th Ave S SD | 4/18/2018 | Grab | 99 U | 99 U | 99 U | 99 U | 99 U | 99 U | 99 U | 48 J | 48 J | 99 U | 99 U | 99 U | 130 J | 110 | 99 U | 140 | 99 U |
| 7th-ST2 | 7th Ave S SD | 4/17/2018 | SedTrap | 8.1 J | 7.9 J | 7.4 J | 19 U | 19 U | 19 U | 7.6 J | 47 | 62 J | 27 | 23 | 19 U | 42 | 35 | 19 U | 71 | 19 U |
| 7th-ST2 | 7th Ave S SD | 4/17/2018 | Grab | 98 U | 98 U | 98 U | 98 U | 55 J | 33 J | 98 U | 300 | 290 J | 160 | 170 | 89 J | 380 | 220 | 98 U | 480 | 76 J |
| 7th-ST3 | 7th Ave S SD | 4/19/2018 | SedTrap | 35 J | 47 J | 99 U | 99 U | 78 J | 99 U | 68 J | 390 | 540 | 260 | 290 | 280 | 780 | 520 | 99 U | 760 | 120 |
| CB154 | 7th Ave S SD | 2/15/2018 | Grab | 210 | 470 | 96 U | 96 U | 41 J | 47 J | 180 | 490 | 760 | 220 | 220 | 360 J | 580 | 550 | 77 J | 850 J | 190 |
| ODS60 | 7th Ave S SD | 6/20/2018 | SurfDebris | 19 U | 19 U | 19 U | 19 U | 19 U | 19 U | 5.0 J | 10 J | 15 J | 8.1 J | 19 U | 17 J | 40 | 18 J | 19 U | 16 J | 14 J |
| 1st-ST1 | 1st Ave S SD | 4/19/2018 | SedTrap | 99 U | 99 U | 99 U | 68 J | 200 | 83 J | 130 | 740 | 1,200 | 450 | 550 | 810 | 1,400 | 1,100 | 99 U | 1,400 | 360 |
| 1st-ST2 | 1st Ave S SD | 4/19/2018 | SedTrap | 100 U | 40 J | 100 U | 100 U | 40 J | 100 U | 46 J | 250 | 340 | 160 | 240 | 240 | 580 | 340 | 100 U | 610 | 190 |
| 1st-ST3 | 1st Ave S SD | 4/18/2018 | SedTrap | 96 U | 96 U | 96 U | 96 U | 96 U | 96 U | 96 U | 92 J | 92 | 100 | 130 | 120 | 280 | 170 | 96 U | 260 | 84 J |
| 1st-ST3 | 1st Ave S SD | 4/18/2018 | Grab | 95 U | 95 U | 95 U | 95 U | 95 U | 95 U | 95 U | 56 J | 56 J | 35 J | 72 J | 95 U | 130 J | 70 J | 95 U | 98 | 95 U |
| CB325 | 1st Ave S SD | 4/10/2018 | Grab | 97 U | 97 U | 97 U | 97 U | 97 U | 97 U | 97 U | 71 J | 71 J | 26 J | 97 U | 52 J | 81 J | 89 J | 97 U | 120 | 97 U |
| CB326 | 1st Ave S SD | 4/10/2018 | Grab | 200 U | 200 U | 200 U | 200 U | 200 U | 200 U | 200 U | 240 | 240 | 89 J | 140 J | 110 J | 310 J | 280 | 100 U | 410 | 200 U |
| HP-ST4 | Highland Park Way SW SD | 4/17/2018 | SedTrap | 95 U | 95 U | 95 U | 95 U | 95 U | 95 U | 95 U | 95 U | 95 U | 95 U | 95 U | 95 U | 190 U | 95 U | 95 U | 73 J | 95 U |
| HP-ST6 | Highland Park Way SW SD | 4/18/2018 | SedTrap | 97 U | 97 U | 150 | 97 U | 77 J | 120 | 60 J | 260 | 670 | 180 | 290 | 270 | 450 | 410 | 97 U | 590 | 97 U |
| HP-ST6 | Highland Park Way SW SD | 4/18/2018 | Grab | 99 U | 99 U | 170 | 37 J | 130 | 120 | 72 J | 160 | 690 J | 220 | 160 | 270 | 460 | 380 | 99 U | 560 | 110 |
| KN-ST1 | Highland Park Way SW SD | 4/19/2018 | SedTrap | 99 U | 99 U | 99 U | 99 U | 65 J | 99 U | 32 J | 270 | 370 | 150 | 250 | 190 | 540 | 380 | 99 U | 440 | 160 |
| MH36 | Highland Park Way SW SD | 1/12/2018 | Grab | 100 U | 100 U | 190 | 75 | 240 | 140 | 75 | 280 | 1,000 | 590 | 270 | 320 | 1,200 | 860 | 100 | 1,700 | 240 |
| RCB84 | Highland Park Way SW SD | 1/12/2018 | Grab | 37 | 72 | 46 | 31 | 110 | 94 | 93 | 750 | 1,100 | 210 | 180 | 240 | 490 | 530 | 96 U | 890 | 150 |
| RCB84 | SW Kenny ST SD/T115 CSO | 1/12/2018 | Grab | 30 | 49 | 38 | 39 | 110 | 120 | 76 | 840 | 1,200 | 260 | 260 | 300 | 600 | 590 | 98 U | 1,100 | 150 |
| LOWER REACH | | | | | | | | | | | | | | | | | | | | |
| CB309 | Diagonal Ave S CSO/SD | 1/24/2018 | Grab | 290 U | 290 U | 290 U | 290 U | 290 U | 290 U | 290 U | 390 | 390 | 160 | 210 | 300 | 360 | 310 | 290 U | 460 | 160 |
| CB322 | Diagonal Ave S CSO/SD | 1/24/2018 | Grab | 300 U | 300 U | 300 U | 300 U | 100 | 300 U | 300 U | 390 | 490 | 210 | 290 | 510 | 690 | 700 | 300 U | 880 | 320 |
| CB323 | Diagonal Ave S CSO/SD | 2/15/2018 | Grab | 33 | 69 | 30 | 25 | 51 | 62 | 95 | 410 | 670 | 160 | 190 | 400 J | 420 | 410 | 50 | 640 J | 140 |
| CB324 | Diagonal Ave S CSO/SD | 2/15/2018 | Grab | 120 | 220 | 1,500 | 180 | 9,500 R | 2,700 | 180 | 26,600 R | -- | 16,000 R | 8,300 | 3,000 J | 14,000 | 16,000 R | 1,200 | 41,000 J | 3,000 |
| CB331 | Diagonal Ave S CSO/SD | 10/12/2018 | Grab | 40 J | 89 | 60 U | 60 U | 82 | 63 | 270 | 450 | 870 | 230 | 270 | 330 | 690 | 690 | 75 | 670 | 180 |
| CB331 | Diagonal Ave S CSO/SD | 10/12/2018 | Grab | 41 J | 92 | 30 J | 35 J | 89 | 59 | 360 | 520 | 1,100 J | 260 | 300 | 320 | 760 | 770 | 72 | 790 | 160 |

