

King County and Seattle Public Utilities Source Control Program for the Lower Duwamish Waterway

January 2005 Progress Report



King County

Department of Natural Resources and Parks
Wastewater Treatment Division

Seattle
Public
Utilities

KING COUNTY AND SEATTLE PUBLIC UTILITIES SOURCE CONTROL PROGRAM FOR THE LOWER DUWAMISH WATERWAY

January 2005 Progress Report

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INTRODUCTION

This report describes the status of source control activities completed by King County and Seattle Public Utilities (SPU) from June 2004 through December 2004 as part of the Lower Duwamish Waterway (LDW) Superfund cleanup. Unlike last reporting period, where work focused on a single geographic area (Diagonal/Duwamish early action site), during the current reporting period, work occurred in multiple areas:

- Diagonal/Duwamish early action site
- Slip 4 early action site
- T117 early action site
- Former Slip 5 (early action site at river mile 3.8) and Slip 6 drainage basins
- East Waterway operable unit of the Harbor Island sediment cleanup site.

Source control activities conducted during this reporting period are summarized below:

- In the Diagonal Ave S CSO/SD service area (discharges to the Diagonal/Duwamish early action site), conducted initial inspections and completed follow-up inspections to ensure that businesses have made the corrections required during the first round of inspections that was completed during the last reporting period.
- Inspected businesses in the areas draining to the Slip 4 early action site, as well as other businesses located on the King County airport property in areas that drain to the former Slip 5 and Slip 6.
- Inspected businesses located in areas that discharge to the East Waterway via storm drains and combined sewer overflows. The East Waterway is outside the Lower Duwamish Waterway study area. King County and SPU are conducting source control work to support the Port of Seattle's ongoing sediment cleanup project in the East Waterway. Results from business inspections conducted in the East Waterway are presented in Appendix D.
- Deployed sediment traps in the Diagonal Ave S CSO/SD storm drain system, collected key manhole samples from the sanitary sewer, and collected sediment samples from catch basins on business sites and in public rights-of way to assist in tracing chemicals to their source.
- Conducted research and testing to identify methods for evaluating atmospheric deposition as a potential source of phthalates in stormwater runoff.
- Completed the removal of sediment from the Diagonal Ave CSO/SD.
- Conducted an interim cleanup to control PCBs found in street dirt and catch basin sediment in the roadways adjacent to the T117 early action site (Dallas Ave S cleanup project).

This progress report is organized by geographic area. The first section provides an overall summary of work completed during the June 1, 2004 to December 31, 2004 reporting period and describes Lower Duwamish Waterway wide activities such as the phthalate source study. Subsequent sections describe source control activities in each of the 5 geographic areas where work occurred this reporting period.

OVERVIEW OF LOWER DUWAMISH WATERWAY-WIDE SOURCE CONTROL ACTIVITIES

To support Lower Duwamish Waterway (LDW) sediment remediation efforts, King County and SPU are working together to reduce the amount of pollution discharged to public storm drains and sanitary/combined sewers that discharge to the waterway. The purpose of this source control program is to reduce the potential for waterway sediment to become recontaminated following cleanup. King County and SPU are key members of the Lower Duwamish Source Control Working Group because each manages a portion of the public stormwater and wastewater systems that discharge to the Lower Duwamish Waterway.

King County operates the large interceptor sewers that convey municipal and industrial wastewater to the treatment plant located at West Point and the storm drain system in unincorporated King County. Seattle operates the local sanitary/combined sewers that collect wastewater and route it to the King County interceptor system and the storm drains within the City of Seattle. The sanitary/combined sewer and storm drain service areas that discharge to the Lower Duwamish Waterway are shown in Figure 1. The sanitary/combined sewer and storm drains serve an area of about 19,800 and 9,100 acres, respectively.

As shown in Figure 2, a number of both public and private outfalls discharge to the LDW. Outfalls can generally be divided into the following categories.

- Public storm drains. Public storm drain systems collect and convey stormwater runoff from roadways and upland properties to the waterway.
- Private storm drains. Waterfront properties are generally served by private onsite drainage systems that discharge directly to the waterway. These systems are generally smaller than public storm drains and are owned and maintained by the private property owner.
- Combined sewer overflows (CSO). CSOs are located on the combined sewer system to release excess flows that occur during large storm events. Combined sewers collect both stormwater runoff and municipal/industrial wastewater. During large storm events, the capacity of the collection pipes can be exceeded due to the large amount of stormwater runoff entering the system. Overflow points are provided to prevent stormwater and wastewater from backing up and flooding roadways and local properties. CSOs can discharge directly to the waterway via a dedicated outfall pipe or via a shared outfall with a nearby storm drain system.
- Emergency overflows. Like CSOs, emergency overflows are relief points in the sanitary/combined sewer system. However, emergency overflows are not related to storm events. Instead, these overflows function to relieve backups that occur as a result of a pump station failure or obstruction in the conveyance system.
- Unknown outfalls. A number of piped outfalls of unknown origin discharge to the LDW. These outfalls are most likely private storm drains that serve waterfront properties, but may also include other systems such as industrial discharges.

Business Inspections

King County Industrial Waste and SPU are co-leads in the joint King County-Seattle program to inspect businesses in areas that discharge to the LDW through either the City-owned storm drain system or the combined sanitary/storm sewer system. Early action sites have the highest priority and within each early action site, inspections focus first on the separated storm drain basin followed by the combined sewer service area. The goal is to complete the business inspections before sediment cleanup begins. Separated storm drain basins are prioritized because storm drains discharge to the LDW on a regular basis (i.e., every time it rains), whereas combined sewer overflows discharge much less frequently, typically only during large storm events. The following agencies are participating on this project:

- King County Industrial Waste (KCIW): Wastewater Treatment Division.
- Seattle Public Utilities (SPU)
- King County Local Hazardous Waste Management: Water and Land Resources Division (KCHW)
- King County Local Hazardous Waste Management: Seattle-King County Public Health (KCPH)

Inspectors that worked on the project during the June 2004 through December 2004 reporting period are listed in below:

Seattle Public Utilities

Tasha Bassett
Ellen Stewart
Tanya Treat
Savina Uzunow
Ryeann-Marie Woods

King County Industrial Waste

Lydia Eng
Arnaud Girard
Dave Haberman
Patricia Magnuson
Jim Sifford

King County Public Health

Diane Agasid

King County Hazardous Waste

Sue Hamilton
Lisa Niehaus
Ann Peacock
Emmanuel Rivera

Inspections are being conducted under existing King County and Seattle code authorities. King County has primary authority in the industrial waste and hazardous waste areas and with the exception of the stormwater discharges to the combined sewer. SPU has primary authority to regulate stormwater discharges. Code authority to regulate stormwater discharges to the combined sewer is shared by King County and Seattle. Because of overlapping and different authorities between the City and County regarding discharges to combined areas, project staff developed specific guidance for inspecting businesses in the combined areas. The goal for inspecting stormwater dischargers in combined areas is to minimize discharge of chemicals of

concern to the combined sewer by preventing the accidental or deliberate discharge of concentrated products or wastes to the combined sewer. Inspection procedures are described in Appendix A.

Summary for the June 2004-December 2004 Reporting Period

A total of 209 businesses were inspected between June 1, 2004 and December 31, 2004. Of these, 22 (16 percent) were screening visits, 116 (84 percent) were full site inspections, and 71 were follow-up inspections to verify compliance with corrective actions requested during the previous reporting period. Inspection locations are shown in Figure 3. A list of all sites inspected is provided in Appendix B, Table B-1. All of the follow-up inspections occurred in the Diagonal Ave S CSO/SD basin. Results are described in the section on the Diagonal/Duwamish early action area.

Corrective actions were required at 63 of the 116 sites (54 percent) where full inspections were conducted (see Table B-2 in Appendix B for details). As of December 31, 2004, 30 of these sites (48 percent) have made the required changes. A breakdown of all corrective actions requested within each program area (i.e., stormwater, industrial waste, hazardous waste, and spill prevention) is provided in Appendix B, Table B-3 and a list of numbers of corrective actions at each site by program area is provided in Table B-4. A detailed list of corrective actions requested for each site is provided in Table B-5.

Table 1 summarizes the percentage of total corrective actions by individual program areas. Problems with spill prevention and control were most common (59 percent) this reporting period followed by stormwater (26 percent), hazardous waste (14 percent), and industrial waste (1 percent). This is different than the previous reporting period where stormwater-related problems (50 percent) occurred most frequently, followed by spill prevention/cleanup (30 percent), hazardous waste (24 percent), and industrial waste (3 percent). The relative number of spill prevention/cleanup problems increased because the majority of the inspections this reporting period were conducted at the King County airport. Inspectors generally found that drainage facilities were well maintained by the airport. Most of the spill-related problems were fairly minor and were typically associated with tenant operations such as small hangar facilities and air transport facilities that lacked proper documentation of spill response protocols. Inspectors found that tenants generally did a good job cleaning up small spills that occurred at their facilities and were well informed about airport spill procedures. However, they often lacked a written spill plan. The most frequently requested corrective actions are summarized in Table 2.

Illicit Connections and Discharges

Three illicit connections and one illicit discharge were discovered during this reporting period. All were located on the portion of the King County airport that drains to the former Slip 5. Details are provided in the section on Slip 5.

Industrial Wastewater Discharge Authorizations

All business inspections include a review of wastewater/process water production and disposal. Businesses discharging wastewater to the sanitary sewer without proper authorization from King County are referred to KCIW for additional review and issuance of a discharge authorization, as necessary. KCIW can issue four types of discharge authorizations depending on the type of

business, the volume and characteristics of wastewater, and the potential risk to the wastewater collection and treatment system:

- Significant discharge: >25,000 gallons per day or federally regulated facility
- Major discharge: Generally 5,000 – 25,000 gallons per day and facility is not a federally regulated industry
- Minor discharge: Generally 1,000 – 5,000 gallons per day and facility is not a federally regulated industry
- Letter of authorization: Generally <1,000 gallons per day and facility is not a federally regulated industry.

All of the sites inspected during this reporting period had the proper authorization to discharge to the sanitary sewer, as appropriate. No sites were referred to KCIW for review and issuance of a discharge authorization.

Surface Water Quality Complaints

As shown in Table 3, between June 2004 and December 2004 SPU inspectors responded to 26 surface water quality complaints in the Lower Duwamish Waterway Basin (6 complaints in the storm drainage basin and 20 complaints in the combined sewer service area). Complaints are registered either from SPU's hotline number for citizens, or from internal or external agencies. The most common complaint involved automobile related fluids such as gasoline, diesel, and oil (8). The remaining complaints involved a variety of materials including wash water, sewage, and general flooding. Twenty-five of these complaints were resolved successfully, but the source of the problem could not be found for one complaint.

Construction Projects

There were 45 major construction sites in the Lower Duwamish Waterway that had active grading permits between June 2004 and December 2004 (Table 4). Major sites are defined as those with a cost of greater than \$5M reported to the Seattle Department of Planning and Development (DPD). Five sites are located in the storm drain portion of the Diagonal Ave S CSO/SD service area, the largest of which is Sound Transit's Light Rail transit facility located on Airport Way S. Thirty-eight of the remaining sites are located in the combined sewer service area and two are located in the Lower Duwamish surface drainage basin (16th Ave SW and West Marginal Way S).

Spill Kit Pilot Incentive Program

In 2004, SPU began a pilot program offering free spill kits to local businesses that manufacture, store, use, or transport liquids as an incentive to improve onsite spill prevention and cleanup practices. The kits contain two absorbent booms, sorbent pads, and a drain cover, as well as personal protective equipment. The program is being administered by the Resource Venture, a program of the Greater Seattle Chamber of Commerce and the Environmental Coalition of South Seattle (ECOSS). Participating businesses fill out a standard spill response plan available online at www.resourceventure.org/spillkit.htm and receive a standard spill kit or a rebate coupon for up to 60 percent off a customized spill kit. The spill plan contains information about business activities that have the potential to contaminate stormwater, contact names for staff responsible

for responding to spills, and basic instructions about spill notification, response, cleanup, and disposal procedures. After the spill plan is completed, ECOSS delivers a spill kit to the business, offers technical assistance, and provides a laminated copy of the spill plan, facility map showing where the spill kit is stored, and a diagram showing how to dispose of hazardous and non-hazardous materials. The incentive program is available to all qualifying businesses in the City.

Source Tracing

Source tracing and identification sampling activities are being performed to support the source control efforts. Source tracing sampling is designed to identify sources by strategically collecting samples at key locations within the drainage/combined sewer service areas. Source identification sampling focuses on product testing to determine whether specific products contain chemicals that are a concern for waterway sediments.

Samples are collected at the following locations to identify sources of the chemicals of concern in the waterway sediment:

- Key manholes in the sanitary/combined sewer
- In-line sediment traps installed in the storm drain system
- Onsite catch basins
- Catch basins in the public right-of-way.

With the exception of the key manhole samples, sediment rather than whole water samples are being collected. Sediment samples offer a number of advantages. First, because sediment is the affected media in the waterway, analysis of sediment source material is key to understanding how pollutants are transported to the waterway. Second, sediment that accumulates in the drainage system provides a measure of pollutant contributions over a longer time period (what has been deposited since the system was last cleaned), whereas water samples provide only a snapshot of a single storm event. Also, unlike whole water samples, sediment samples do not usually present detection limit problems for the analytical laboratory. Contaminants present in the sediment can usually be quantified, which makes it easier to evaluate and interpret the sample results. Finally, sediment samples are generally easier and less expensive to collect than whole water samples.

Key Manhole Samples

KCIW regularly samples wastewater at key locations in the collection system. Twenty-four hour composite samples are collected over a 7-day period twice per year, once during the wet season and once during the dry season. Samples are normally analyzed for a suite of metals. In 2003, KCIW began analyzing samples for phthalates to provide a better understanding of the fate of phthalates in the LDW study area and as a possible tool to trace pollutant sources in the system. Figure 4 shows sampling stations located within the combined sewer service area discharging to the Lower Duwamish Waterway.

The first two sets of samples were collected in September 2003 (dry season) and April 2004 (wet season). Test results were provided in the previous progress report (King County and SPU,

2004). Another set of dry weather samples was collected during this reporting period (September 2004). Phthalate results for all samples are summarized in Table 5. For comparison purposes, Table 5 also presents results from stormwater samples collected from storm drains in Tacoma, SR-520, and the Diagonal Ave S CSO/SD, and wastewater samples collected from the plant influent at King County's Renton and West Point wastewater treatment plants.

Concentrations of bis(2-ethylhexyl)phthalate (BEHP) in the wet weather samples collected in April 2004 at the East Marginal and Duwamish pump stations (2-14 ug/L) are generally within the range of concentrations observed in stormwater samples (1-16 ug/L). However, BEHP concentrations in the West Marginal samples (13-52 ug/L) are greater than the stormwater samples and are similar to the concentrations measured in treatment plant influent (5-37 ug/L). The cause of the higher BEHP concentrations at the West Marginal station is unknown. Source investigations have not yet begun in this area. Further investigation will be conducted when source-tracing efforts expand into the west side of the Duwamish.

The dry weather samples collected at the East Marginal and Duwamish pump stations in September 2004 (5-40 ug/L), exhibit a broader range in BEHP concentrations than those collected in September 2003 (4-12 ug/L) and were also higher than the wet weather samples collected in April 2004 (2-14 ug/L). However, the average concentrations are fairly similar (6-15 ug/L in the dry weather samples versus 6 to 21 ug/L in the wet weather samples). In September 2003, one of the dry weather samples collected from the West Marginal pump station contained a significantly higher BEHP concentration (148 ug/L) than the other stations. However, this pattern was not observed in the samples collected in September 2004 (9-20 ug/L).

Phthalates other than BEHP that were detected in the key manhole samples include butylbenzylphthalate (100 percent), diethylphthalate (97 percent), di-*n*-butylphthalate (25 percent), dimethylphthalate (1 percent).

Sediment Trap Samples

In-line sediment traps consist of a small bracket mounted inside the collection system pipe that holds a wide-mouth sample bottle. The traps are installed for a period of 4 to 6 months to passively collect suspended particulate that passes by the site. Traps have been installed in the storm drain systems that discharge to Diagonal/Duwamish and Slip 4 early action sites, but at this time, results are only available for the Diagonal/Duwamish traps. Sampling results are discussed in the following sections for each individual geographic area.

Catch Basin Samples

Catch basin samples are grab samples of sediment that has accumulated in the catch basin sump. A catch basin is a storm drain structure that contains a sump to capture sediment and other debris before it can enter the collection system. Because many pollutants present in stormwater runoff tend to adhere to sediment, catch basins can also trap pollutants. The quality of sediment that accumulates in catch basins provides a measure of the quality of the stormwater runoff discharged to the drainage system since the catch basin was last cleaned. Catch basins must be cleaned on a regular basis to maintain their capacity to trap sediment and associated pollutants and prevent these materials from discharging to the downstream receiving water body. During this reporting period, sediment samples were collected from 9 onsite (1 in the Diagonal Ave S CSO/SD, 2 in T117, and 6 in the Slip 4 basin), and 8 right-of-way catch basins (in the Diagonal

Ave S CSO/SD basin). Sample locations are shown in Figure 5. To date, a total of 43 onsite and 39 right-of-way catch basin samples have been collected. Sample results are provided in Tables 6 and 7.

Sediment and soil samples were collected from an additional 85 locations in the public right-of-way near the T117 early action site. Samples included catch basin sediment, street dust, and soil samples from the public right-of-way and adjacent yards. Results for these samples are described in the section on T117.

Like storm drain sediment traps, there are currently no standards that apply specifically to catch basin sediment. For this analysis, results are compared to the state sediment management standards and the Washington State Model Toxics Control Act (MTCA) Method A cleanup levels. If catch basin sediment samples are below the sediment management standards, there is little chance of recontamination. However, an exceedance of a sediment management standard does not necessarily indicate that the sediment offshore of the outfall will exceed the standards, because particulates discharged from storm drains will mix with sediment in the waterway. Total petroleum hydrocarbon (TPH) results are compared to the MTCA cleanup levels to aid in assessing disposal options for sediment once it is removed from the catch basin.

Onsite Catch Basins

Onsite catch basin samples have been collected at sites of interest identified during the business inspections or simply at sites where sufficient sediment was available for chemical analysis. Most inspections during this reporting period were on the King County Airport property. The airport sweeps the roadways and tarmac areas at the airport on a daily basis to control foreign objects and debris (FOD) that could damage aircraft engines. As a result, most catch basins on the airport were clean and there was little opportunity for inspectors to collect samples.

Sampling locations are shown in Figure 5 and sample results for all samples collected to date are shown in Table 6. Key findings are summarized below:

- Arsenic (<20 – 40 mg/kg) was detected in about 47 percent of the samples. Concentrations were all below the sediment management standards.
- Copper (30-6,300 mg/kg) and lead (10-2,010 mg/kg) exceeded the sediment standards in 6 (15 percent) and 7 (18 percent) of the samples collected, respectively. All of the copper exceedances were above the cleanup screening level (CSL). For lead, five of the samples exceeded the CSL and seven exceeded the sediment quality standard (SQS). Most exceedances occurred in samples collected from automotive-related facilities (e.g., auto repair, gas station, and vehicle wash facilities). Other sites where samples exceeded standards included a manufacturing, a metal finishing, and a medical facility.
- Mercury (<0.06-1.82 mg/kg) was detected in about 72 percent of the samples, but exceeded the sediment management standards (SQS or CSL) in only 7 of the samples (16 percent).
- Zinc (55-2,720 mg/kg) exceeded the CSL in 9 samples (21 percent) and exceeded the SQS in 30 samples (70 percent)

- Polynuclear aromatic hydrocarbon (PAH) concentrations are consistently below the SQS standards. However, TPH-oil (52-77,000 mg/kg) exceeded the MTCA Method A cleanup level in 77 percent of the samples. The highest concentrations were measured at a vehicle steam-cleaning pad and an oil recycling facility. TPH-diesel concentrations (15-34,000 mg/kg) were consistently lower than the oil levels and exceeded the MTCA cleanup level in about 35 percent of the samples.
- PCBs were detected in about 60 percent of the samples, but only two samples exceeded the CSL and three samples exceeded the SQS.
- BEHP (10-2,700 mg/kg OC) exceeded the sediment management standards in all but 10 of the 43 samples collected. Most samples exceeded the CSL; 1 sample exceeded only the SQS. With the exception of the sample collected from the steam cleaning pad (2,700 mg/kg OC), the concentration of BEHP in most samples ranged from about 100-1,000 mg/kg OC.

Right-of Way Samples

Right-of-way samples were collected from catch basins located in a wide variety of roadways to evaluate whether contaminant levels are related to traffic density. Sample locations are shown in Figure 5 and results are presented in Table 7. Results from samples collected during this reporting period were similar to those from the previous reporting period. Zinc, TPH-oil, and BEHP are the contaminants that most frequently exceeded the sediment management standards (or MTCA Method A for TPH). Key findings are summarized below:

- With the exception of zinc, metals concentrations rarely exceeded the sediment management standards. None of the samples exceeded the SQS for copper and only two of the 39 samples collected to date (0.87 and 1.17 mg/kg) have exceeded the SQS for mercury. Mercury was detected in less than half of the samples. Lead concentrations exceeded the CSL in 2 samples. Arsenic was detected in 33 percent of the samples, but did not exceed the sediment management standards. Zinc exceeded the SQS in 12 samples (31 percent), but none of the samples exceeded the CSL.
- PAH concentrations are consistently below the SQS standards. However, TPH-oil (480-11,000 mg/kg) exceeded the MTCA Method A cleanup level for industrial soil in about 60 percent of the samples. One sample collected from an industrial roadway exceeded the MTCA cleanup level for TPH-diesel.
- PCBs were detected in about half the samples. One sample (RCB37) located off of Airport Way S and S Stevens St, exceeded the CSL for PCBs. SPU is currently working with adjacent property owners to investigate possible sources of PCBs in this area.
- Over 60 percent of the right-of-way samples exceeded either the CSL or the SQS for BEHP. The highest BEHP concentrations (460 and 502 mg/kg OC) occurred in two samples, one collected from an industrial roadway (RCB 1) and one from a high traffic arterial (RCB 36). BEHP concentrations were generally lower in samples collected from low to medium traffic roadways (15-110 mg/kg OC) compared to the higher traffic arterials (23-502 mg/kg OC). BEHP concentrations in freeway samples (18-277 mg/kg

OC) were within the range observed in the high traffic arterial samples (23-502 mg/kg OC).

Source Sediment Comparisons

Source to source comparisons are complicated by the limited number of samples collected and possible biases introduced by the different sampling strategies employed for each source type. For example, onsite catch basin samples were collected primarily where problems were suspected either because of the kinds of activities conducted onsite or because of specific problems identified during business inspections. General observations and comparisons are described below:

- Contaminant concentrations were generally higher in samples collected from onsite catch basins compared to right-of-way samples. For example, BEHP concentrations in most of the right-of-way samples ranged from about 15-300 mg/kg OC compared to 12-1,000 mg/kg OC in the onsite samples. As shown in Table 6, exceedances of sediment management standards for metals were also more frequent in the onsite samples.
- Few of the sediment samples collected from onsite (2 of 43 samples) and right-of-way (2 of 40 samples) catch basin samples and inline sediment traps (0 of 11 samples) exceeded the sediment management standards for PCBs and PAHs. Therefore, it is unlikely that these chemicals will be a problem in waterway sediment following cleanup.
- BEHP poses the most serious concern for recontamination in waterway sediment after cleanup. Concentrations frequently exceeded the sediment management standards in all of the samples collected (79 percent, 64 percent, and 83 percent in the onsite catch basins, right-of-way catch basins, and inline sediment traps, respectively (Table 8).

Phthalate Source Study

Phthalates, particularly bis(2-ethylhexyl)phthalate (BEHP), are contaminants of concern in the majority of the early action sites in the Lower Duwamish Waterway. Phthalates are a class of industrial compounds commonly used as softeners in plastics, as solvents, as oil in vacuum pumps and electric capacitors and transformers, and as carriers for fragrances and pesticides. They have also been reported in personal care products (Houlihan et. al., 2002). BEHP is the most prevalent phthalate in the Duwamish sediments, and is a contaminant of concern at the majority of the early action sites, including the Duwamish/Diagonal, former Slip 5 at river mile 3.8, Slip 4, Trotsky, and Norfolk sites. BEHP is also frequently detected in stormwater and catch basin samples (USEPA 1983; Herrera 1998; Tacoma 1990; Tacoma 1999; Tacoma 2002).

Because they are a regional concern extending beyond the Duwamish Waterway, King County and SPU joined with the City of Tacoma in 2003 to test various commonly used products and materials to help identify the source of these chemicals. The intent of that testing was to use information about the phthalate content of common consumer products in conjunction with the source tracing efforts to identify specific sources of phthalates to the storm drains and the sanitary sewer. In addition, project staff hoped to identify specific products low in phthalates that they could recommend as replacement products to businesses and residents.

The results of the first round of product testing were reported in the previous progress report (King County and SPU, 2004). Testing of a variety of liquid and solids products found high levels of phthalates, particularly BEHP in brake pads, serpentine belts, and tires but only low levels of phthalates in liquid products. These solid products may be a source of phthalates to the waterway via either atmospheric deposition or direct deposition of worn product particles onto roadway surfaces and subsequent wash off in stormwater runoff. The literature review also suggests that some vehicle fuel products, such as diesel, contain BEHP that may be released into the atmosphere in the exhaust (California Air Resources Board, 1997). Atmospheric deposition is suggested by the results from sampling phthalates on the Tacoma Dome roof.