**Appendix F-2
SPU Source Tracing Data 2018**

| Station ID | Outfall | Date Sampled | Sample Type | 1-Methyl-naphthalene (ug/kg) | 2-Methyl-naphthalene (ug/kg) | Acenaph-thene (ug/kg) | Acenaph-thylene (ug/kg) | Anthra-cene (ug/kg) | Fluorene (ug/kg) | Naphtha-lene (ug/kg) | Phenan-threne (ug/kg) | Total LPAHs (ug/kg) | Benzo(a)anthracene (ug/kg) | Benzo(a)pyrene (ug/kg) | Benzo(g,h,i)perylene (ug/kg) | Total Benzo-fluoranthenes (ug/kg) | Chrysene (ug/kg) | Dibenzo(a,h)anthracene (ug/kg) | Fluoran-thene (ug/kg) | Indeno (1,2,3-cd)pyrene (ug/kg) |
|------------------|-----------------------|--------------|-------------|------------------------------|------------------------------|-----------------------|-------------------------|---------------------|------------------|----------------------|-----------------------|---------------------|----------------------------|------------------------|------------------------------|-----------------------------------|------------------|--------------------------------|-----------------------|---------------------------------|
| SCO | | | | -- | 670 | 500 | 1,300 | 960 | 540 | 2,100 | 1,500 | 5,200 | 1,300 | 1,600 | 670 | 3,200 | 1,400 | 230 | 1,700 | 600 |
| CSL/RAL/Method A | | | | -- | 670 | 500 | 1,300 | 960 | 540 | 2,100 | 1,500 | 5,200 | 1,600 | 1,600 | 720 | 3,600 | 2,800 | 230 | 2,500 | 690 |
| MH18 | Diagonal Ave S CSO/SD | 2/15/2018 | Grab | 130 | 320 | 300 | 68 J | 620 | 330 | 220 | 4,300 | 4,800 J | 2,300 | 2,500 | 1,800 | 4,600 | 3,100 | 680 | 8,100 | 1,500 |
| MH18 | Diagonal Ave S CSO/SD | 2/15/2018 | Grab | 100 | 250 | 170 | 81 J | 490 | 250 | 170 | 2,600 | 3,800 J | 1,800 | 2,100 | 1,300 | 3,800 | 2,400 | 390 | 6,300 | 1,200 |
| MH208 | Diagonal Ave S CSO/SD | 10/19/2018 | Grab | na | na | na | na | na | na | na | na | na | na | na | na | na | na | na | na | na |
| MH231 | Diagonal Ave S CSO/SD | 2/15/2018 | Grab | 97 U | 97 U | 97 U | 97 U | 97 U | 97 U | 97 U | 23 J | 23 J | 97 U | 97 U | 46 J | 50 J | 75 J | 97 U | 47 J | 97 U |
| MH231 | Diagonal Ave S CSO/SD | 10/19/2018 | Grab | 63 J | 150 | 100 U | 100 U | 97 J | 58 J | 220 | 560 | 940 J | 250 | 260 | 520 | 530 | 760 | 76 J | 580 | 170 |
| MH40 | Diagonal Ave S CSO/SD | 5/15/2018 | Grab | 100 U | 100 U | 100 U | 100 U | 100 U | 100 U | 28 J | 170 | 200 | 150 | 180 | 330 | 530 | 350 | 59 J | 370 | 190 |
| MH46 | Diagonal Ave S CSO/SD | 10/12/2018 | Grab | 12 J | 27 | 6.1 J | 20 U | 22 | 8.9 J | 61 | 110 | 210 J | 65 | 92 | 120 | 220 | 140 | 30 | 170 | 68 |
| ODS59 | Diagonal Ave S CSO/SD | 5/15/2018 | SurfDebris | 99 U | 48 J | 99 U | 99 U | 38 J | 99 U | 96 J | 140 | 270 | 110 | 150 | 270 | 350 | 240 | 54 J | 220 | 150 |
| RCB60 | Diagonal Ave S CSO/SD | 3/12/2018 | Grab | 51 J | 92 J | 310 | 110 | 1,500 | 310 | 110 | 2,300 | 4,600 | 2,300 | 2,300 | 1,200 | 4,400 | 3,700 | 510 | 5,200 | 1,100 |
| ST1 | Diagonal Ave S CSO/SD | 4/18/2018 | SedTrap | 62 J | 94 J | 100 U | 100 U | 180 | 100 U | 470 | 550 | 1,200 | 350 | 450 | 380 | 730 | 620 | 100 U | 870 | 220 |
| ST1 | Diagonal Ave S CSO/SD | 4/18/2018 | Grab | 18 J | 23 | 9.0 J | 25 | 63 | 18 J | 15 J | 180 J | 310.0 J | 240 J | 330 J | 150 J | 410 | 350 J | 56 | 240 J | 160 |
| DIAGNORTON | Diagonal Ave S CSO/SD | 7/23/2018 | SedTrap | 26 J | 40 J | 18 J | 59 U | 60 | 36 J | 83 | 290 | 490 J | 150 | 140 | 110 | 310 | 250 | 59 U | 340 | 80 |
| DIAGRORY | Diagonal Ave S CSO/SD | 7/23/2018 | SedTrap | 60 U | 27 J | 60 U | 60 U | 28 J | 60 U | 52 J | 150 | 230 J | 94 | 98 | 130 | 200 | 180 | 60 U | 210 | 69 |
| DIAGSIFT | Diagonal Ave S CSO/SD | 7/23/2018 | SedTrap | 58 U | 25 J | 58 U | 58 U | 36 J | 22 J | 47 J | 190 | 300 J | 130 | 150 | 200 | 310 | 240 | 44 J | 310 | 120 |
| DIAGTRENT | Diagonal Ave S CSO/SD | 7/23/2018 | SedTrap | 60 U | 40 J | 60 U | 60 U | 42 J | 60 U | 71 | 230 | 340 J | 130 | 150 | 200 | 320 | 310 | 32 J | 340 | 110 |
| ST7 | Diagonal Ave S CSO/SD | 4/19/2018 | SedTrap | 1,100 | 1,500 | 98 U | 98 U | 56 J | 50 J | 310 | 210 | 630 | 180 | 220 | 98 U | 420 | 270 | 98 U | 410 | 98 U |
| ST7 | Diagonal Ave S CSO/SD | 4/19/2018 | Grab | 98 U | 98 U | 98 U | 98 U | 98 U | 98 U | 98 U | 98 U | 98 U | 41 J | 98 U | 98 U | 99 J | 75 J | 98 U | 67 J | 98 U |
| RCB312 | S Nevada St SD | 5/25/2018 | Grab | 98 U | 56 J | 98 U | 41 J | 68 J | 62 J | 84 J | 570 | 830 | 300 | 240 | 400 | 640 | 710 | 55 J | 670 | 180 |
| ID-ST1 | SW Idaho St SD | 4/18/2018 | SedTrap | 170 U | 170 U | 170 U | 170 U | 110 J | 74 J | 82 J | 680 | 950 | 550 | 660 | 610 | 2,400 | 1,200 | 170 U | 1,500 | 580 |
| ID-ST2 | SW Idaho St SD | 4/19/2018 | SedTrap | 19 U | 19 U | 19 U | 19 U | 8.9 J | 19 U | 7.1 J | 41 | 57 | 40 | 56 | 50 | 160 | 94 | 19 U | 78 | 42 |
| ID-ST3 | SW Idaho St SD | 4/18/2018 | SedTrap | 99 U | 99 U | 99 U | 99 U | 99 U | 99 U | 99 U | 78 J | 78 | 55 J | 85 J | 130 | 230 | 110 | 99 U | 88 J | 98 J |
| RCB200a | SW Dakota St SD | 6/12/2018 | Grab | 300 U | 300 U | 300 U | 300 U | 300 U | 300 U | 120 J | 430 | 550 J | 260 J | 270 J | 340 | 750 | 550 | 150 J | 530 | 250 J |

Screening levels are listed in Table 2-4.

Sample results is above the CSL/RAL/Method A screening level

Sample result is above the SCO but below the CSL

Analyte was not detected, but detection limit is above the SCO

Detections are shown in **bold** font.

Only analytes detected in at least one sample are shown.