To evaluate whether atmospheric deposition is a significant source of phthalates in stormwater runoff in the LDW, work during this reporting period focused on investigating methods for collecting samples of particulate material from air. Efforts have focused on literature review, methods development, selection of sampling locations, and the preparation of a sampling and analysis plan (see Appendix C).

Air deposition of chemicals of concern can occur through either “dry” or “wet” deposition. In dry deposition gaseous or particulate phase contaminants deposit directly on a surface via gravity. In wet deposition gaseous or particulate phase contaminants become dissolved or interspersed in an aqueous suspension that then deposits on a surface via gravity rainfall or snow.

Dry deposition is generally evaluated by use of high-volume (i.e., “Hi-Vol”) samplers. Wet deposition is generally evaluated by use of a sampler that only collects precipitation when rainfall is occurring. It is common to find both types of samplers in an air deposition sampling station. A third type of sampler, passive (total) deposition samplers are constantly open to collect rainfall and some atmospheric particulates. Because of the complexity and expense of developing a full sampling station, passive air deposition sampling (i.e., power vacuum is not used to facilitate sample collection) was selected for this initial phase of the project.

Three prototypes of a passive deposition sampler apparatus were tested at the King County Environmental Laboratory (near the Fremont neighborhood in Seattle) from November 23, 2004 to December 7, 2004. Each sampler consisted of a 1.14-ft diameter stainless steel mixing bowl (with drilled hole and welded 3/8” stainless steel union) attached to a 5-gallon glass carboy. The King County Environmental Laboratory analyzed the samples for phthalates.

The levels of bis(2-ethylhexyl)phthalate in the samples (approximately 0.2 to 0.3 µg/L) compare reasonably well with the 0.4 µg/L wet deposition value from a study of the Georgia Basin air shed (Belzer, 2004). The associated blank level for bis(2-ethylhexyl)phthalate is still a concern, but efforts are ongoing at the King County Environmental Laboratory to evaluate the ability of the analytical method to accommodate the extraction of larger volumes of water.

Based on the results from the prototype samplers, the next phase of sampling will involve collecting aqueous samples from sites in the Lower Duwamish Waterway study area using passive deposition samplers. Sampling is expected to last from January 2005 through April 2005. A total of four (4) stations will be used for testing. The Puget Sound Clean Air Agency (PSCAA) owns two of the stations and the Washington State Department of Ecology (Ecology) owns the other two stations:

- Olive Way and Boren Ave

- 15th S & Charlestown on Beacon Hill
- 4752 E Marginal Way S
- 6431 Corson Ave S in the Georgetown neighborhood.

Sites in the South Park Neighborhood are also being investigated for testing.

Samples will be collected from January 2005 to April 2005. Sampling intervals can vary between 2-weeks to 4-weeks, depending on rainfall amounts. The goal is to collect between 4 to 8 liters of precipitation. King County Industrial Waste will monitor the precipitation at SeaTac International Airport and determine when it is time to retrieve the samplers from the stations. Equipment rinsate blanks will be collected for each individual sampler.

DIAGONAL/DUWAMISH EARLY ACTION SITE

The combined sewer service area in the Diagonal/Duwamish basin encompasses about 4,900 acres and the storm drain basin covers about 2,600 acres (Figure 6). Both systems share the same outfall. There are 7 separate combined sewer overflow points in the system, Seattle operates 6 and overflows from the King County system discharge to the Diagonal system at one location. Overflow locations within the Diagonal system are shown on Figure 6.

Locations on Figure 6 where the combined sewer service and storm drain service systems overlap are known as partially separated areas. In these areas, stormwater runoff can discharge to either the separated storm drain system or the combined system, depending how the individual storm drain inlets are plumbed.

Land use in the Diagonal service area is a mix of residential, commercial, and industrial properties. As shown in Figure 7, the western portion of the basin is predominately industrial and the eastern side is mostly residential. Commercial areas are generally located along the major transportation corridors, (e.g., Rainier Ave S and Beacon Ave S). Land use in the basin is summarized in Table 9.

Business Inspections

A total of 25 businesses were inspected in the Diagonal/Duwamish basin between June 1, 2004 and December 31, 2004. Of these, 4 (16 percent) were screening visits and 21 (84 percent) were full site inspections. Inspection locations are shown in Figure 8. A list of all sites inspected is provided in Appendix B, Table B-1. Corrective actions were required at 16 of the sites where full inspections were conducted (76 percent). By December 31, 2004, 9 of the sites where corrective actions requested (56 percent) had achieved compliance.

A breakdown of all corrective actions requested within each program area (i.e., stormwater, industrial waste, hazardous waste, and spill prevention) is provided in Appendix B (Table B-3) and a list of numbers of corrective actions at each site by program area is provided in Table B-4. A detailed list of corrective actions requested for each site is provided in Table B-5.

The most frequently requested corrective actions are shown in Table 2. Lack of onsite materials for controlling and cleaning up spills was the most common problem found during this reporting period (94 percent of the sites where corrective actions requested). Other frequent problems included lack of written spill prevention and cleanup plan (69 percent), inadequate employee training on spill response (63 percent), and need for cleaning of onsite drainage facilities (63 percent).

In addition to the initial site inspections in this basin, 71 follow-up inspections were conducted to verify compliance at sites inspected in the previous reporting period. Of the 65 sites that were out of compliance as of the previous reporting date (June 1, 2004), 50 have achieved overall compliance. Inspectors are currently working with the remaining 15 sites to achieve compliance.

Key Findings

No significant sources of contaminants to the waterway were found during the business inspections. Instead, as described above, many small problems/corrective actions were identified

at numerous businesses throughout the Duwamish Diagonal basin. Key findings related to illicit connections and discharges, unauthorized discharges of industrial wastewater to the sanitary sewer, and presence of elevated levels of contaminants in onsite catch basin samples are described in the following sections.

Illicit Connections and Discharges

No new illicit connections were discovered in the Diagonal Ave S CSO/SD during this reporting period. The four identified during the previous reporting period were corrected as reported in the last progress report (King County and SPU 2004).

SPU is continuing to work with Ralph's Concrete and Pumping where an illicit discharge was discovered during the previous reporting period. Ralph's generally routes water used to rinse concrete trucks through a series of settling trays, trenches, and drums, and then recycles the water back into the concrete trucks. However, SPU discovered that Ralph's occasionally discharges excess concrete wastewater into the public right-of-way and the wastewater then enters the Diagonal drainage system at catch basins on Poplar Place S. SPU issued a Notice of Violation (NOV) to Ralph's on December 15, 2003 and referred the problem to Ecology on May 12, 2004 after 2 additional violations occurred. In December 2004, the City of Seattle filed a lawsuit in Seattle Municipal Court to enforce the NOV. Ralph's Concrete has submitted an application to King County Industrial Waste to discharge wastewater to the sanitary sewer. County staff will review plans and develop discharge requirements before issuing a permit.

Source Sampling and Identification

Source Tracing in the Diagonal Ave S CSO/SD

In October 2004, KCIW conducted a source tracing effort to determine whether contaminated groundwater from a nearby leaking underground storage tank (LUST) site was infiltrating into the storm drain and sewer systems.

Background

The LUST site, located on the Union Pacific Railroad (UPR) property at 4300 Colorado Ave S, was identified when petroleum hydrocarbons were found in the groundwater beneath four underground storage tanks that were removed in 1990-1992. Investigation and clean up began in 1999.

In March 2000, a release of diesel was discovered at the fueling facility. In July, Union Pacific completed the constructed an interceptor trench down gradient of the fueling facility and began pumping operations to recover the diesel material. By August, a total of 21,300 gallons of pure product had been recovered. The groundwater pumping system continued to operate until April 2001. At that time the total volume of diesel fuel recovered by the system was 38,500 gallons.

An air sparging system was constructed in May 2001 to continue remediating groundwater at the site. This system was shut off in May 2004 to correct electrical problems and to allow for an evaluation of natural attenuation of the site in the absence of air injection.

Source Tracing Results

KCIW staff collected samples in both the Diagonal Ave S CSO/SD and the local sanitary sewer to determine if shutdown of the air sparging system had caused petroleum hydrocarbons to infiltrate into utilities in the area. Grab samples were collected October 13, 2004 between 10:00 and 11:00 AM at the following three locations:

- Diagonal Ave S CSO/SD at Diagonal Ave S and Colorado Ave S (D056-136)
- Diagonal Ave S CSO/SD at Diagonal Ave S and Denver Ave S (D056-135)
- 36-inch combined sewer at Diagonal Ave S and Denver Ave S (S056-168).

The tidal height during this time was 3 feet. The weather was clear and dry and there had been no precipitation during the previous 96 hours. Samples were analyzed for diesel and oil range hydrocarbons by the Northwest Total Petroleum Hydrocarbons Diesel-Extended (NWTPH-Dx) method. Sample results are provided in Table 10.

All parameters were at background concentrations for stormwater and sanitary sewage. Although these results did not show infiltration when the samples were collected, changes in the configuration and flow of any diesel plume could cause different results in the future. Source control staff will remain vigilant for any evidence of infiltration in future sampling or inspection events.

In-Line Sediment Traps

Traps are installed at 7 sites in the Diagonal Ave CSO/SD basin (Figure 9). Station locations were selected to isolate individual subbasins within the larger storm drain system. During this reporting period, sediment traps were removed and redeployed in July-August. Only Stations ST1 and ST2 contained sufficient volume of sediment for chemical analyses. The remaining 5 stations could not be analyzed due to insufficient sample volume. A total of three rounds of sediment trap samples have been collected to date:

- Round 1: February 2003 – August 2003
- Round 2: August 2003 – February 2004
- Round 3: February 2004 – August 2004.

It is anticipated that traps will continue to be deployed over the next 2-3 years to track changes in suspended particulate quality that may occur as a result of source control activities. SPU is working to modify trap installations to improve sediment capture.

Results from all three rounds of samples are presented in Table 11. There are no standards for sediment trap samples. For the purpose of this analysis, sample results are compared to the sediment management standards. Particulates discharged from storm drain outfalls are transported and deposited over a large area in the waterway and mix with sediment from other sources (e.g., natural sedimentation and sediment transport processes within the waterway).

Therefore, an exceedance of a sediment management standard in the in-line sediment samples does not necessarily indicate that the sediment offshore of the outfall will exceed the standards.

Key results are summarized below:

- PCBs are infrequently detected and no samples exceed the sediment management standards.
- With the exception of zinc, metals concentrations are generally low. Zinc exceeded the SQS at 3 stations (ST3, ST5, and ST6) during the first two rounds. Station ST1 exceeded the CSL during the first round, but exceeded only the SQS in the samples collected during the second and third rounds.
- BEHP continues to be the primary contaminant of concern in the Diagonal Ave S CSO/SD. Concentrations have exceeded the CSL in all samples collected to date from Stations ST1, ST2, ST3, and ST6. No exceedances were observed in the samples collected from Stations ST5 and ST7. The approximately 300-acre drainage basin upstream of station ST5 is predominately residential. The basin at station ST7 (approximately 200 acres) contains a mixture of residential and industrial properties.
- Polynuclear aromatic hydrocarbon (PAH) concentrations are consistently below the SQS at all trap locations.

Catch Basin Samples

Onsite Catch Basins

One onsite catch basin sample (CB 38) was collected in the Diagonal Ave S CSO/SD basin during this reporting period (Figure 10). As shown in Table 6, concentrations of most chemicals were fairly low. TPH heavy oil (3,300 mg/kg) exceeded the MTCA Level A cleanup level and BEHP (78.1 mg/kg OC) exceeded the SQS.

One of the two catch basins containing elevated concentrations of contaminants that remained to be cleaned from last reporting period has since been cleaned (CB22 cleaned on November 1, 2004). SPU is continuing to work on having the second catch basin cleaned (CB19). Negotiations with the tenant failed and SPU is now working with the property owner to have this catch basin cleaned.

Right-of-Way Catch Basins

Sediment samples were collected from 8 catch basins in the public right-of-way during this reporting period (Figure 10). Two samples RCB36 (mercury) and RCB37 (PCBs and TPH-oil) contained elevated levels of contaminants. Additional sampling has been conducted in the roadways around RCB37. PCBs appear to be limited to one small drainage system on S Stevens St. SPU is working with adjacent property owners to identify possible sources and will have the system cleaned in 2005.

Source Control Actions

Diagonal Ave S CSO/SD Cleaning

The Diagonal Ave S CSO/SD cleaning project started in 2002 as part of an agreement with the Elliott Bay Duwamish Restoration Panel to eliminate a potential source of contamination to the Duwamish/Diagonal sediment cleanup site, which was dredged and capped by King County in 2002-2003. Initial sampling conducted in 2002, indicated that sediment that had accumulated in the lower section of the Diagonal Ave S CSO/SD contained elevated concentrations of lead, mercury, zinc, total petroleum hydrocarbons (NWTPH-Dx), phthalates, PAH, and PCBs. Sampling station locations are shown on Figure 11 and results are presented in Table 12.