J - estimated

U - not detected

R - rejected

na - not analyzed

Appendix F-2
SPU Source Tracing Data 2018

| Station ID | Outfall | Date Sampled | Sample Type | Pyrene (ug/kg) | Total HPAHs (ug/kg) | Total cPAH (ug TEQ/kg) | BEHP (ug/kg) | Butylbenzyl phthalate (ug/kg) | Dimethyl phthalate (ug/kg) | Dibutyl phthalate (ug/kg) | Di-n-octyl phthalate (ug/kg) | 1,2-Dichloro-benzene (ug/kg) | 1,4-Dichloro-benzene (ug/kg) | 4-Methyl-phenol (ug/kg) | Benzoic acid (ug/kg) | Benzyl alcohol (ug/kg) | Carbazole (ug/kg) | Dibenzo-furan (ug/kg) | Iso-phorone (ug/kg) | n-Nitroso-diphenyl-amine (ug/kg) | Pentachloro-phenol (ug/kg) | Phenol (ug/kg) |
|---------------------|-------------------------|--------------|-------------|----------------|---------------------|------------------------|--------------|-------------------------------|----------------------------|---------------------------|------------------------------|------------------------------|------------------------------|-------------------------|----------------------|------------------------|-------------------|-----------------------|---------------------|----------------------------------|----------------------------|----------------|
| SCO | | | | 2,600 | 12,000 | 1,000 | 1,300 | 63 | 71 | 1,400 | 6,200 | 35 | 110 | 670 | 650 | 57 | -- | 540 | -- | 28 | 360 | 420 |
| CSL/RAL/Method A | | | | 3,300 | 17,000 | 1,000 | 1,900 | 900 | 160 | 1,400 | 6,200 | 50 | 110 | 670 | 650 | 73 | -- | 540 | -- | 40 | 690 | 1,200 |
| UPPER REACH | | | | | | | | | | | | | | | | | | | | | | |
| MH5 | Norfolk CSO/SD | 4/13/2018 | Grab | 1,400 | 5,900 J | 750 J | 13,000 | 260 | 200 U | 180 J | 440 | 200 U | 200 U | 200 U | 2,000 U | 200 U | 200 U | 200 U | 200 U | 200 U | 1,000 U | 88 J |
| NST1 | Norfolk CSO/SD | 4/16/2018 | SedTrap | 820 | 4,000 | 410 | 7,200 | 250 | 99 U | 170 | 4,200 | 99 U | 99 U | 1,100 | 2,700 | 1,900 | 99 U | 99 U | 99 U | 99 U | 500 U | 330 |
| NST1 | Norfolk CSO/SD | 4/16/2018 | Grab | 2,600 | 12,000 | 1,500 | 8,500 | 1,200 | 99 U | 180 | 1,900 | 99 U | 99 U | 99 U | 560 J | 370 | 150 | 56 J | 99 U | 99 U | 500 U | 170 |
| NST3 | Norfolk CSO/SD | 4/16/2018 | SedTrap | 170 | 1,100 J | 180 J | 350 | 96 U | 96 U | 48 J | 96 U | 96 U | 96 U | 96 U | 96 U | 96 U | 96 U | 96 U | 96 U | 96 U | 480 U | 96 U |
| NST4 | Norfolk CSO/SD | 4/17/2018 | SedTrap | 520 | 2,800 J | 380 J | 750 | 300 U | 300 U | 300 U | 300 U | 300 U | 300 U | 300 U | 1,900 J | 580 | 300 U | 300 U | 300 U | 300 U | 1,500 U | 130 J |
| MH47 | KCIA SD#1 | 10/12/2018 | Grab | 770 | 4,300 | 520 | 600 | 670 | 17 J | 17 J | 20 U | 20 U | 20 U | 20 U | 260 | 58 | 78 | 12 J | 20 U | 20 U | 81 J | 20 U |
| RCB85 | 17th Ave S SD | 12/18/2018 | Grab | 690 | 4,400 | 490 | 13,000 | 98 U | 89 J | 580 | 460 | 98 U | 98 U | 98 U | 3,000 | 2,100 | 98 | 98 U | 98 U | 98 U | 490 U | 650 |
| RCB76 | 17th Ave S SD | 12/18/2018 | Grab | 480 | 5,900 | 820 | 89,000 | 1,200 | 1,200 | 680 | 650 | 96 U | 96 U | 96 U | 3,200 | 8,700 | 96 U | 96 U | 96 U | 96 U | 480 U | 910 |
| MH41 | S 96th St SD | 7/31/2018 | Grab | 190 | 1,400 J | 180 J | 680 | 320 | 98 U | 43 J | 98 U | 98 U | 98 U | 72 J | 2,300 | 140 | 37 J | 320 | 98 U | 98 U | 490 U | 480 |
| MIDDLE REACH | | | | | | | | | | | | | | | | | | | | | | |
| MH23 | Georgetown SD | 6/12/2018 | Grab | 3,800 | 23,000 | 2,900 | 7,000 | 600 | 110 | 190 | 98 U | 98 U | 98 U | 82 J | 750 J | 110 | 370 | 72 J | 97 U | 98 U | 490 U | 120 |
| MH32 (SL4-T6) | I-5 S (Slip 4) | 4/17/2018 | SedTrap | 710 | 3,100 | 370 | 3,500 | 22,000 | 99 U | 3,500 | 180 | 99 U | 99 U | 160 | 760 J | 110 | 69 J | 99 U | 99 U | 99 U | 490 U | 110 |
| MH32 (SL4-T6) | I-5 S (Slip 4) | 4/17/2018 | Grab | 33 | 180 J | 23 J | 430 | 19 U | 19 U | 49 | 19 U | 19 U | 19 U | 19 U | 190 U | 19 U | 7.2 J | 19 U | 19 U | 19 U | 96 U | 19 U |
| MH100 | S Myrtle St SD | 5/25/2018 | Grab | 550 | 4,000 | 550 | 4,100 | 1,300 | 329 | 540 | 330 | 96 U | 96 U | 96 U | 340 J | 96 U | 68 J | 41 J | 96 U | 80 J | 480 U | 290 |
| SMYRTLE_NORTON | S Myrtle St SD | 5/31/2018 | SedTrap | 1,800 J | 8,500 J | 1,400 J | na | na | na | na | na | na | na | na | na | na | na | 150 J | na | na | na | na |
| SMYRTLE_RORY | S Myrtle St SD | 5/31/2018 | SedTrap | 1,800 J | 8,400 J | 890 J | na | na | na | na | na | na | na | na | na | na | na | 130 J | na | na | na | na |
| SMYRTLE_TRENT | S Myrtle St SD | 5/31/2018 | SedTrap | 1,400 J | 6,700 J | 750 J | na | na | na | na | na | na | na | na | na | na | na | 250 UJ | na | na | na | na |
| ODS58 | S River St SD | 2/5/2018 | SurfDebris | 220,000 | ##### | 120,000 | 12,000 | 1,100 | 9,000 | 540 | 1,400 | 300 U | 300 U | 300 U | 2,500 | 300 U | 19,000 | 700 | 300 U | 300 U | 1,500 U | 2,300 |
| MH211 | S River St SD | 5/25/2018 | Grab | 1,000 | 5,800 | 660 | 4,400 | 160 | 150 | 100 | 250 | 94 U | 94 U | 94 U | 940 U | 94 U | 82 J | 26 J | 94 U | 94 U | 470 U | 77 J |
| MH223 | S Brighton St SD | 5/25/2018 | Grab | 800 | 4,000 | 370 | 4,000 | 410 | 95 U | 22,000 | 130 | 95 U | 95 U | 95 U | 950 U | 95 U | 150 | 61 J | 95 U | 95 U | 480 U | 110 |
| MH38 | Head of Slip 2 | 5/25/2018 | Grab | 78 J | 230 | 71 | 460 | 94 U | 94 U | 49 J | 94 U | 49 J | 94 U | 94 U | 94 U | 94 U | 94 U | 94 U | 94 U | 94 U | 470 U | 94 U |
| MH39 | 1st Ave S (East) SD | 5/25/2018 | Grab | 980 | 5,400 | 570 | 4,700 | 260 | 94 U | 110 | 310 | 94 U | 94 U | 94 J | 940 U | 94 U | 62 J | 46 J | 94 U | 54 J | 470 U | 85 J |
| MH39 | 1st Ave S (East) SD | 5/25/2018 | Grab | 810 | 4,300 | 460 | 4,900 | 310 | 93 U | 85 J | 350 | 93 U | 93 U | 87 J | 930 U | 93 U | 55 J | 39 J | 93 U | 73 J | 470 U | 93 U |
| 7th-ST1 | 7th Ave S SD | 4/18/2018 | SedTrap | 650 | 3,600 | 440 | 6,000 | 96 U | 49 J | 160 | 370 | 96 U | 110 | 1,000 | 560 J | 410 | 54 J | 96 U | 96 U | 96 U | 480 U | 200 |
| 7th-ST1 | 7th Ave S SD | 4/18/2018 | Grab | 140 | 520 J | 78 J | 880 | 99 U | 99 U | 50 J | 99 U | 99 U | 99 U | 320 | 990 U | 160 | 99 U | 99 U | 99 U | 99 U | 490 U | 99 U |
| 7th-ST2 | 7th Ave S SD | 4/17/2018 | SedTrap | 62 | 260 | 32 | 110 | 98 | 19 U | 19 U | 19 U | 19 U | 19 U | 330 | 370 | 19 U | 7.4 J | 19 U | 19 U | 96 U | 45 | |
| 7th-ST2 | 7th Ave S SD | 4/17/2018 | Grab | 400 | 2,000 J | 240 J | 800 | 98 U | 98 U | 72 J | 98 U | 98 U | 98 U | 98 U | 860 J | 98 U | 54 J | 98 U | 98 U | 98 U | 490 U | 98 U |
| 7th-ST3 | 7th Ave S SD | 4/19/2018 | SedTrap | 780 | 3,800 | 420 | 6,600 | 99 U | 99 U | 110 | 280 | 99 U | 99 U | 95 J | 680 J | 600 | 110 | 99 U | 99 U | 99 U | 500 U | 350 |
| CB154 | 7th Ave S SD | 2/15/2018 | Grab | 820 | 3,900 J | 330 | 20,000 | 350 | 110 | 770 | 790 | 96 U | 96 U | 630 | 960 U | 2,500 | 71 J | 41 J | 96 U | 96 U | 480 U | 260 |
| ODS60 | 7th Ave S SD | 6/20/2018 | SurfDebris | 15 J | 130 J | 17 J | 210 | 19 U | 19 U | 46 | 19 U | 19 U | 19 U | 19 U | 89 J | 19 U | 19 U | 19 U | 19 U | 19 U | 95 U | 110 |
| 1st-ST1 | 1st Ave S SD | 4/19/2018 | SedTrap | 2,100 | 8,200 | 790 | 13,000 | 99 U | 99 U | 99 U | 720 | 99 U | 99 U | 530 | 950 J | 500 | 130 | 70 J | 99 U | 99 U | 500 U | 260 |
| 1st-ST2 | 1st Ave S SD | 4/19/2018 | SedTrap | 590 | 3,000 | 340 | 5,500 | 100 U | 100 U | 88 J | 620 | 100 U | 100 U | 1,300 | 1,000 | 270 | 45 J | 100 U | 100 U | 100 U | 500 U | 270 |
| 1st-ST3 | 1st Ave S SD | 4/18/2018 | SedTrap | 210 | 1,400 | 180 | 300 | 96 U | 96 U | 50 J | 96 U | 96 U | 96 U | 96 U | 960 U | 96 U | 96 U | 96 U | 96 U | 96 U | 480 U | 96 U |
| 1st-ST3 | 1st Ave S SD | 4/18/2018 | Grab | 110 | 520 J | 99 J | 240 | 95 U | 95 U | 95 U | 95 U | 95 U | 95 U | 95 U | 950 U | 95 U | 95 U | 95 U | 95 U | 95 U | 480 U | 95 U |
| CB325 | 1st Ave S SD | 4/10/2018 | Grab | 140 | 510 J | 70 J | 1,600 | 430 | 110 | 64 J | 60 J | 97 U | 97 U | 110 | 360 J | 97 U | 97 U | 97 U | 97 U | 97 U | 480 U | 71 J |
| CB326 | 1st Ave S SD | 4/10/2018 | Grab | 500 | 1,800 J | 200 J | 11,000 | 2,600 | 310 | 200 U | 200 U | 200 U | 200 U | 2,100 | 1,200 J | 200 U | 200 U | 200 U | 200 U | 210 | 990 U | 290 |
| HP-ST4 | Highland Park Way SW SD | 4/17/2018 | SedTrap | 100 | 170 J | 70 U | 570 | 95 U | 95 U | 95 U | 95 U | 95 U | 95 U | 320 | 370 J | 87 J | 95 U | 95 U | 95 U | 95 U | 470 U | 93 J |
| HP-ST6 | Highland Park Way SW SD | 4/18/2018 | SedTrap | 670 | 2,900 | 370 | 3,800 | 370 | 97 U | 120 | 260 | 97 U | 97 U | 83 J | 410 J | 400 | 49 J | 77 J | 97 U | 97 U | 490 U | 150 |
| HP-ST6 | Highland Park Way SW SD | 4/18/2018 | Grab | 650 | 2,800 | 250 | 3,900 | 310 | 99 U | 99 U | 99 U | 99 U | 99 U | 99 U | 1,000 | 320 | 99 U | 73 J | 99 U | 99 U | 500 U | 150 |
| KN-ST1 | Highland Park Way SW SD | 4/19/2018 | SedTrap | 490 | 2,600 | 340 | 3,000 | 99 U | 99 U | 52 J | 230 | 99 U | 99 U | 120 | 990 U | 190 | 99 U | 99 U | 99 U | 99 U | 500 U | 99 U |
| MH36 | Highland Park Way SW SD | 1/12/2018 | Grab | 1,600 | 6,900 | 490 | 4,000 | 330 | 170 | 100 U | 100 U | 100 U | 100 U | 110 | 880 | 910 | 69 | 75 | 100 U | 100 U | 500 U | 190 |
| RCB84 | Highland Park Way SW SD | 1/12/2018 | Grab | 880 | 3,600 | 280 | 8,200 | 9,500 | 110 | 150 | 870 | 96 U | 96 U | 620 | 960 U | 680 | 93 | 55 | 96 U | 96 U | 480 U | 120 |
| RCB84 | SW Kenny ST SD/T115 CSO | 1/12/2018 | Grab | 1,100 | 4,400 | 370 | 7,700 | 2,400 | 170 | 140 | 630 | 98 U | 98 U | 690 | 980 U | 1,400 | 110 | 46 | 98 U | 98 U | 490 U | 190 |
| LOWER REACH | | | | | | | | | | | | | | | | | | | | | | |
| CB309 | Diagonal Ave S CSO/SD | 1/24/2018 | Grab | 400 | 2,400 | 300 | 7,300 | 360 | 290 U | 650 | 820 | 290 U | 290 U | 970 | 1,300 | 290 U | 290 U | 290 U | 290 U | 290 U | 1,400 U | 180 |
| CB322 | Diagonal Ave S CSO/SD | 1/24/2018 | Grab | 940 | 4,500 | 430 | 3,100 | 300 U | 300 U | 97 | 300 U | 300 U | 300 U | 300 U | 3,000 U | 300 U | 300 U | 300 U | 300 U | 300 U | 1,500 U | 300 U |
| CB323 | Diagonal Ave S CSO/SD | 2/15/2018 | Grab | 740 | 3,200 J | 270 | 13,000 | 440 | 120 | 600 | 430 | 97 U | 97 U | 670 | 450 | 110 | 76 | 38 | 97 U | 97 U | 490 U | 160 |
| CB324 | Diagonal Ave S CSO/SD | 2/15/2018 | Grab | 32,000 R | -- | -- | 7,700 | 510 | 250 | 210 | 170 | 99 U | 99 U | 210 | 990 U | 310 | 5,600 | 840 | 99 U | 99 U | 500 U | 150 |
| CB331 | Diagonal Ave S CSO/SD | 10/12/2018 | Grab | 750 | 3,900 | 390 | 44,000 | 810 | 70 | 84 | 2,000 | 60 U | 60 U | 160 | 510 J | 64 | 76 | 55 J | 60 U | 68 | 300 U | 130 |
| CB331 | Diagonal Ave S CSO/SD | 10/12/2018 | Grab | 850 | 4,300 | 430 | 63,000 | 260 | 140 | 96 | 1,800 | 58 U | 58 U | 170 | 580 U | 80 | 84 | 58 | 58 U | 71 | 130 J | 120 |