Exceedances of Washington State Sediment Management Standards (SMS) are highlighted in Table 12. The SMS do not apply to storm drain sediments, but are used in this report to provide a rough indication of the storm drain sediment quality. Sediments discharged from storm drains are highly dispersed in the receiving environment and mix with sediment from other sources before depositing in the area offshore of the outfall. Therefore, comparison of storm drain sediment to SMS is considered conservative. The SMS establish two levels:

- Sediment quality standards (SQS): Concentrations below the SQS are expected to have no adverse effects on biological resources and no significant human health risk.
- Cleanup screening level (CSL): Minor effects level used to identify areas of potential concern.

There were no exceedances of SMS for metals in the sediment samples collected from the Diagonal 144-inch diameter mainline. Zinc exceeded the SQS (410 mg/kg) in the Duwamish Ave S (460 mg/kg) and Denver Ave S (580 mg/kg) laterals. Lead (538 mg/kg) and mercury (1.02 mg/kg) exceeded the CSL in the Duwamish Ave S lateral. Bis(2-ethylhexyl)phthalate exceeded either the CSL or the SQS in all of the mainline (86-882 mg/kg OC) and laterals (43-278 mg/kg OC). In addition, butylbenzyl phthalate exceeded the SQS in the Duwamish Ave S (8.2 mg/kg OC), Denver Ave S (15.8 mg/kg OC), and 1st Ave S laterals (5.1 mg/kg OC). PCBs (Aroclors 1254 and 1260) exceeded the SQS at one station on the Dakota Ave S lateral (35.6 mg/kg OC).

In 2002, SPU crews cleaned approximately 2,800 feet of pipe in the Denver Ave S and 1st Ave S laterals (Figure 11). In 2003, a contractor cleaned about 2,000 feet of the mainline (from 4th Ave S to Colorado Ave S) and about 500 feet of the S Dakota St lateral (from 5th Ave S and 2nd Ave S), but was unable to complete the work before the winter wet season. The lower portion of the Diagonal system is tidally influenced and was taken out of service for cleaning by closing the shear gate on the outlet structure. Because the gate also prevented stormwater from leaving the pipe, a bypass was installed to divert base flow from the upper end of the Diagonal system. Bypass flow was pumped to the sanitary sewer. Cleaning operations were stopped in September 2003, when weather conditions changed and the drainage system had to be brought back on line. Approximately 270 cubic yards of sediment were removed from the mainline and 16 cubic yards were removed from the S Dakota St lateral. Sections of pipe that were cleaned in 2003 are shown in Figure 11.

In 2004, SPU inspected and collected sediment samples in the sections of the Diagonal system that remained to be cleaned. Two large storm events occurred in October-November 2003 that redistributed sediment in the lower section of the Diagonal system. Only 4 to 6 inches of sediment remained in the 144-inch diameter mainline, but the 54-inch diameter S Dakota lateral was still 25 to 50 percent full of sediment. Concentrations measured in 2 samples collected from the mainline (at E Marginal Way S and near 4th Ave S) were generally lower in 2004 compared to the samples collected in 2002 (see Table 12). For example, sediment collected at the station below E Marginal Way S no longer exceeded SMS for PAH and bis(2-ethylhexyl)phthalate exceeded the SQS, but not the CSL at both stations. Because most of the sediment in the mainline had been flushed out of the drain (and was subsequently removed by King County dredging operations) and because the remaining sediment contained lower concentrations of contaminants, SPU decided to discontinue cleaning operations in the mainline and to focus efforts on cleaning the S Dakota lateral.

In preparation for cleaning, SPU installed a new maintenance hole on the S Dakota St lateral in August 2004 to provide access to the pipe. SPU crews then cleaned the remaining approximately 915 feet in the S Dakota St lateral using a drag line dredge followed by pressure washing. Material removed from the pipe was collected, dewatered, and shipped offsite for disposal. Sediment samples were collected during cleaning operations to characterize sediment removed from the lateral. Sample results are provided in Table 12. BEHP concentrations exceeded the CSL in two of the three samples, mercury exceeded the SQS in two of the three samples, and zinc exceeded the SQS in one sample. PCB concentrations were below the SQS in all three samples.

Approximately 160 cubic yards of sediment was removed from the S Dakota St lateral in 2004. Video inspection conducted following cleanup, indicate that, in places, sediment is still caked on the sidewall of the pipe. SPU plans to jet these sections of the line in early 2005 to remove the remaining sediment. An estimated 5-10 cubic yards of material remains to be cleaned.

SLIP 4 EARLY ACTION SITE

The combined sewer service area in the Slip 4 basin encompasses about 6,200 acres and the storm drain basin covers about 467 acres. There are no storm-related combined sewer overflow discharges to Slip 4. The City (pump station 44) and King County (East Marginal Way pump station) both maintain emergency overflows on pump stations that discharge to Slip 4, but these pump stations overflow infrequently. The City pump station has not overflowed in the past 5 years (when the City started maintaining pump station records) and the King County pump station has not overflowed in the last 20 years. Both pump stations are equipped with emergency generators. Because discharges from the combined sewer service area are infrequent, source control work in Slip 4 focused on the separated drainage system.

Areas draining to Slip 4 are shown in Figure 12. Four public storm drains (Slip 4 SD, Slip 4 CSO/SD, Georgetown flume, and the I-5 storm drain) and ten private storm drains discharge to Slip 4. Land use in the basin is primarily industrial/commercial. The Slip 4 SD, which drains the northern portion of the King County Airport, encompasses a large portion of the Slip 4 drainage area (290 acres). Emergency overflows from City pump station 44 also now discharge to this drain. The drainage system at the airport has been modified numerous times. In about 1985, runoff from approximately 90 acres at the north end of the airport that used to discharge to the Slip 4 CSO/SD was diverted to the Slip 4 SD (Striplin 2004). This diversion also included the emergency overflow from City pump station 44. The Slip 4 CSO/SD now drains only about 3 acres on the north end of the airport.

The Georgetown flume, constructed in the early 1900s, originally discharged cooling water from the Georgetown Steam Plant to the Duwamish Waterway. Cooling water discharges to the flume stopped in the 1960s when the steam plant was shut down (Striplin 2004). Prior to about 1985, numerous storm drains and pipes from adjacent properties were also plumbed to the flume. At one time, runoff from an estimated 90 acres in the north end of the airport (North Boeing Field) as well as industrial wastewater discharged to the flume. In 1985-1987, Seattle City Light plugged all pipes entering the flume, except one 15-inch pipe from a Boeing yard (Striplin 2004). The flume now drains an estimated 3 acres and also continues to receive industrial discharges from Boeing.

The I-5 drain collects runoff from approximately 1.5 miles of I-5 (80 acres), 22 acres of single family residential property located east of I-5, and 1-2 acres on the north end of the King County airport. The small private drains that discharge to Slip 4 also serve mostly industrial and commercial areas immediately adjacent to the slip (approximately 50 acres).

Business Inspections

A total of 46 businesses were inspected in the Slip 4 basin between June 1, 2004 and December 31, 2004. Of these, 8 (17 percent) were screening visits and 38 (83 percent) were full site inspections. To date, all but three of the airport tenants (not including the Boeing-lease facilities) have been inspected. Inspectors could not access Boeing facilities. Inspection locations are shown in Figure 13. A list of all sites inspected is provided in Appendix B, Table B-1. Sixty-three percent of the sites where full inspections were conducted required some type of corrective action (see Table B-2, Appendix B). Three of the sites with full site visits have not yet been

issued corrective actions letters. By December 2004, 67 percent of all sites with corrective actions requested have made the changes that were required.

Most of the problems found in Slip 4 (64 percent) were related to spill prevention and cleanup (see Table 1). A breakdown of all corrective actions requested within each program area (i.e., stormwater, industrial waste, hazardous waste, and spill prevention) is provided in Appendix B (Table B-3).

The most frequently requested corrective actions are summarized in Table 2. Lack of a written spill prevention/cleanup plan and lack of employee training on spill response procedures were the two most frequent problems, occurring at 79 percent and 75 percent, respectively of the sites with corrective actions requested. Other common problems included lack of adequate spill control materials onsite (45 percent) and need for cleaning of onsite drainage facilities (38 percent). A detailed list of corrective actions requested for each site is provided in Table B-5.

Illicit Connections and Discharges

At 7:30 pm on June 11, 2004, an illicit discharge was identified in Slip 4 by King County staff conducting sandpiper surveys in the area. A white foam was observed to be discharging in pulses lasting 3-7 minutes from one of the storm drains at the head of Slip 4 (later identified as the Slip 4 SD, which serves the north end of the King County Airport). King County returned the following day to collect samples while the discharge was still occurring. Samples were collected on an outgoing tide (3 feet) and analyzed for metals, including mercury, and semi-volatile organic compounds. Salmon were visible in the area, but did not appear to be affected.

King County Industrial Waste contacted Boeing North Field to investigate possible sources of the foam and found that Boeing had been conducting an annual fire test at its propulsion engineering laboratory. The foam was an aqueous film forming foam (AFFF) released when a valve was inadvertently left open by a new fire inspector conducting the testing. Boeing estimated that less than three gallons of foam was discharged into the storm system with up to 300 gallons of water (Turner 2004, personal communication).

Samples collected in Slip 4, contained BEHP at 0.609 µg/L and caffeine at 1.01 µg/L. All other semi-volatile organic compounds analyzed were below the method detection limit. Low levels of barium, boron, calcium, iron, magnesium, and sodium were found. All other metals were below reliable or method detection levels. However, the active ingredient of AFFF, perfluorooctanyl sulfate was not among the parameters tested.

As a result of this incident Boeing North Field has adopted written procedures to prevent future incidents. In addition, King County's Trouble Call Coordinator has added a number for the King County airport to his Trouble Call phone list.

Source Tracing

Sediment Trap Samples

Ten sediment trap-sampling stations have been proposed in the Slip 4 drainage basin (Figure 14). Stations will be located on each of the main drains:

- I-5 storm drain
- Slip 4/King County airport drain, south lateral (upstream and downstream of Boeing lease property)
- Slip 4/King County airport drain, north lateral (upstream and downstream of Boeing lease property)
- Slip4/King County airport drain, central lateral (upstream and downstream of Boeing lease property)
- Slip 4 CSO/SD (currently functions only as a storm drain).

The trap on the I-5 drain was installed in November 2004. Installation of the remaining traps was delayed due to ownership and access issues. The remaining traps will be installed in February-March 2005.

Catch Basin Samples

Sediment samples were collected from four onsite catch basins in the Slip 4 drainage basin (see Figure 5 and Table 6). Two of the sampling stations are located on the King County Airport CB45 and CB46), one is on the Crowley property north of Slip 4 (CB37), and one is in a parking on S Myrtle St (CB44) that drains to the Georgetown flume.

CB45 and CB46 are located on a drain that collects runoff from a small area at the north end of the airport adjacent to the airport maintenance facility and other tenants. These two catch basins may also be affected by dust from the bag filter unit on a metal finishing facility's air filtration system. CB 45 is located immediately adjacent to the bag filter unit. Inspectors observed a fine dust on the ground around the filter unit. Both samples contained elevated concentrations of copper (5,660-6,320 mg/kg), zinc (3,420-3530 mg/kg), and BEHP (90-290 mg/kg OC). Airport maintenance has cleaned onsite catch basins in 1998-1999, 2001, and 2003. The airport has been informed of the test results and has been requested to clean these catch basins. CB45 discharges to the WSDOT storm drain system and CB46 discharges to the King County airport drainage system (Slip 4 SD).

Sediment collected from CB37 at the Crowley property contained elevated concentrations of zinc (1,220 mg/kg). The BEHP concentration (34 mg/kg OC) did not exceed the SQS (47 mg/kg OC).

CB44, located on a storm drain that discharges to the Georgetown Flume, contained low concentrations of all chemicals except zinc (524 mg/kg), which exceeded the SQS.

FORMER SLIP 5 AND SLIP 6

Source control activities during this reporting period also covered areas on the King County Airport that drain to the former Slip 5 (early action site at river mile 3.8) and Slip 6. Inspectors were already working on the airport property for the Slip 4 early action site, therefore King County and SPU elected to inspect all of the airport tenants and facilities at one time. The middle portion of the airport (237 acres) drains to the former Slip 5 via a 48-inch diameter storm drain. This outfall also serves as the emergency overflow for City pump station 45 on the City's sanitary sewer system. Pump station 45 has not overflowed in the last 5 years, since the City started maintaining pump station records. The southern portion of the airport (approximately 70 acres) drains to Slip 6 via a 24-inch diameter storm drain.

Business Inspections

A total of 33 businesses were inspected in the Slip 5 and Slip 6 basins between June 1, 2004 and December 31, 2004. Of these, 2 (6 percent) were screening visits and 31 (96 percent) were full site inspections. Inspection locations are shown in Figure 15. A list of all sites inspected is provided in Appendix B, Table B-1. Thirty-nine percent of the sites where full inspections were conducted required some type of corrective action. Five of the sites with full site visits have not yet been issued corrective actions letters. By December 2004, 67 percent of all sites where corrective actions were requested have achieved compliance.