**Appendix F-2
SPU Source Tracing Data 2018**

| Station ID | Outfall | Date Sampled | Sample Type | Pyrene (ug/kg) | Total HPAHs (ug/kg) | Total cPAH (ug TEQ/kg) | BEHP (ug/kg) | Butylbenzyl phthalate (ug/kg) | Dimethyl phthalate (ug/kg) | Dibutyl phthalate (ug/kg) | Di-n-octyl phthalate (ug/kg) | 1,2-Dichloro-benzene (ug/kg) | 1,4-Dichloro-benzene (ug/kg) | 4-Methyl-phenol (ug/kg) | Benzoic acid (ug/kg) | Benzyl alcohol (ug/kg) | Carbazole (ug/kg) | Dibenzo-furan (ug/kg) | Iso-phorone (ug/kg) | n-Nitroso-diphenyl-amine (ug/kg) | Pentachloro-phenol (ug/kg) | Phenol (ug/kg) |
|------------------|-----------------------|--------------|-------------|----------------|---------------------|------------------------|---------------|-------------------------------|----------------------------|---------------------------|------------------------------|------------------------------|------------------------------|-------------------------|----------------------|------------------------|-------------------|-----------------------|---------------------|----------------------------------|----------------------------|----------------|
| SCO | | | | 2,600 | 12,000 | 1,000 | 1,300 | 63 | 71 | 1,400 | 6,200 | 35 | 110 | 670 | 650 | 57 | -- | 540 | -- | 28 | 360 | 420 |
| CSL/RAL/Method A | | | | 3,300 | 17,000 | 1,000 | 1,900 | 900 | 160 | 1,400 | 6,200 | 50 | 110 | 670 | 650 | 73 | -- | 540 | -- | 40 | 690 | 1,200 |
| MH18 | Diagonal Ave S CSO/SD | 2/15/2018 | Grab | 6,300 | 31,000 | 3,400 | 7,500 | 3,200 | 75 J | 120 | 250 | 84 J | 290 | 190 | 590 J | 98 U | 940 | 210 | 170 | 98 U | 490 U | 190 |
| MH18 | Diagonal Ave S CSO/SD | 2/15/2018 | Grab | 5,000 | 24,000 | 2,800 | 7,000 | 740 | 75 J | 160 | 98 U | 72 J | 250 | 180 | 980 U | 98 U | 730 | 140 | 140 | 98 U | 490 U | 130 |
| MH208 | Diagonal Ave S CSO/SD | 10/19/2018 | Grab | na | na | na | na | na | na | na | na | na | na | na | na | na | na | na | na | na | na | na |
| MH231 | Diagonal Ave S CSO/SD | 2/15/2018 | Grab | 78 J | 300 J | 69 J | 420 | 97 U | 97 U | 86 J | 97 U | 97 U | 97 U | 97 U | 970 U | 97 U | 97 U | 97 U | 97 U | 97 U | 480 U | 97 U |
| MH231 | Diagonal Ave S CSO/SD | 10/19/2018 | Grab | 1,100 | 4,200 J | 370 J | 5,900 | 210 | 100 U | 78 J | 100 U | 100 U | 100 U | 100 | 1,300 | 100 U | 54 J | 54 J | 66 J | 100 U | 260 J | 130 |
| MH40 | Diagonal Ave S CSO/SD | 5/15/2018 | Grab | 380 | 2,500 | 280 J | 940 | 300 | 100 U | 87 J | 100 U | 100 U | 100 U | 100 U | 1,000 U | 100 U | 100 U | 100 U | 100 U | 100 U | 500 U | 100 U |
| MH46 | Diagonal Ave S CSO/SD | 10/12/2018 | Grab | 190 | 1,100 | 130 | 7,800 | 140 | 16 J | 48 | 77 | 20 U | 20 U | 35 | 470 | 63 | 39 | 16 J | 20 U | 20 U | 120 | 93 |
| ODS59 | Diagonal Ave S CSO/SD | 5/15/2018 | SurfDebris | 240 | 1,800 | 220 J | 1,300 | 170 | 99 U | 87 J | 99 U | 99 U | 57 J | 99 U | 990 U | 99 U | 99 U | 99 U | 99 U | 99 U | 490 U | 100 |
| RCB60 | Diagonal Ave S CSO/SD | 3/12/2018 | Grab | 5,100 | 26,000 | 3,200 | 6,300 | 120 | 100 U | 92 J | 200 | 100 U | 100 U | 6,200 | 890 J | 88 J | 310 | 160 | 100 U | 61 J | 500 U | 640 |
| ST1 | Diagonal Ave S CSO/SD | 4/18/2018 | SedTrap | 1,000 | 4,600 | 590 | 7,100 | 100 U | 100 U | 100 U | 2,400 | 100 U | 100 U | 4,800 | 1,600 | 100 U | 100 | 100 U | 100 U | 100 U | 500 U | 520 |
| ST1 | Diagonal Ave S CSO/SD | 4/18/2018 | Grab | 310 J | 2,200 J | 420 J | 300 J | 20 U | 20 U | 20 U | 20 U | 20 U | 20 U | 20 U | 200 U | 20 U | 22 | 7.8 J | 20 U | 20 U | 99 U | 20 U |
| DIAGNORTON | Diagonal Ave S CSO/SD | 7/23/2018 | SedTrap | 400 | 1,800 | 200 | 4,300 | 260 | 35 J | 23 J | 1,100 | 59 U | 59 U | 270 | 280 J | 59 U | 48 J | 59 U | 59 U | 59 U | 290 U | 89 |
| DIAGRORY | Diagonal Ave S CSO/SD | 7/23/2018 | SedTrap | 260 | 1,200 | 140 | 3,600 | 60 U | 60 U | 35 J | 200 | 60 U | 60 U | 160 | 280 J | 120 | 60 U | 60 U | 60 U | 60 U | 300 U | 72 |
| DIAGSIFT | Diagonal Ave S CSO/SD | 7/23/2018 | SedTrap | 360 | 1,900 J | 210 J | 3,600 | 200 | 58 U | 39 J | 210 | 58 U | 58 U | 58 U | 420 J | 58 U | 48 U | 58 U | 58 U | 58 U | 290 U | 110 |
| DIAGTRENT | Diagonal Ave S CSO/SD | 7/23/2018 | SedTrap | 430 | 2,000 J | 210 J | 7,000 | 120 | 60 U | 45 J | 410 | 60 U | 60 U | 240 | 630 J | 180 | 44 J | 60 U | 60 U | 50 J | 300 U | 130 |
| ST7 | Diagonal Ave S CSO/SD | 4/19/2018 | SedTrap | 520 | 2,000 | 290 | 7,400 | 98 U | 98 U | 98 U | 430 | 98 U | 98 U | 1,700 | 980 U | 98 U | 98 U | 98 U | 98 U | 98 U | 490 U | 640 |
| ST7 | Diagonal Ave S CSO/SD | 4/19/2018 | Grab | 77 J | 360 J | 74 J | 570 | 98 U | 98 U | 98 U | 98 U | 98 U | 98 U | 98 U | 980 U | 98 U | 98 U | 98 U | 98 U | 98 U | 490 U | 98 U |
| RCB312 | S Nevada St SD | 5/25/2018 | Grab | 840 | 4,000 | 370 | 10,000 | 730 | 130 | 450 | 330 | 98 U | 98 U | 1,200 | 370 J | 98 U | 65 J | 36 J | 98 U | 100 | 490 U | 100 |
| ID-ST1 | SW Idaho St SD | 4/18/2018 | SedTrap | 1,500 | 9,000 | 1,000 | 6,500 | 410 | 170 U | 130 J | 170 U | 170 U | 170 U | 520 | 2,400 | 1,100 | 150 J | 170 U | 170 U | 170 U | 830 U | 390 |
| ID-ST2 | SW Idaho St SD | 4/19/2018 | SedTrap | 96 | 620 | 82 | 610 | 73 | 19 U | 19 U | 31 | 19 U | 19 U | 28 | 79 J | 19 U | 19 U | 19 U | 19 U | 19 U | 95 U | 20 |
| ID-ST3 | SW Idaho St SD | 4/18/2018 | SedTrap | 93 J | 890 | 130 | 1,900 | 99 U | 99 U | 120 | 99 U | 99 U | 99 U | 710 | 8,500 | 1,600 | 99 U | 99 U | 99 U | 99 U | 500 U | 510 |
| RCB200a | SW Dakota St SD | 6/12/2018 | Grab | 590 | 3,700 J | 420 J | 6,900 | 300 U | 300 U | 280 J | 720 | 300 U | 300 U | 490 | 980 J | 2,300 | 300 U | 300 U | 300 U | 300 U | 1,500 U | 180 J |

Screening levels are listed in Table 2-4.

Sample results is above the CSL/RAL/Method A screening level

Sample result is above the SCO but below the CSL

Analyte was not detected, but detection limit is above the SCO

Detections are shown in **bold** font.

Only analytes detected in at least one sample are shown.

J - estimated

U - not detected

R - rejected

na - not analyzed

**Appendix G:
King County Source Tracing Data
(2018)**

**Appendix G-1
King County Source Tracing
Sample Locations (2018)**

| Station ID | Sample No. | Date | Type | Sewer Type | Source Control Area | Outfall | Description | X Coordinate | Y Coordinate |
|--------------------|-------------|-----------|------------------|------------|---|------------------|---|--------------|--------------|
| Upper Reach | | | | | | | | | |
| 96-ST1 | L69696-1 | 3/12/2018 | Sediment Trap | SD | RM 3.8-4.2 West (Sea King Industrial Area) | S 96th Street SD | Traps in 8-ft deep type 2 catch basin with slotted lid, just east of the lawn of Delta Marine's admin building and just north of S 96th Street. | 1275076.00 | 192295.60 |
| 96-ST2 | L69696-2 | 3/12/2018 | Sediment Trap | SD | RM 3.8-4.2 West (Sea King Industrial Area) | S 96th Street SD | Traps in 14-foot deep type-2 catch basin with vaned, slotted lid near NE corner of 15th Avenue S and S 96th Street. Downstream of 96-ST3. | 1274675.00 | 192705.00 |
| 96-ST3 | L69696-3 | 3/12/2018 | Sediment Trap | SD | RM 3.8-4.2 West (Sea King Industrial Area) | S 96th Street SD | Traps on south wall of 13-ft deep stormwater vault at corner of 4th Avenue S and S 96th Street. Upstream of 96-ST2. | 1270741.00 | 192246.70 |
| 96ST1A | L69699-1 | 3/28/2018 | Catch Basin Grab | SD | RM 3.8-4.2 West (Sea King Industrial Area) | S 96th Street SD | Type-2 catch basin with birdcage. South side of S 96th Street, just E of West Marginal Place S. | 1274997.00 | 192175.00 |
| 96ST1B | L69699-2 | 3/28/2018 | Catch Basin Grab | SD | RM 3.8-4.2 West (Sea King Industrial Area) | S 96th Street SD | Type-2 catch basin with 24" solid lid marked "DRAIN." Located in grassy area west of SR-99. | 1274653.00 | 192115.00 |
| 96ST1C | L69699-3 | 3/28/2018 | Manhole Grab | SD | RM 3.8-4.2 West (Sea King Industrial Area) | S 96th Street SD | Access with 36" solid lid marked "DRAIN", located on N side, 1300 block of S 96th Street | 1273997.00 | 192148.00 |
| 96ST1D | L69699-4 | 3/28/2018 | Catch Basin Grab | SD | RM 3.8-4.2 West (Sea King Industrial Area) | S 96th Street SD | Non-standard catch basin with grated lid on west side of the 9600 block of Des Moines Memorial Drive, 30 ft N of crosswalk. | 1274533.00 | 1901562.00 |
| KCIA2 | KCIA2 Trap | 7/31/2018 | Sediment Trap | SD | RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA) | KCIA SD#2 | KC Airport SD#2 at former Slip 5, MH east of E Marginal Wy S | 1277685.38 | 194822.09 |
| KCIA2 | KCIA2 Grab | 7/31/2018 | Catch Basin Grab | SD | RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA) | KCIA SD#2 | KC Airport SD#2 at former Slip 5, MH east of E Marginal Wy S | 1277685.38 | 194822.09 |
| KC-SPS | SPS Grab | 7/31/2018 | Catch Basin Grab | SD | RM 3.7-3.9 East (EAA-6: Boeing Isaacson/Central KCIA) | KCIA SD#2 | KCIA South Pump Station inlet vault, in KCIA drainage basin 2 | 1273725.09 | 199334.77 |
| KCIA1A | KCIA1A Trap | 7/31/2018 | Sediment Trap | SD | RM 3.9-4.3 East (Slip 6) | KCIA SD#1 | KC Airport SD #1 at Slip 6, MH east of E Marginal Wy S, upstream of former sampling location KCIA1 | 1278547.80 | 193860.70 |
| KCIA1A | KCIA1A Grab | 7/31/2018 | Catch Basin Grab | SD | RM 3.9-4.3 East (Slip 6) | KCIA SD#1 | KC Airport SD #1 at Slip 6, MH east of E Marginal Wy S, upstream of former sampling location KCIA1 | 1278547.80 | 193860.70 |

**Appendix G-1
King County Source Tracing
Sample Locations (2018)**

| Station ID | Sample No. | Date | Type | Sewer Type | Source Control Area | Outfall | Description | X Coordinate | Y Coordinate |
|---------------------|---------------|-----------|------------------|------------|------------------------------------|--------------------------|--|--------------|--------------|
| KCIA1UP | KCIA-SL6-Q1-S | 2/2/2018 | Catch Basin Grab | SD | RM 3.9-4.3 East (Slip 6) | KCIA SD#1 | KC Airport SD#1 at upstream boundary of KCIA along Perimeter Road S | 1279714.80 | 194265.00 |
| KCIA1UP | KCIA-SL6-Q2-W | 4/11/2018 | Catch Basin Grab | SD | RM 3.9-4.3 East (Slip 6) | KCIA SD#1 | KC Airport SD#1 at upstream boundary of KCIA along Perimeter Road S | 1279714.80 | 194265.00 |
| Middle Reach | | | | | | | | | |
| WDUWAM.W14-224 | L70568-2 | 7/3/2018 | Sediment Trap | CS | RM 1.6-2.1 West (Terminal 115) | Terminal 115 CSO | Manhole just north of W. Marginal Pump Station (T115 CSO) | 1268203.38 | 200297.25 |
| A4007_U | L70566-1 | 7/3/2018 | Sediment Trap | CS | RM 1.7-2.0 East (Slip 2 to Slip 3) | Michigan CSO | S. Michigan Street Regulatory Station (Michigan CSO) | 1270402.00 | 202321.00 |
| MH071-099 | L70566-2 | 7/3/2018 | Sediment Trap | CS | NA | Michigan CSO | Corson Avenue S and S Eddy Street Intersection | 1272840.00 | 202712.00 |
| SL4-T3A Trap | SL4-T3A Trap | 7/31/2018 | Sediment Trap | SD | RM 2.8 East (EAA-3: Slip 4) | KCIA SD#3 | KCIA SD#3, south-central lateral, upstream of NBF, downstream of KCIA runway | 1275726.22 | 199160.79 |
| SL4-T3A Grab | SL4-T3A Grab | 7/31/2018 | Catch Basin Grab | SD | RM 2.8 East (EAA-3: Slip 4) | KCIA SD#3 | KCIA SD#3, south-central lateral, upstream of NBF, downstream of KCIA runway | 1275726.22 | 199160.79 |
| SL4-T2A Trap | SL4-T2A Trap | 7/31/2018 | Sediment Trap | SD | RM 2.8 East (EAA-3: Slip 4) | KCIA SD#3 | KCIA SD#3, south lateral, upstream of NBF, downstream of KCIA runway | 1275936.17 | 198779.19 |
| SL4-T2A Grab | SL4-T2A Grab | 7/31/2018 | Catch Basin Grab | SD | RM 2.8 East (EAA-3: Slip 4) | KCIA SD#3 | KCIA SD#3, south lateral, upstream of NBF, downstream of KCIA runway | 1275936.17 | 198779.19 |
| Lower Reach | | | | | | | | | |
| HNFORD.21 | L70568-3 | 7/5/2018 | Sediment Trap | CS | Combined Sewer Area | Duwamish/Diagonal CSO/SD | Near Rainier Avenue S & S Estelle Street (Hanford #1 CSO Basin) | 1279899.13 | 211986.81 |
| HNFORD.MS-204 | L70568-1 | 7/5/2018 | Sediment Trap | CS | Combined Sewer Area | Duwamish/Diagonal CSO/SD | Near S Hanford Street & Martin Luther King Jr Way S (Hanford #1 CSO Basin) | 1279207.85 | 213225.16 |

SD = storm drain
CS = combined sewer

Appendix G-2
King County Source Tracing Sample Results (2018)
All concentrations in mg/kg DW except as noted

| Station ID | Date Sampled | Total Organic Carbon (Percent) | Arsenic | Cadmium | Chromium | Copper | Lead | Mercury | Nickel | Silver | Vanadium | Zinc | Diesel Oil Range HC | Motor Oil Range HC |
|---------------------|--------------|--------------------------------|---------|---------|----------|--------|------|---------|--------|--------|----------|-------|---------------------|--------------------|
| SCO | | NA | 57 | 5.1 | 260 | 390 | 450 | 0.41 | -- | 6.1 | -- | 410 | 2,000 | 2,000 |
| CSL/RAL/Method A | | NA | 93 | 6.7 | 270 | 390 | 530 | 0.59 | -- | 6.1 | -- | 960 | 2,000 | 2,000 |
| Upper Reach | | | | | | | | | | | | | | |
| 96-ST1 | 3/12/2018 | 5.58 | 23 | 0.73 | 32 J | 59 | 43 | na | 37 | 0.13 | 51 | 510 | na | na |
| 96-ST2 | 3/12/2018 | 5.97 | 14 | 0.88 | 100 | 85 | 68 | na | 50 | 0.14 | 48 | 900 | na | na |
| 96-ST3 | 3/12/2018 | na | 19 | 0.53 | 38 | 51 | 45 | na | 45 | 0.15 | 65 | 460 | na | na |
| LDW_SG_96ST1A | 3/28/2018 | 3.25 | 6.0 | 0.44 | 16 | 32 | 14 | na | 19 | 0.074 | 31 | 210 | na | na |
| LDW_SG_96ST1B | 3/28/2018 | 4.75 | 19 | 0.75 | 42 | 82 | 73 | na | 38 | 0.15 | 67 | 310 | na | na |
| LDW_SG_96ST1C | 3/28/2018 | 6.43 | 40 | 0.79 | 39 | 98 | 51 | na | 32 | 0.16 | 61 | 440 | na | na |
| LDW_SG_96ST1D | 3/28/2018 | 0.46 | 3.3 | 0.11 | 16 | 26 | 4.4 | na | 13 | 0.036 | 26 | 52 | na | na |
| KCIA2 Trap | 7/31/2018 | 0.56 | na | na | na | na | na | 0.17 J | na | na | na | na | 130 | 310 |
| KCIA2 Grab | 7/31/2018 | 3.0 | 26 | na | na | 200 | 15 | 0.01 UJ | na | na | na | 120 | 25 UJ | 50 UJ |
| SPS Grab | 7/31/2018 | 1.4 | 75 | na | na | 16 | 23 | 0.10 UJ | na | na | na | 700 | 170 UJ | 480 UJ |
| KCIA1A Trap | 7/31/2018 | 3.4 | 141 | na | na | 29 | 460 | 0.18 UJ | na | na | na | 3,400 | 130 | 440 |
| KCIA1A Grab | 7/31/2018 | 2.2 | 16 | na | na | 30 | 35 | 2.1 U | na | na | na | 510 | 120 UJ | 300 UJ |
| KCIA-SL6-Q1-S | 2/2/2018 | 8.0 | 13 | na | na | 140 | 220 | 0.13 | na | na | na | 1,200 | 530 DJ | 2,400 D |
| KCIA-SL6-Q2-W | 4/11/2018 | 5.8 | 6.3 | na | na | 26 | 90 | 0.11 | na | na | na | 190 | 260 | 1,100 |
| Middle Reach | | | | | | | | | | | | | | |
| ST_WDUWAM.W14-224 | 7/3/2018 | 10.6 | 2.7 | 0.64 | 70 | 230 | 69 | 1.1 J | 34 | 0.72 | 21 | 490 | na | na |
| ST_A4007_U | 7/3/2018 | 9.41 | 4.8 | 2.4 | 44 | 160 | 260 | 1.6 J | 30 | 3.2 | 37 | 500 | na | na |
| ST_MH071-099 | 7/3/2018 | 4.35 | 4.2 | 1.5 | 48 | 170 | 340 | 0.31 J | 33 | 2.6 | 44 | 340 | na | na |
| SL4-T3A Trap | 7/31/2018 | 2.4 | 26 | na | na | 16 | 47 | 0.15 | na | na | na | 170 | 230 UJ | 810 UJ |
| SL4-T3A Grab | 7/31/2018 | 0.40 | 70 | na | na | 1,200 | 120 | 0.90 | na | na | na | 340 | 480 | 400 |
| SL4-T2A Trap | 7/31/2018 | na | 66 | na | na | 280 | 360 | na | na | na | na | 3,400 | na | na |
| SL4-T2A Grab | 7/31/2018 | na | na | na | na | na | na | na | na | na | na | na | na | na |
| Lower Reach | | | | | | | | | | | | | | |
| ST_HNFORD.21 | 7/5/2018 | na | 4.8 | 1.1 | 55 | 220 | 110 | 0.57 J | 39 | 1.5 | 43 | 460 | na | na |
| ST_HNFORD.MS-204 | 7/5/2018 | 6.17 | 3.4 | 0.50 | 28 | 100 | 83 | 0.36 | 26 | 1.0 | 26 | 240 | na | na |

Sample result is above the CSL/RAL/Method A screening level

Sample result is above the SCO but below the CSL

Analyte was not detected, but detection limit is above the SCO

Screening levels are presented in Table 2-4.

na - not analyzed

Only analytes detected in at least one sample are shown.