Most of the problems found in Slip 5 and 6 (84 percent) were related to spill prevention and cleanup (see Table 1). A breakdown of all corrective actions requested within each program area (i.e., stormwater, industrial waste, hazardous waste, and spill prevention) is provided in Appendix B (Table B-3) and a list of numbers of corrective actions at each site by program area is provided in Table B-4. The most frequently requested corrective actions are summarized in Table 2. Lack of onsite materials for controlling and cleaning up spills was the most common problem found during this reporting period (84 percent of the sites where corrective actions requested). A detailed list of corrective actions requested for each site is provided in Table B-5.

Illicit Connections and Discharges

Inspectors discovered three illicit connections at tenant facilities in the portion of the King County Airport that drains to Slip 5 and 6. Two involve interior catch basins located on drainage mainlines that run under the building and cannot be fully sealed. The first tenant had already covered the catch basin with a steel plate. The second tenant discharges process water to the catch basin about twice a year. The discharge consists of about 1,500 gallons of a dilute solution of Immunol (an anti-corrosive agent). The tenant was advised to stop discharging and to cover the catch basin to prevent material from entering the drainage system. The third illicit connection is at a catch basin located off the mainline in an area of the building that is no longer being used, so the risk of material inadvertently entering the catch basin is low. The tenant was advised to totally seal the catch basin by filling it with concrete.

Source Tracing

One sediment sample was collected from a catch basin in the area draining to the former Slip 5 (CB 40) and one sample was collected from the Slip 6 drainage area (CB41b). Sample results

are provided in Table 6 and sampling locations are shown on Figure 5. Results are generally comparable to samples collected from other onsite catch basins. Mercury (0.61 mg/kg), BEHP (185 mg/kg OC), and PCBs (154 mg/kg OC) exceeded the CSL in CB40, while the sample from CB41b exceeded the SQS for zinc (740 mg/kg). The concentration of TPH heavy oil exceeded the MTCA Method A cleanup level for soil in both samples and CB41b also exceeded the soil cleanup for diesel. The King County Airport has been requested to clean these catch basins.

TERMINAL 117 EARLY ACTION SITE

The Terminal 117 (T117) early action site is located in the South Park neighborhood on the west side of the Lower Duwamish Waterway just south of the 16th Ave S Bridge. The upland areas draining to T117 are located in an area of South Park that lacks a formal drainage system. Because the streets were in poor condition, stormwater runoff typically ponded in the right-of-way or ran off onto adjacent properties. The total area draining to the T117 early action site is estimated at about 5 acres and consists of the now vacant Terminal 117 property owned by the Port of Seattle (former Malarkey Asphalt site), 3 small residential properties, an oil recycling facility that is in the process of being demolished (Basin Oil), a chocolate factory, and about 3 blocks of roadway (S Donovan St, 17th Ave S, and Dallas Ave S). The South Park marina is located on the waterfront on the north side of the T117 early action site and the Boeing South Park facility is located on the south side of T117.

Until recently, most of the runoff from the upland area either entered a catch basin at the south end of the Port's T117 property or sheet flowed across T117 and entered the Port's drainage system that discharges to the Duwamish Waterway. As a result of an interim source control action completed by the City of Seattle in December 2004, runoff from most upland areas outside of the Port property is now collected, treated, and discharged to the City's combined sewer system (see section below for complete description of the City's interim cleanup action). Runoff from a portion of the hillside along the south side of S Donovan St continues to discharge to the Port's drainage system.

Business Inspections

In August 2004, SPU conducted a joint inspection with Ecology at the Basin Oil property located directly west of T117 on Dallas Ave S. Basin Oil formerly collected, transported, and marketed used oil, but the facility closed in 2004. All of the tanks and equipment are being removed from the site. Site demolition had not yet begun when the site was inspected. Inspectors found a number of problems at the site, including lack of proper spill prevention and control plan/procedures, improper storage of hazardous products and waste materials, improper waste disposal, and poor overall housekeeping procedures.

The large tank storage areas located on the north and south ends of the property were equipped with secondary containment systems. Water from the containment systems was collected and shipped offsite for disposal. Runoff from the yard area located outside the containment system on the north end of the property was discharged to an oil/water separator (on the east side of the property) and then pumped to the street. Runoff from the south end of the property that is outside the south containment area sheet flowed to the east and discharged to Dallas Ave S (EMR 2001).

SPU collected sediment samples from two structures during the inspection (an area drain located in the containment area at the southwest end of the property [CB42] and the oil/water separator on the east side of the property [CB41]). Zinc concentrations (711-830 mg/kg) exceeded the SQS and BEHP concentrations (622-708 mg/kg OC) exceeded the CSL. In addition, the oil/water separator contained elevated concentrations of TPH diesel (72,000 mg/kg) and TPH heavy oil (77,000 mg/kg). Neither of these structures has been cleaned. Both are expected to be removed during site demolition.

Basin Oil began dismantling the plant in 2004. Demolition work involved removing tanks and associated equipment, as well as demolishing buildings, pavement, and other structures. In December 2004, the Seattle Department of Planning and Development (DPD) issued a stop work order and NOV because site demolition activities were being conducted without a permit. Basin Oil must obtain a permit before continuing demolition operations.

Source Control Actions

Dallas Ave S PCBs Cleanup

In August 2004, SPU discovered elevated concentrations of PCBs (Aroclor 1260) in catch basin sediment and street dirt samples collected from the roadways adjacent to T117. The initial sampling was performed as part of routine source sampling efforts to identify potential sources to the T117 early action site. Subsequent sampling narrowed the contaminated area to the section of Dallas Ave S between 14th Ave S and S Donovan St, 17th Ave S between Dallas Ave S and S Donovan St, and S Donovan St between Dallas Ave S and 17th Ave S.

Sampling locations are shown in Figures 16 and 17 and results are summarized in Table 13. Concentrations in street dirt were as high as 9.2 mg/kg PCBs DW (found in a catch basin located on 17th Ave S). Soil beneath the roadway contained as much as 66 mg/kg PCBs DW and soil collected from the public right-of-way immediately adjacent to the roadway contained up to 93 mg/kg PCBs DW. The cleanup level in soil for unrestricted use under the Washington State Model Toxics Control Act is 1 mg/kg PCBs.

The King County Health Department also collected soil samples in yards in the vicinity of the contaminated roadway areas. Soil sampling locations are also shown in Figure 17 (see “YS” sampling stations). The highest PCB concentrations were found in soil samples collected from the front yards at 8601 (37-47 mg/kg) and 8609 (1.4-3.4 mg/kg) 17th Ave S. All other samples were below 1 mg/kg PCBs.

In November-December 2004, SPU completed a source control action to reduce the exposure of nearby residents to the PCBs present in the public right-of-way and to control roadway runoff. Work included:

- Removing contaminated soil and placing clean gravel on roadway shoulders along Dallas Ave S and 17th Ave S. Approximately 6 to 12 inches of soil was removed and capped with gravel.
- Grading and paving S Donovan St between Dallas Ave S and 17th Ave S, 17th Ave S between S Donovan St and Dallas Ave S, and Dallas Ave S between 17th Ave S and S Donovan St.
- Installing a temporary stormwater collection and treatment system to serve the newly paved roadways.

The stormwater system collects runoff from the public right-of-way and the adjacent Basin Oil property and routes it to a temporary treatment system located on the south side of S Donovan St. It is designed to handle runoff from up to the 10-yr, 24-hr storm event. Runoff is treated via settling and sand, bag, and carbon filters prior to controlled discharge to the combined sewer on S Donovan St at 17th Ave S. Because the existing combined sewer is over capacity, the treated runoff is stored in (5) 18,000-gallon storage tanks (located on 17th Ave S just south of S

Donovan St) to allow runoff to be released to the sewer at a controlled rate. SPU has obtained a discharge authorization from King County Industrial Waste to allow discharge to the sewer and is currently testing all stormwater prior to discharge. PCBs have not been detected (at 0.1 ug/L) any of the samples collected from the treatment system since the plant started operation in mid-December. SPU has also received permission from the Port of Seattle to discharge treated runoff to the Port's drainage system at the south end of T117 under emergency conditions (i.e., existing combined sewer capacity exceeded). As part of the agreement with the Port, SPU also conducted the following work on T117 to prevent the treated runoff from becoming recontaminated prior to discharge to the Duwamish Waterway:

- Cleaned the existing catch basin at the south entrance to T117 (emergency discharge point for treated runoff) and the downstream catch basin adjacent to the waterway, and pressured washed the existing 6-inch PVC drain that crosses T117.
- Extended the existing 6-inch drain (noted above) located on the north side of the T117 south building to the end of the building, installed asphalt berms to direct flow to the downstream catch basin, and paved the planter area adjacent to the building.

SPU is currently working to develop a final cleanup plan for the public right-of-way. Future work will be completed by 2006 when the T117 early action site cleanup is scheduled to occur. Contaminated soil in the yards at 8601 and 8609 17th Ave S will also be removed and the yards will be replanted. Additional sampling to delineate the extent of the soil contamination is scheduled to occur in February and yard cleanup is planned for the spring of 2005.

NEXT STEPS

King County and SPU intend to continue the joint business inspection and source tracing efforts to support the Lower Duwamish Waterway Superfund investigation. SPU and King County Industrial Waste are planning an outreach program to reach businesses in the Diagonal/Duwamish Basin. Potential outreach activities include educational seminars and posters mailed to all businesses inspected. The intent is to provide ongoing reminders to businesses of how their practices can affect the Duwamish Waterway.

Business Inspections

The joint business inspection program has been successful in reaching businesses that discharge to the LDW via the publicly owned storm drain or the combined sewer systems. King County and SPU will have a continuing presence in the Diagonal/Duwamish area, focusing on higher priority businesses and will also expand into other areas to support ongoing and future early action area cleanups.

Diagonal/Duwamish

Inspectors will complete follow-up inspections in the Diagonal/Duwamish early action area to ensure that problems found during previous inspections are corrected. Some businesses in the area (those that were inspected during the early part of the first reporting period) have not been inspected in over a year. Results from previous inspections will be reviewed to identify sites that should be re-inspected. Re-inspections will be conducted by the jurisdiction with lead authority (i.e., KCIW for industrial wastewater discharges and SPU for stormwater discharges).

Slip 4

The Boeing Company owns most of the sites remaining to be inspected in the Slip 4 early action area. Boeing has not allowed county and city inspectors to inspect their facilities and has requested that only Ecology inspectors or other inspectors with direct permit authority inspect Boeing facilities. King County and SPU will support Ecology to facilitate these inspections. The County and City will also conduct follow up inspections at the other businesses in Slip 4 to ensure that all required corrective actions are implemented.

Terminal 117

SPU inspectors will conduct a joint inspection with Ecology at the South Park marina. Runoff from the marina discharges directly to the waterway.

Other Areas in the LDW

During the next reporting period, inspectors will continue working in the East Waterway to support the ongoing cleanup by the Port and will focus on the remaining early action areas in the Lower Duwamish Waterway:

- Early action site at river mile 3.8 in the vicinity of the former Slip 5 (areas outside the King County Airport that have not yet been inspected).

- Trotsky early action site
- Norfolk early action site.

King County, SPU, and other members of the Lower Duwamish source control work group are developing a work plan to coordinate future source control activities. The goals are to support upcoming early action site cleanups by ensuring that the source control work is underway on schedule with cleanup activities, to schedule future work that may be needed outside the existing early action sites, and to identify resources needed for future source control efforts.

Source Sampling

Source Tracing

Source tracing efforts will continue to focus on catch basin and in-line sediment sampling to track sources of contaminants to the waterway sediment. SPU intends to continue sampling the 7 sediment trap installations in the Diagonal Ave S CSO/SD basin. In addition, SPU will collect sediment samples from the other public storm drains discharging in the vicinity of the Diagonal/Duwamish early action site (S Nevada St and the Diagonal Ave S storm drains) to determine whether these drainage systems may be contributing contaminants to the waterway sediment.

To support work in the Slip 4 early action site, additional sediment traps will be installed in 3 of the 4 main drains that discharge to Slip 4 (Slip 4 CSO/SD, I-5 drain, and the King County airport storm drain). Proposed sediment trap locations are shown on Figure 15. Onsite and right-of-way catch basin sampling will be coordinated with the business inspection effort. In addition, SPU is currently working with a contractor to investigate the Georgetown Flume. The scope of work includes surveying the locations of all historic and active outfalls to the flume, video inspecting the piped sections of the flume, and collecting sediment samples from select locations along the flume. Work is scheduled to begin in February 2005.

King County and SPU also plan to begin source sampling/tracing in the areas draining to the East Waterway during the next reporting period.

Phthalate Source Study

The phthalate source study will be continued with future work focusing on evaluating whether atmospheric deposition is a significant source of phthalates to the waterway sediment via either direct deposition on the waterway or via stormwater runoff. The first phase of the atmospheric deposition investigation involving collecting samples of wet deposition at four existing Ecology or PSCAA air monitoring stations will be conducted during the next reporting period. Sampling procedures and protocols are described in sampling and analysis plan provided in Appendix C. If atmospheric deposition is found to be a significant source of phthalates to the LDW, efforts to reduce phthalates in automobile and truck parts at the national level may be necessary.

Site-Specific Source Control Actions

Dallas Ave Cleanup

During the next reporting period, SPU will begin developing plans for the final cleanup of the Dallas Ave site. Cleanup will be conducted under SPU's capital improvement program. Work will involve evaluating cleanup options, working with regulatory agencies, and completing the internal business plan needed to obtain funding for the project.

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TABLES

Table 1. Corrective actions requested by program area.
June - December 2004

	Percent of Total Corrective Actions			
	Stormwater	Spill Prevention/ Cleanup	Hazardous Waste	Industrial Waste
Diagonal Ave S CSO/SD				
March 03 - May 04	50	30	24	3
June 04 - December 04	34	42	21	7
Slip 4 drainage basin	24	64	12	0
Slip 5/6 drainage basins	10	84	6	0
East Waterway	31	63	6	0
Overall	26	59	14	1

Table 2. Most frequent corrective actions requested.

June - December 2004

Corrective Action	Percent of sites with corrective actions (June - December 2004 reporting period)					Overall
	<i>Diagonal Ave S CSO/SD</i>		<i>Slip 4 drainage basin</i>	<i>Slip 5/6 drainage basins</i>	<i>East Waterway</i>	
	Jan 03-May 04	June - Dec 04				
Drainage facility needs cleaning	41	63	38	8	50	40
Facility lacks proper spill prevention/cleanup plan/procedures	36	69	79	100	70	79
Inadequate spill cleanup materials available onsite	33	94	46	67	60	65
Inadequate employee training on spill prevention/cleanup practices	58	63	75	50	70	67
Improper storage of hazardous products and waste materials	22	38	13	17	10	19
Improper hazardous waste disposal	17	38	17	0	10	16
Improper outdoor storage of non-hazardous materials/products	13	6	13	0	0	5

Table 3. Surface water quality complaints in the Lower Duwamish Waterway.
June - December 2004

Date	Material	Location	Service Area	Status
11/15/2004	Antifreeze	2468 S College St	SD	Resolved
7/2/2004	Auto fluid	6924 Rainier Ave S	CSO	Resolved
10/2/2004	Auto oil	45th Ave S and S Willow St	CSO	Unresolved
12/13/2004	Broken sewer line	Union St and 15th Ave	CSO	Resolved
8/20/2004	Brown water	Diagonal/Duwamish outfall	CSO	Resolved
10/5/2004	Diesel	2460 4th Ave S	CSO	Resolved
6/10/2004	Dirty water	1925 6th Ave	CSO	Resolved
12/6/2004	Granite cutting water	Across from Home Depot at 2701 Utah Ave S	SD	Resolved
09/21/04	Grey Water	11812 57th Av S	CSO	Resolved
12/9/2004	Oil	4735 E Marginal Way S (north)	CSO	Resolved
8/25/2004	Oil	E Marginal Way S and S Spokane St	CSO	Resolved
12/28/2004	Oil and Gas	1922 S Stevens St	SD	Resolved
12/2/2004	Oil spill	1st Ave S and S Lander St (NW corner)	CSO	Resolved
11/9/2004	Possible broken sewer line	3320 Beacon Ave S	SD	Resolved
11/10/2004	Pressure Wash Water	1st Ave S and S Front St	CSO	Resolved
7/12/2004	Sewage or water	4111 42nd Ave S	CSO	Resolved
11/19/2004	Unknown	6924 Rainier Ave S	CSO	Resolved
6/28/2004	Unknown	700 Broadway	CSO	Resolved
11/10/2004	Unknown	8th Ave S and S Monroe St	CSO	Resolved
7/20/2004	Unknown	Between Delta Marine and Duwamish Yatch club	SD	Resolved
8/19/2004	Unknown substance	3223 1st Ave S (parking lot side)	CSO	Resolved
8/23/2004	Water	1422 E Union St	CSO	Resolved
6/2/2004	Water	2122 19th Ave S	SD	Resolved
8/24/2004	Water	4230 Rainier Ave S	CSO	Resolved
10/1/2004	Water	4515 49th Ave S	CSO	Resolved
9/16/2004	Water overflow	3401 25th Ave S	CSO	Resolved

Table 4. Construction projects in the Lower Duwamish Waterway.*June - December 2004*

Project	Basin	Permit Issued	Permit Expires	Address	Zoning / Use
2302820	Combined sewer	11/19/2003	5/19/2005	00401 BROADWAY	ADMIN OFFICE, MEDICAL SERVICES
2205112	Combined sewer	1/9/2004	7/9/2005	04515 M L KING JR WY	ADMIN OFFICE/ADULT CARE CENTER
2207885	Combined sewer	4/4/2003	10/4/2004	00401 BROADWAY	ADMINISTRATIVE OFFICE
2207114	Combined sewer	8/27/2003	8/12/2006	03512 S JUNEAU ST	APARTMENT
2105164	Combined sewer	8/5/2003	2/5/2005	03213 HARBOR AV SW	APARTMENT, OFFICE, GARAGE
2306070	Combined sewer	1/13/2004	7/13/2005	03621 33RD AV S	APARTMENT/RETAIL SALES & SVC/CUSTOMER SERVICE OFC
2308375	Combined sewer	5/11/2004	11/11/2005	03512 S JUNEAU ST	APARTMENTS WITH ACCESSORY PARKING
2206001	Combined sewer	12/8/2004	6/8/2006	04408 DELRIDGE WY SW	ARTIST'S STUDIO/DWELLINGS
2206223	Combined sewer	6/20/2003	12/20/2004	00316 BROADWAY	CHILD CARE CENTER
2401584	Combined sewer	9/30/2004	3/30/2006	09401 MYERS WY S	CITY FACILITY
2401582	Combined sewer	7/23/2004	1/23/2006	09401 MYERS WY S	CITY FACILITY (JOINT TRAINING)
2200383	Combined sewer	1/3/2003	7/3/2004	02100 24TH AV S	COMMUNITY CENTER
2204090	Combined sewer	2/10/2003	8/10/2004	04801 35TH AV SW	CONGREGATE RESIDENCE/NURSING HOME
2400239	Combined sewer	8/3/2004	2/3/2006	03642 33RD AV S	CUSTOMER SERVICE OFFICE, APARTMENTS
2301075	Combined sewer	7/16/2003	1/16/2005	00901 12TH AV	EDUCATIONAL MAJOR INSTITUTION
2405843	Combined sewer	9/15/2004	3/15/2006	04418 - 4430 S SHELL ST	GRADING
2304854	Combined sewer	6/28/2004	12/28/2005	06101 S FOUNTAIN ST	GRADING FOR ACCESS ROAD
2209009	Combined sewer	6/28/2004	12/28/2005	05949 S FOUNTAIN ST	GRADING OF ACCESS ROAD
2301526	Combined sewer	4/30/2003	10/30/2004	01300 - 1316 SW WEBSTER ST	GRADING ONLY
2304855	Combined sewer	6/28/2004	12/28/2005	06107 S FOUNTAIN ST	GRADING ONLY
2201895	Combined sewer	6/11/2003	12/11/2004	04500 M L KING JR WY	GRADING/DRAINAGE ONLY
2301344	Combined sewer	9/30/2003	3/30/2005	00917 E YESLER WY	GYM
2207892	Combined sewer	2/6/2004	8/6/2005	00500 17TH AV	LABORATORY
2404017	Combined sewer	7/21/2004	1/21/2006	00201 S MEAD ST	LIGHT MANUFACTURING / ACCESSORY OFFICE
2206147	Combined sewer	2/20/2003	8/20/2004	07501 M L KING JR WY	LOW-INCOME HOUSING
2302552	Combined sewer	8/13/2003	2/13/2005	06550 32ND AV SW	LOW-INCOME HOUSING REDEVELOPMENT
2208351	Combined sewer	9/18/2003	3/18/2005	03815 S OTHELLO ST	MEDICAL SERVICE/RETAIL SALES & SERVICE/APARTMENT
2302636	Combined sewer	3/16/2004	9/16/2005	02916 S COLUMBIAN WY	MIXED USE
9906186	Combined sewer	8/16/2004	8/16/2004	00912 12TH AV	MIXED USE RESIDENTIAL AND CUSTOMER SERVICE OFFICE
2401795	Combined sewer	12/8/2004	6/8/2006	03201 SW GRAHAM ST	MULTI-FAMILY STRUCTURE (APARTMENTS)
2204538	Combined sewer	2/21/2003	8/21/2004	01706 22ND AV	MULTI-PURPOSE CONV. STORE/RESIDENTIAL/PARKING
2204942	Combined sewer	4/24/2003	10/24/2004	02821 S WALDEN ST	NURSING HOME
2208274	Combined sewer	7/7/2004	1/7/2006	02025 14TH AV S	PUBLIC EDUCATIONAL FACILITY
2208109	Combined sewer	5/8/2003	11/8/2004	06725 45TH AV S	PUBLIC SCHOOL
2207452	Combined sewer	4/23/2003	10/23/2004	02500 SW BARTON ST	REMODEL EXISTING RETAIL & OFFICE SPACE
2204539	Combined sewer	5/19/2003	11/19/2004	01706 22ND AV	RETAIL GROCERY, APARTMENTS & PARKING GARAGE
2305817	Combined sewer	8/4/2004	2/4/2006	07345 DELRIDGE WY SW	RETAIL SALES AND SERVICE
2308483	Combined sewer	6/21/2004	12/21/2005	03701 S KENYON ST	SCHOOL/ GYM
2300675	Combined sewer	3/25/2004	9/25/2005	02600 SW THISTLE ST	SEATTLE PUBLIC SCHOOLS
2301697	Combined sewer	8/5/2003	2/5/2005	02701 15TH AV S	SITE WORK ONLY
2300290	Diagonal SD	6/19/2003	12/19/2004	00833 DAVIS PL S	APARTMENT
2201694	Diagonal SD	2/3/2003	8/3/2004	09050 16TH AV SW	COMMUNITY CENTER
2400594	Diagonal SD	8/27/2004	2/27/2006	04401 4TH AV S	GENERAL PERSONAL & HOUSEHOLD RETAIL SALES & SVC
2308462	Diagonal SD	12/8/2004	6/8/2006	02302 E YESLER WY	LIBRARY

Table 4. Construction projects in the Lower Duwamish Waterway.

June - December 2004

Project	Basin	Permit Issued	Permit Expires	Address	Zoning / Use
2107959	Diagonal SD	9/23/2003	3/23/2005	03407 AIRPORT WY S	LIGHT RAIL TRANSIT FACILITY
2404044	Other storm drain	9/24/2004	3/24/2006	07272 WEST MARGINAL	GENERAL MANUFACTURING
2206735	Other storm drain	7/25/2003	1/25/2005	06000 16TH AV SW	MAJOR INSTITUTION COMMUNITY COLLEGE

Table 5. Phthalates in key manhole samples.

Sta ID	Land Use	n	Bis(2-ethylhexyl)phthalate				Butylbenzylphthalate				Diethylphthalate			
			Mean	Min	Max	Detects	Mean	Min	Max	Detects	Mean	Min	Max	Detects
KEY MH DATA^f														
Dry Weather (9/04)														
East Marginal pump station		8	11.0	4.7	35	8	1.9	<1	2.7	3	2.9	<9.6	3.9	7
West Marginal pump station		9	13.9	8.67	20.5	9	7.3	<1	7.3	1	5.7	5.1	6.4	8
Duwamish pump station		8	14.6	8.75	39.5	8	24.6	<1	69.8	6	5.3	4.5	6.3	8
Dry Weather (9/03)														
East Marginal pump station		9	5.9	3.9	7.4	9	2.8	1.3	4.0	9	5.3	2.1	8.3	9
West Marginal pump station		10	25.7	9.5	148	10	2.0	<1	3.0	8	8.4	7.0	9.4	10
Duwamish pump station		8	10.6	7.3	12.4	8	1.3	<1	1.8	8	6.0	4.8	7.0	8
Wet Weather (4/04)														
East Marginal pump station		9	6.5	1.6	11.8	9	1.0	<1	1.5	7	4.4	2.0	12.1	9
West Marginal pump station		7	20.8	13.3	52.3	7	2.4	<1	3.4	6	7.7	5.5	8.9	7
Duwamish pump station		8	12.2	10.0	13.7	8	1.8	1.4	2.4	8	6.7	5.1	8.3	8
STORMWATER DATA														
Thea Foss^a														
SD-230	Comm	11	5.8	1.1	12	9	1.25	1	3	4	0.0	0	0	2
SD-235	Comm	10	5.6	1	16	8	1.26	1	2	4	0.0	0	0.00	5
SD-237A	Mix	10	3.3	1	5.4	6	1.01	1	1.1	2	0.0	0	0	4
SD-237B	Mix	10	2.8	1	4.7	6	1.10	1	2	1	0.0	0	0	1
SD-243	Ind	7	2.6	1.5	5	6	2.06	1	3.9	3	0	0	1	0
SD-245	Ind	10	4.2	2.4	15	8	63	20	130	8	0.0	0	0	4
SD-254	Ind	7	2.4	1.5	3.7	4	2.09	1	6.1	4	0.0	0	0	1
SR-520 ^b	Highway	3	12.03	9.49	14.2	3	0.64	0.59	0.71	3	1.1	0.43	2.55	3
Diagonal Ave S CSO/SD^c														
D057009	Mix	3	6.6	3.48	10.1	3	0.65	0.57	0.79	1	1	1	1	0
D057036	Mix	7	7.1	0.57	14.7	6	0.77	0.57	0.987	3	1	1	1	0
WASTEWATER DATA														
Renton WWTP influent ^d		34	14.2	5.22	37.1	34								
West Point WWTP influent ^e		16	12.8	4.7	33.3	16	1.7	0.6	2.47	6/8	4.5	2.74	5.88	8/8

Units: ug/L

- a. Samples collected 2001-2002 by City of Tacoma
- b. Samples collected 4/8/03 by King County
- c. Samples collected in 1995 by King County (from manholes at S Hinds St and S Horton St)
- d. Samples collected 1998-2003 by King County (system fully separated)
- e. Samples collected 1998-2003 by King County (system combined)
- f. Samples collected 2003-2004 by King County Industrial Waste.