Detections are shown in **bold** font.

Appendix G-2
King County Source Tracing Sample Results (2018)
All concentrations in mg/kg DW except as noted

| Station ID | Aroclor 1242 | Aroclor 1248 | Aroclor 1254 | Aroclor 1260 | Total PCB Aroclors | Dioxin/Furan TEQ (ND=DL) (ng/kg) | 1-Methylnaphthalene | 2-Methylnaphthalene | Acenaphthene | Anthracene | Fluorene | Naphthalene | Phenanthrene |
|---------------------|--------------|--------------|--------------|--------------|--------------------|----------------------------------|---------------------|---------------------|--------------|------------|-----------|-------------|--------------|
| SCO | -- | -- | -- | -- | 0.13 | -- | -- | 0.67 | 0.50 | 0.96 | 0.54 | 2.1 | 1.5 |
| CSL/RAL/Method A | -- | -- | -- | -- | 1.0 | 25 | -- | 0.67 | 0.50 | 0.96 | 0.54 | 2.1 | 1.5 |
| Upper Reach | | | | | | | | | | | | | |
| 96-ST1 | na | na | na | na | na | na | 0.029 U | 0.029 U | 0.21 | 0.62 | 0.27 | 0.029 U | 2.6 J |
| 96-ST2 | na | na | na | na | na | na | 0.027 U | 0.027 U | 0.027 U | 0.050 J | 0.029 J | 0.027 U | 0.31 J |
| 96-ST3 | na | na | na | na | na | na | 0.046 U | 0.046 U | 0.046 U | 0.046 U | 0.046 U | 0.046 U | 0.090 U |
| LDW_SG_96ST1A | na | na | na | na | na | na | 0.0053 J | 0.0056 J | 0.029 J | 0.083 J | 0.038 J | 0.0045 UJ | 0.47 J |
| LDW_SG_96ST1B | na | na | na | na | na | na | 0.011 U | 0.011 U | 0.041 J | 0.057 J | 0.036 J | 0.011 UJ | 0.26 J |
| LDW_SG_96ST1C | na | na | na | na | na | na | 0.0088 UJ | 0.017 J | 0.0088 UJ | 0.0088 UJ | 0.0088 UJ | 0.016 J | 0.18 J |
| LDW_SG_96ST1D | na | na | na | na | na | na | 0.0041 UJ | 0.0041 UJ | 0.0041 UJ | 0.0041 UJ | 0.0041 UJ | 0.0041 UJ | 0.018 J |
| KCIA2 Trap | 0.14 U | 0.14 U | 0.14 U | 0.14 U | 0.14 U | na | na | 0.56 U | 0.56 U | 0.56 U | 0.56 U | 0.56 U | 0.56 U |
| KCIA2 Grab | 0.022 U | 0.022 U | 0.022 U | 0.022 U | 0.02 U | na | na | 0.089 U | 0.089 U | 0.089 U | 0.089 U | 0.089 U | 0.089 U |
| SPS Grab | 0.17 U | 0.17 U | 0.17 U | 0.17 U | 0.17 U | na | na | 0.68 UJ | 0.68 U | 0.68 U | 0.68 U | 0.68 UJ | 0.68 U |
| KCIA1A Trap | 0.30 U | 0.30 U | 0.30 U | 0.30 U | 0.30 U | na | na | 1.2 UJ | 1.2 U | 1.2 U | 1.2 U | 1.2 UJ | 1.7 |
| KCIA1A Grab | 0.38 U | 0.38 U | 0.38 U | 0.38 U | 0.38 U | na | na | 1.6 UJ | 1.6 U | 1.6 U | 1.6 U | 1.6 UJ | 1.6 U |
| KCIA-SL6-Q1-S | 0.044 U | 0.044 U | 0.044 U | 0.044 U | 0.044 U | na | na | 0.18 U | 0.28 | 0.92 | 0.39 | 0.18 U | 11 |
| KCIA-SL6-Q2-W | 0.027 U | 0.027 U | 0.027 U | 0.027 U | 0.027 U | na | na | 0.11 U | 0.41 | 1.3 | 0.53 | 0.11 U | 16 |
| Middle Reach | | | | | | | | | | | | | |
| ST_WDUWAM.W14-224 | 0.0081 U | 0.0020 U | 0.021 J | 0.014 | 0.04 J | 6.15 | 0.41 U | 0.41 U | 0.41 U | 0.41 U | 0.41 U | 0.41 U | 0.81 U |
| ST_A4007_U | 0.76 | 0.011 U | 0.15 U | 0.043 | 0.80 | na | 0.44 U | 0.44 U | 0.44 U | 0.44 U | 0.44 U | 0.44 U | 0.87 U |
| ST_MH071-099 | 0.018 | 0.0021 U | 0.079 | 0.020 | 0.12 | na | 0.12 J | 0.11 J | 0.084 U | 0.084 U | 0.084 U | 0.084 U | 0.48 |
| SL4-T3A Trap | 0.19 U | 0.19 U | 0.19 U | 0.19 U | 0.19 U | na | na | 0.78 UJ | 0.78 UJ | 0.78 U | 0.78 U | 0.78 U | 0.86 |
| SL4-T3A Grab | 1.5 U | 1.5 U | 1.5 U | 1.5 U | 1.5 U | na | na | 6.0 U | 6.0 U | 6.0 U | 6.0 U | 6.0 U | 6.0 U |
| SL4-T2A Trap | 0.14 U | 0.14 U | 0.14 U | 0.61 | 0.61 | na | na | na | na | na | na | na | na |
| SL4-T2A Grab | na | na | na | na | na | na | na | na | na | na | na | na | na |
| Lower Reach | | | | | | | | | | | | | |
| ST_HNFORD.21 | 0.013 U | 0.0031 U | 0.016 U | 0.017 | 0.017 | na | na | na | na | na | na | na | na |
| ST_HNFORD.MS-204 | 0.0037 U | 0.0019 U | 0.0062 | 0.0034 | 0.010 | 3.09 | 0.37 U | 0.37 U | 0.37 U | 0.37 U | 0.37 U | 0.37 U | 0.74 U |

Appendix G-2
King County Source Tracing Sample Results (2018)
All concentrations in mg/kg DW except as noted