Table 6. Onsite catch basin sediment sample results.

Source	Sample ID	Date Sampled	Drainage Basin	Cu (mg/kg)	Pb (mg/kg)	Hg (mg/kg)	Zn (mg/kg)	TPH-Diesel (mg/kg)	PCBs (ug/kg DW)	PCBs (mg/kg OC)	BEHP ^a (ug/kg DW)	BEHP ^a (mg/kg OC)
Diagonal basin												
Auto repair	CB7	10/15/03	Diag/Duw	647	1,220	0.1	1,150	9,900	48	0.28	140,000	824
	CB9	01/22/04	Diag/Duw	177	105	0.06 U	294	50 U	97	3.59	2,200	81
	CB13	01/23/04	Diag/Duw	96	127	0.09	432	51	690	20.9	4,500	136
	CB19	02/12/04	Diag/Duw	405	1,530	1.82	1,170	3,500	289	2.63	53,000	482
	CB45	12/22/04	Slip 4	6,320	481	0.3	3,420	950	470	4.83	8,800	90
	CB46	12/22/04	Slip 4	5,660	396	0.2	3,530	1,900	680	6.54	30,000	288
Gas station	CB10	01/22/04	Diag/Duw	87	96	0.07	250	930	17 U	0.11 U	1,500	10
	CB23	03/15/04	Diag/Duw	87	73	0.07 U	501	800	20 U	0.24 U	3,400	40
	CB26	03/15/04	Diag/Duw	184	699	1.7	1,470	8,700	940	3.62	64,000	246
	CB27a	03/15/04	Diag/Duw	92	109	0.1	396	5,200	141	1.66	33,000	388
	CB29	04/07/04	Diag/Duw	261	164	0.09 U	668	5,000	29 J	0.26 J	63,000	558
Grocery stores	CB15	02/09/04	Diag/Duw	142	476	0.06 U	98.3	380	19 U	0.48 U	380	10
	CB18	02/12/04	Diag/Duw	80	55	0.22	359	970	19 U	0.21 U	20,000	225
	CB25	03/15/04	Diag/Duw	187	152	0.2	912	2,900	39	0.24	120,000	750
Vehicle/equip wash	CB2	08/21/03	Diag/Duw	1,520	1,110	0.5	2,720	34,000	20 U	0.53 U	200,000 B	2,667 B
	CB21	03/20/04	Diag/Duw	194	97	0.06 U	305	1,900	19 U	0.40 U	17,000	354
Transportation	CB3	09/05/03	Diag/Duw	30	10	0.05 U	54.9	15	39 U	8.30 U	130	28
	CB8	11/04/03	Diag/Duw	275	205	0.10	603	2,000	1,000	10.87	71,000	772
	CB33	05/24/04	Diag/Duw	118	82	0.09	924	900	58	0.51	9,900	87
	CB34	05/24/04	b	99	110	0.07 U	833	430	16	0.21 U	4,200	45
	CB35	05/24/04	b	79	87	0.1	382	4,000	20 U	0.22 U	11,000	123
	CB36	05/24/04	b	201	152	0.07 U	420	5,300	20 U	0.19 U	24,000	226
	CB41b	09/10/04	Slip 6	92	232	0.17	740	8,000	51 U	0.50 U	3,300	33
	CB37	06/22/04	Slip 4	173	250	0.08	1,220	180	20 U	0.42 U	1,600	34
Misc retail	CB16	02/09/04	Diag/Duw	56	63	0.1	237	1,400	51	1.06	11,000	229
	CB20	02/12/04	Diag/Duw	184	277	1.16	754	2,100	194	1.94	99,000	990
	CB12	01/23/04	Diag/Duw	181	97	0.1	603	41	41	0.61	6,600	99
	CB28	03/26/04	Diag/Duw	254	327	0.2	677	440	18 J	0.13 J	14,000	103
Manufacturing	CB1	08/21/03	Diag/Duw	161	125	0.3	1,100	NA	160	0.62	19,000 B	100 B
	CB22	03/02/04	Diag/Duw	520	151	0.16	433	190	3,200	267	410	34
	CB31	05/06/04	Diag/Duw	186	231	0.12	590	200	128	3.47	460	12
Restaurant	CB27b	03/26/04	Diag/Duw	137	88	0.1 U	537	6,600	68 J	0.47 J	140,000	596
	CB32	05/24/04	Diag/Duw	194	131	0.2 U	874	770	20 U	0.10 U	34,000	164
	CB38	06/25/04	Diag/Duw	66	54	0.08	209	960	220	3.44	5,000	78
Other	CB4	09/08/03	Diag/Duw	135	47	0.08 U	360	1,800	19 U	1.12 U	32,000	941
	CB5	09/10/03	Diag/Duw	147	51	0.2 U	412	2,600	20 U	0.27 U	67,000	447
	CB11	01/23/04	Diag/Duw	325	445	0.68	3,940	370	255 P	4.11 P	6,200	100
	CB24	03/15/04	Diag/Duw	172	299	0.2	699	730	71 Y	0.92 Y	12,000	156
	CB44	12/08/04	Slip 4	142	123	0.12	524	85	180	0.73	10,000	41
	CB30	04/30/04	Diag/Duw	79	2,010	0.84	257	620	259	3.15	11,000	134
	CB40	08/04/04	Slip 5	92	90	0.61	271	600	6,600	154	5,500	185
Oil recycling	CB41	08/19/04	T117	134	428	0.11	711	72,000	350	2.59	84,000	622
	CB42	08/19/04	T117	173	98	0.08	830	3,900	140	2.75	41,000	708
SQS				390	450	0.41	410	NA		12	NA	47
CSL				390	530	0.59	960	NA		65	NA	78
MTCA Method A ^c				NA	250	2	NA	2,000	1,000	NA	NA	NA
MTCA Method A ^d				NA	1,000	2	NA	2,000	10,000			

Table 6. Onsite catch basin sediment sample results.

Source	Sample ID	Date Sampled	Drainage Basin	Cu (mg/kg)	Pb (mg/kg)	Hg (mg/kg)	Zn (mg/kg)	TPH-Diesel (mg/kg)	PCBs (ug/kg DW)	PCBs (mg/kg OC)	BEHP ^a (ug/kg DW)	BEHP ^a (mg/kg OC)
Thea Foss basin (Tacoma)												
Auto repair/supplies (7)			Mean								58,371	
			Range							(2,600 - 340,000)		
			Min								2,600	
			Max								340,000	
			General Tire								23,000	
			Service Master								2,600	
			Eagle Tire								340,000	
			Maaco Autobody								7,200	
			Osborne Cadillac								6,800	UJ
			Tacoma Dodge								19,000	
			Pacific Motoring								10,000	
Fast food (2)			Mean								74,000	
			Range							(48,000 - 100,000)		
			Min								48,000	
			Max								100,000	
			Jack in Box								48,000	
			McDonalds								100,000	
Vehicle/equip wash (1)											24,000	
			Brown Bear								24,000	
Misc retail (3)			Mean								14,100	
			Range							(1,800 - 35,000)		
			Min								1,800	
			Max								35,000	
			Keller plumbing								1,800	
			Washington Floral								5,500	
			American Linen								35,000	
Manufacturing (6)			Mean								106,083	
			Range							(9,100 - 580,000)		
			Min								9,100	
			Max								580,000	
			Pickering								9,400	
			Tacoma News								10,000	
			Atlas Foundry								9,100	
			Totem Marina								580,000	
			United Pipe								13,000	
			Ideal Machine								15,000	

- a. Bis(2-ethylhexyl)phthalate
- b. Upstream of Lower Duwamish study area.
- c. MTCA Method A soil cleanup level for unrestricted use.

- d. MTCA Method A soil cleanup level for industrial use.
-  Exceeds SQS
-  Exceeds CSL or MTCA Method A Cleanup Level (TPH)

- U = Chemical not detected at concentration shown.
- Y = Chemical not detected at concentration shown.
Reporting limit raised due to background interference.
- J = Concentration is less than the reporting limit.
- P = High RPD on dual column analyses, without obvious interference.

Table 7. Right-of-way catch basin sediment sample results.

Road Type	Station ID	Date Sampled	Drainage Basin	Cu (mg/kg)	Pb (mg/kg)	Hg (mg/kg)	Zn (mg/kg)	TPH-Diesel (mg/kg)	TPH-Oil (mg/kg)	PCBs (ug/kg DW)	PCBs (mg/kg OC)	BEHP ^a (ug/kg DW)	BEHP ^a (mg/kg OC)
Diagonal basin													
Freeway	RCB30	05/26/04	LDW	46.2	20	0.06 U	171	130	630	U	0.63 U	3,200	107
Freeway	RCB31	05/26/04	LDW	185	157	0.07	552	150	660	117 Y	4.74 Y	1,100	18
Freeway	RCB32	05/26/04	LDW	97.5	126	0.09 U	305	150	690	138 Y	1.82 Y	21,000	277
High traffic arterial	RCB2	02/22/04	Diag/Duw	40.1	121	0.07 U	137	270	1,600	30	0.55	2,900	53
High traffic arterial	RCB3	02/22/04	Diag/Duw	48.8	78	0.07 U	179	200	1,400	U	0.37 U	2,400	46
High traffic arterial	RCB7	03/03/04	Diag/Duw	55.1	374	0.06 U	142	210	1,600	U	0.83 U	2,100	88
High traffic arterial	RCB10	03/15/04	Diag/Duw	183	109	0.1 U	589	630	4,600	54	1.16	28,000	280
High traffic arterial	RCB11	03/15/04	Diag/Duw	117	92	0.07 U	243	540	3,000	U	0.27 U	3,200	23
High traffic arterial	RCB12	04/07/04	Diag/Duw	112	77	0.1 U	384	540	3,000	50 J	0.51 J	5,600	96
High traffic arterial	RCB13	04/07/04	Diag/Duw	172	163	0.17	567	1,200	7,800	161	1.67	17,000	177
High traffic arterial	RCB15	04/07/04	Diag/Duw	157	145	0.2	781	1,400	9,100	303	3.68	18,000	219
High traffic arterial	RCB17	04/16/04	Diag/Duw	137	146	0.15	534	1,400	7,200	231	3.04	12,000	158
High traffic arterial	RCB18	04/16/04	Diag/Duw	229	137	0.13	575	1,700	8,500	248	2.51	14,000	141
High traffic arterial	RCB19	04/16/04	Diag/Duw	71.9	64	0.05 U	252	470	2,600	64	1.48	5,900	137
High traffic arterial	RCB20	04/16/04	Diag/Duw	164	206	0.2	759	1,800	11,000	187	1.31	24,000	168
High traffic arterial	RCB21	04/16/04	Diag/Duw	38.4	39	0.07 U	132	390	2,500	U	0.31 U	4,300	70
High traffic arterial	RCB27	04/21/04	Diag/Duw	159	111	0.06 U	335	560	2,400	22	0.37	12,000	201
High traffic arterial	RCB33	06/30/04	Diag/Duw	149	60	0.06 U	674	190	1,100	53	1.22	740	31
High traffic arterial	RCB34	06/30/04	Diag/Duw	134	89	0.08	488	1,200	6,100	114	0.63	16,000	152
High traffic arterial	RCB35	06/30/04	Diag/Duw	120	193	0.1	358	420	2,100	142	2.32	8,000	84
High traffic arterial	RCB36	06/30/04	Diag/Duw	751	152	1.17	505	1,800	6,000	639 Y	10.47 Y	48,000	502
High traffic arterial	RCB37	06/30/04	Diag/Duw	58.5	62	0.06 U	189	220	1,200	17,500	202.21	8,300	153
High traffic arterial	RCB39	06/30/04	Diag/Duw	113	61	0.06 U	213	640	3,500	160	3.50	4,400	96
High traffic arterial	RCB40	06/30/04	Diag/Duw	70.4	99	0.04 U	207	140	850	U	0.72 U	980	35
Industrial	RCB1	02/20/04	Diag/Duw	112	1,370	0.87	364	3,500	4,000	670	6.70	46,000	460
Industrial	RCB16	04/07/04	Diag/Duw	154	105	0.19	698	1,400	8,000	293	4.13	14,000	197
Industrial	RCB29	05/07/04	Diag/Duw	134	106	0.26	334	130	480	68	1.53	1,400	32
Low traffic mix	RCB8	03/03/04	Diag/Duw	75.3	54	0.07 U	223	320	3,000	19	0.24	8,600	110
Low traffic mix	ROW24	01/14/05	Diag/Duw	84.4	19	0.06 U	185	6,400	14,000	ROW24 - 011405			
Low traffic res	RCB4	02/22/04	Diag/Duw	167	245	0.30	851	460	1,600	U	0.18 U	3,600	30
Low traffic res	RCB5	02/22/04	Diag/Duw	66.6	197	0.32	362	260	2,400	U	0.18 U	2,400	22
Low traffic res	RCB22	04/16/04	Diag/Duw	97.2	65	0.06 U	176	230	1,500	21 J	0.45 J	3,100	66
Low traffic res	RCB23	04/21/04	Diag/Duw	81.6	180	0.12	277	690	2,500	45	0.22	8,700	81
Low traffic res	RCB28	04/21/04	Diag/Duw	76.9	131	0.2	313	140	910	36	0.29	4,100	33
Medium traffic	RCB6	03/03/04	Diag/Duw	46.4	46	0.06 U	176	380	2,800	U	0.40 U	4,000	85
Medium traffic	RCB9	03/03/04	Diag/Duw	42.5	53	0.04 U	151	160	1,900	U	0.43 U	970	21
Medium traffic	RCB24	04/21/04	Diag/Duw	41.4	316	0.31	226	400	1,400	25	0.34	1,100	15
Medium traffic	RCB25	04/21/04	Diag/Duw	53.1	25	0.07 U	120	290	1,200	U	0.34 U	1,900	34
Medium traffic	RCB26	04/21/04	Diag/Duw	40.2	136	0.06 U	84.7	1,800	4,500	U	0.29 U	1,300	20
Medium traffic	RCB41	06/30/04	Diag/Duw	83.2	120	0.07 U	223	260	1,200	133 J	1.08 J	2,800	27