| Station ID | Total LPAH | Benzo(a) anthracene | Benzo(a) pyrene | Benzo(g,h,i) perylene | Total Benzo-fluoranthenes | Chrysene | Dibenzo(a,h) anthracene | Fluoranthene | Indeno (1,2,3-cd) pyrene | Pyrene | Total HPAH | BEHP |
|---------------------|------------|---------------------|-----------------|-----------------------|---------------------------|-----------|-------------------------|--------------|--------------------------|----------|------------|----------|
| SCO | 5.2 | 1.3 | 1.6 | 0.67 | 3.2 | 1.4 | 0.23 | 1.7 | 0.60 | 2.6 | 12 | 1.3 |
| CSL/RAL/Method A | 5.2 | 1.6 | 1.6 | 0.72 | 3.6 | 2.8 | 0.23 | 2.5 | 0.69 | 3.3 | 17 | 1.9 |
| Upper Reach | | | | | | | | | | | | |
| 96-ST1 | 3.7 J | 1.4 J | 1.4 J | 0.55 J | 3.0 J | 1.5 J | 0.16 J | 4.0 J | 0.61 J | 3.6 J | 16 J | 12 J |
| 96-ST2 | 0.39 J | 0.27 | 0.38 | 0.22 | 0.96 | 0.42 | 0.053 U | 0.75 J | 0.19 | 0.74 J | 3.9 J | 3.8 |
| 96-ST3 | 0.046 U | 0.090 U | 0.074 J | 0.071 J | 0.18 | 0.95 | 0.090 U | 0.18 J | 0.049 J | 0.15 J | 0.80 J | 0.98 |
| LDW_SG_96ST1A | 0.62 J | 0.32 J | 0.23 J | 0.016 J | 0.92 J | 0.50 J | 0.0045 UJ | 0.95 J | 0.057 J | 0.77 J | 3.7 J | na |
| LDW_SG_96ST1B | 0.39 J | 0.011 UJ | 0.057 UJ | 0.057 UJ | 0.057 UJ | 0.53 J | 0.057 UJ | 0.83 J | 0.057 UJ | 0.70 J | 2.1 J | na |
| LDW_SG_96ST1C | 0.21 J | 0.0088 UJ | 0.045 UJ | 0.045 UJ | 0.045 UJ | 0.0088 UJ | 0.045 UJ | 0.48 J | 0.045 UJ | 0.63 J | 1.1 J | na |
| LDW_SG_96ST1D | 0.018 J | 0.023 J | 0.021 UJ | 0.021 UJ | 0.021 UJ | 0.045 J | 0.021 UJ | 0.063 J | 0.021 UJ | 0.052 J | 0.18 J | na |
| KCIA2 Trap | 0.56 U | 0.56 U | 0.56 U | 0.56 U | 0.33 T | 0.56 U | 0.56 U | 0.40 T | 0.56 U | 0.39 T | 1.1 | 0.56 U |
| KCIA2 Grab | 0.089 U | 0.025 JT | 0.033 JT | 0.034 JT | 0.081 JT | 0.047 JT | 0.089 UJ | 0.060 JT | 0.029 JT | 0.067 JT | 0.47 | 0.025 JT |
| SPS Grab | 0.68 UJ | 0.68 U | 0.68 U | 0.68 U | 0.68 U | 0.68 U | 0.68 U | 0.68 U | 0.68 U | 0.68 U | 0.68 U | 0.68 U |
| KCIA1A Trap | 1.7 | 1.2 | 1.3 | 1.9 | 4.5 | 2.1 | 1.2 U | 3.7 | 1.6 | 3.8 | 20 | 1.8 |
| KCIA1A Grab | 1.6 U | 1.6 U | 1.6 U | 1.6 U | 1.6 U | 1.6 U | 1.6 U | 1.6 U | 1.6 U | 1.6 U | 1.6 U | 3.7 U |
| KCIA-SL6-Q1-S | 12 | 7.8 | 9.5 | 7.7 | 22 | 12 | 0.18 U | 22 | 8.2 | 20 | 110 | 1.0 |
| KCIA-SL6-Q2-W | 18 | 10 | 12 | 13 | 31 | 17 | 0.11 U | 32 | 13 | 28 | 160 | 0.30 |
| Middle Reach | | | | | | | | | | | | |
| ST_WDUWAM.W14-224 | 0.41 U | 0.81 U | 0.47 J | 0.41 U | 1.4 | 0.41 U | 0.81 U | 0.41 U | 0.41 U | 0.41 U | 1.8 | 6.5 |
| ST_A4007_U | 0.44 U | 0.87 U | 0.44 U | 0.44 U | 1.3 | 0.44 U | 0.87 U | 1.2 | 0.44 U | 1.1 | 3.6 | 7.5 |
| ST_MH071-099 | 0.58 | 0.35 J | 0.31 | 0.22 | 0.84 | 0.40 | 0.17 U | 0.79 | 0.21 | 0.63 | 3.8 J | 2.3 |
| SL4-T3A Trap | 0.86 | 0.58 | 0.92 | 1.5 | 3.2 | 1.6 | 0.78 U | 2.1 | 1.2 | 2.1 | 13 | 1.9 |
| SL4-T3A Grab | 6.0 U | 6.0 U | 6.0 U | 6.0 U | 6.0 U | 6.0 U | 6.0 U | 6.0 U | 6.0 U | 6.0 U | 6.0 U | 6.0 U |
| SL4-T2A Trap | na | na | na | na | na | na | na | na | na | na | na | na |
| SL4-T2A Grab | na | na | na | na | na | na | na | na | na | na | na | na |
| Lower Reach | | | | | | | | | | | | |
| ST_HNFORD.21 | na | na | na | na | na | na | na | na | na | na | na | na |
| ST_HNFORD.MS-204 | 0.37 U | 0.74 U | 0.37 U | 0.37 U | 0.37 U | 0.37 U | 0.74 U | 0.48 J | 0.37 U | 0.39 J | 0.87 J | 3.3 |

Appendix G-2
King County Source Tracing Sample Results (2018)
All concentrations in mg/kg DW except as noted

| Station ID | Butylbenzyl phthalate | Dibutyl phthalate | Diethyl phthalate | Dimethyl phthalate | Di-n-octyl phthalate | 3, 4-Methyl-phenol | Benzoic acid | Benzyl alcohol | Carbazole | Dibenzo-furan | Pentachloro phenol |
|---------------------|-----------------------|-------------------|-------------------|--------------------|----------------------|--------------------|--------------|----------------|-----------|---------------|--------------------|
| SCO | 0.063 | 1.4 | 0.20 | 0.071 | 6.2 | 0.67 | 0.65 | 0.057 | -- | 0.54 | 0.36 |
| CSL/RAL/Method A | 0.90 | 1.4 | 1.2 | 0.16 | 6.2 | 0.67 | 0.65 | 0.073 | -- | 0.54 | 0.69 |
| Upper Reach | | | | | | | | | | | |
| 96-ST1 | 0.029 U | 0.029 U | 0.29 UJ | 0.014 J | 0.029 U | 0.14 U | 0.19 J | 0.011 U | 0.25 J | 0.12 | 0.056 U |
| 96-ST2 | 0.75 | 0.057 | 0.27 UJ | 0.012 J | 0.027 U | 0.18 J | 0.19 J | 0.014 J | 0.053 J | 0.027 U | 0.053 U |
| 96-ST3 | 0.060 J | 0.046 U | 0.46 UJ | 0.018 U | 0.046 U | 0.23 U | 0.30 J | 0.018 U | 0.046 U | 0.046 U | 0.090 U |
| LDW_SG_96ST1A | na | na | na | na | na | na | na | na | na | na | na |
| LDW_SG_96ST1B | na | na | na | na | na | na | na | na | na | na | na |
| LDW_SG_96ST1C | na | na | na | na | na | na | na | na | na | na | na |
| LDW_SG_96ST1D | na | na | na | na | na | na | na | na | na | na | na |
| KCIA2 Trap | 0.56 U | 0.56 U | 0.56 U | 0.56 U | 0.28 U | na | na | na | na | na | na |
| KCIA2 Grab | 0.089 UJ | 0.089 UJ | 0.089 UJ | 0.089 UJ | 0.045 UJ | na | na | na | na | na | na |
| SPS Grab | 0.68 U | 0.68 U | 0.68 U | 0.68 U | 0.34 U | na | na | na | na | na | na |
| KCIA1A Trap | 1.2 U | 1.2 U | 1.2 U | 1.2 U | 0.59 U | na | na | na | na | na | na |
| KCIA1A Grab | 1.6 U | 1.6 U | 1.6 U | 1.6 U | 0.80 U | na | na | na | na | na | na |
| KCIA-SL6-Q1-S | 0.18 U | 0.18 U | 0.18 U | 0.18 U | 0.090 U | na | na | na | na | na | na |
| KCIA-SL6-Q2-W | 0.11 U | 0.11 U | 0.11 U | 0.11 U | 0.053 U | na | na | na | na | na | na |
| Middle Reach | | | | | | | | | | | |
| ST_WDUWAM.W14-224 | 0.41 U | 0.41 U | 4.1 U | 1.6 U | 0.4 U | 98 | 19 J | 1.6 UJ | 0.41 U | 0.41 U | 8.1 U |
| ST_A4007_U | 0.44 U | 0.44 U | 4.4 U | 1.8 U | 0.44 U | 89 | 39 J | 1.8 U | 0.44 U | 0.44 U | 12 J |
| ST_MH071-099 | 0.084 U | 0.084 U | 0.84 U | 0.33 U | 0.084 U | 23 | 4.2 J | 0.33 U | 0.084 U | 0.084 U | 1.7 U |
| SL4-T3A Trap | 0.78 U | 0.78 U | 0.78 U | 0.78 U | 0.39 | na | na | na | na | na | na |
| SL4-T3A Grab | 6.0 U | 6.0 U | 6.0 U | 6.0 U | 3.0 U | na | na | na | na | na | na |
| SL4-T2A Trap | na | na | na | na | na | na | na | na | na | na | na |
| SL4-T2A Grab | na | na | na | na | na | na | na | na | na | na | na |
| Lower Reach | | | | | | | | | | | |
| ST_HNFORD.21 | na | na | na | na | na | na | na | na | na | na | na |
| ST_HNFORD.MS-204 | 0.37 U | 0.37 U | 3.7 U | 1.5 U | 0.37 U | 23 | 17 | 1.5 UJ | 0.37 U | 0.37 U | 7.4 U |