Thea Foss (Tacoma)

Residential												4,825	
(8 samples)												(2,000 - 10,000)	
Commercial												21,000	
(5 samples)												(2,100 - 67,000)	
Industrial												13,250	
(14 samples)												(2,300 - 34,000)	
SQS				390	450	0.41	410	NA	NA	NA	12	NA	47
CSL				390	530	0.59	960	NA	NA	NA	65	NA	78
MTCA Level A ^b				NA	250	2	NA	2,000	2,000	1,000	NA	NA	NA
MTCA Level A ^c				NA	1,000	2	NA	2,000	2,000	10,000	NA	NA	NA

a. Bis(2-ethylhexyl)phthalate

b. MTCA Method A soil cleanup level for unrestricted use.

c. MTCA Method A soil cleanup level for industrial use.

Exceeds SQS

Exceeds CSL or MTCA Method A Cleanup Level (TPH)

U = Chemical not detected at concentration shown.

Y = Chemical not detected at concentration shown.

Reporting limit raised due to background interference.

J = Concentration is less than the reporting limit.

Table 8. Summary of exceedances of sediment management standards for metals in storm drain sediment samples.

Metal	Onsite catch	Right-of-way	Sediment traps
Copper	14%	0%	0%
Lead	16%	8%	0%
Mercury	16%	5%	0%
Zinc	70%	31%	67%

Table 9. Land use in the Diagonal Ave S CSO/SD service area.

Land Use	Storm drain service area (Ac)	Combined sewer service area (Ac)
Industrial	490	657
Commercial	233	412
Public right-of-way	991	1,432
Single-family residential	487	1,369
Multi-family residential	102	314
Schools	45	116
Open space	124	349
Vacant	128	251
Total	2,600	4,900^a

Table 10. Petroleum hydrocarbon results from Diagonal Ave S source tracing samples.

Petroleum hydrocarbons (mg/kg)	Diagonal Ave S CSO/SD		Sanitary Sewer
	D056-136	D056-135	S056-168
TPH-diesel	0.22 U	0.22 U	1.9
TPH-heavy oil	0.22 U	1.04	5.59
2-Fluorobiphenyl	0.13	0.138	0.134
Pentacosane	0.166	0.173	0.164

U = Chemical not detected at concentration shown.

D056-136: Diagonal Ave S CSO/SD at Diagonal Ave S and Colorado Ave S.

D056-135: Diagonal Ave S CSO/SD at Diagonal Ave S and Denver Ave S.

S056-168: 36-inch combined sewer at Diagonal Ave S and Denver Ave S.

Table 11. Diagonal Ave S CSO/SD Sediment Trap Results.

	SQS	CSL	ST1 E Marginal/S Oregon	ST1 E Marginal/S Oregon	ST1 E Marginal/S Oregon	ST2 Airport Way/6th Ave S	ST2 Grab in pipe	ST 2 (bottle #1)	ST2 (bottle #2)	ST2 Airport Way/6th Ave S	ST3 S Forest	ST3 S Forest	ST5 S College/Rainier Ave
Date deployed			02/01/03	08/21/03	03/11/04	02/01/03				03/11/04	02/01/03	10/13/03	02/01/03
Date removed			08/21/03	02/18/04	07/30/04	08/21/03	08/21/03	03/11/04	03/11/04	07/30/04	08/21/03	03/11/04	08/21/03
TOC (percent)			17	10	7.81	4.5	2.1	4.6	3.5	7.46	6.7	1.8	13
Metals (mg/kg DW)													
As	57	93	10 U	10 U	20 U	7 U	30 U	50 U	8 U	10 U	9 U	7 U	6 U
Cu	390	390	298	120	215	89.9	78	146	34.1	136	138	69	136
Pb	450	530	244	121	160	76	100	210	39	41	128	102	175
Hg	0.41	0.59	0.3	0.20	0.20	0.06 U	0.02 U	0.4 U	0.07 U	0.1 U	0.07	0.07 U	0.10
Zn	410	960	1,050	445	638	282	159	735	162	184	653	433	479
LPAH (mg/kg OC)													
Acenaphthene	16	57	11 U	0.6 J	3 U	2 U	2 U	5 U	3 U	1 U	2 U	4 U	1 U
Acenaphthylene	66	66	11 U	1.0	3 U	2 U	2 U	5 U	3 U	1 U	2 U	4 U	1 U
Anthracene	220	1,200	11 U	0.8 J	3 U	6	2 U	5 U	3 U	2	3	4 U	1 U
Fluorene	23	79	11 U	0.8 J	3 U	2	2 U	5 U	3 U	1 U	2 U	4 U	1 U
Naphthalene	99	170	11 U	1.0	3 U	2 U	2 U	5 U	3 U	1 U	9	4 U	1 U
Phenanthrene	100	4,480	19	5.9	22	36	6	22	12	17	16	11	4
HPAH (mg/kg OC)													
Benzo(a)anthracene	110	270	11 U	3.4	11	24	5	18	8	10	11	6	3
Dibenzo(a,h)anthracene	12	33	11 U	1.0	3 U	2 U	2 U	5 U	3	1 U	2 U	4 U	1 U
Chrysene	110	460	18	6.1	23	29	6	30	12	15	15	11	4
Fluoranthene	160	1,200	35	11.0	29	60	10	65	25	27	24	22	8
Benzo(b)fluoranthene ^a	230	450	14	6.3	15	40	6	24	9	11	6	7	6
Benzo(k)fluoranthene			14	3.4	15	40	5	24	9	11	5	7	4
Benzo(g,h,i)perylene	31	78	11 U	1.6	9	3	2 U	10	5	5	2 U	5	2
Benzo(a)pyrene	99	210	11	3.7	13	24	4	20	9	10	2 U	6	4
Pyrene	1,000	1,400	32	9.5	31	53	10	30	13	21	24	11	7
Indeno(1,2,3-c,d)pyrene	34	88	11 U	1.7	8	5	2	10	6	5	2 U	4 J	4
Phthalates (mg/kg OC)													
Bis(2-ethylhexyl)phthalate	47	78	394	87	294	400 E	133	283	40	113	269 E	256	68
Butylbenzylphthalate	4.9	64	17	3.9	23	27	2 U	10	4	1 U	30	7	3
Diethylphthalate	61	110	11 U	1.0 U	3 U	2 U	2 U	5 U	3 U	1 U	2 U	4 U	1 U
Dimethylphthalate	53	53	11 U	1.0 U	3 U	2	2 U	5 U	3 U	1 U	2	15	2
Di-n-butylphthalate	220	1,700	11 U	1.3	5	2	2 U	5 U	3	1 U	2 U	4 U	6
Di-n-octylphthalate	58	4,500	21	7.1	22	8	2 U	19	4	1 U	58 M	23	3
PCBs (mg/kg OC)													
Aroclor 1016			0.12 U	0.2 U	0.26 U	0.53 U	0.90 U	0.43 U	0.57 U	0.27 U	0.30 U	1.11 U	0.15 U
Aroclor 1242			0.12 U	0.2 U	0.26 U	0.53 U	0.90 U	0.43 U	0.57 U	0.27 U	0.30 U	1.11 U	0.15 U
Aroclor 1248			0.12 U	0.2 U	0.26 U	0.53 U	0.90 U	1.48 P	1.71 P	0.27 U	0.30 U	1.11 U	0.15 U
Aroclor 1254			0.50	2.3	0.85	2.13	1.71	0.98	0.60 J	0.29	1.94	2.78	1.00
Aroclor 1260			0.12 U	6.3	1.04	0.53 U	0.90 U	0.67	0.40 J	0.27 U	0.30 U	1.28 J	0.15 U
Aroclor 1221			0.24 U	0.2 U	0.26 U	1.09 U	1.81 U	0.43 U	0.57 U	0.27 U	0.58 U	1.11 U	0.30 U
Aroclor 1232			0.12 U	0.2 U	0.26 U	0.53 U	0.90 U	0.43 U	0.57 U	0.27 U	0.30 U	1.11 U	0.15 U
Total PCBs			0.50	8.6	1.88	2.13	1.71	0.98	2.71	0.29	1.94	4.06	1.00
TPH (mg/kg)													
Diesel	2000 ^b		620		840	88	50	370	87 U	32	560	380	600
Motor Oil	2000 ^b		1,100		3,200	230	110	2,400	570	120	1,400	1,200	1,200

Exceeds CSL or MTCA Method A Cleanup level
Exceeds SQS

a. SMS for total benzofluoranthenes

b. MTCA Method A cleanup level for unrestricted/industrial

U = Chemical not detected at concentration shown.

Y = Chemical not detected at concentration shown.

Reporting limit raised due to background interference.

J = Concentration is less than the reporting limit.

Table 11. Diagonal Ave S CSO/SD Sediment Trap Results.

	SQS	CSL	ST6 S Bush PI/Rainier Ave	ST7 S Dakota/6th Ave S
Date deployed			02/01/03	10/13/03
Date removed			08/21/03	02/18/04
TOC (percent)			12	6.9
Metals (mg/kg DW)				
As	57	93	8 U	9
Cu	390	390	231	62.6
Pb	450	530	200	61
Hg	0.41	0.59	0.25	0.06 U
Zn	410	960	944	262
LPAH (mg/kg OC)				
Acenaphthene	16	57	9 U	1 J
Acenaphthylene	66	66	9 U	1 U
Anthracene	220	1,200	9 U	1 U
Fluorene	23	79	9 U	1 J
Naphthalene	99	170	9 U	1 U
Phenanthrene	100	4,480	49	4
HPAH (mg/kg OC)				
Benzo(a)anthracene	110	270	27	2
Dibenzo(a,h)anthracene	12	33	9	1 U
Chrysene	110	460	42	3
Fluoranthene	160	1,200	76	6
Benzo(b)fluoranthene ^a	230	450	39	2
Benzo(k)fluoranthene			39	2
Benzo(g,h,i)perylene	31	78	14	1 J
Benzo(a)pyrene	99	210	28	2
Pyrene	1,000	1,400	68	4
Indeno(1,2,3-c,d)pyrene	34	88	16	1 J
Phthalates (mg/kg OC)				
Bis(2-ethylhexyl)phthalate	47	78	350	35
Butylbenzylphthalate	4.9	64	28	3
Diethylphthalate	61	110	9 U	1 U
Dimethylphthalate	53	53	9	1 U
Di-n-butylphthalate	220	1,700	9 U	1 U
Di-n-octylphthalate	58	4,500	31	3
PCBs (mg/kg OC)				
Aroclor 1016			0.16 U	0.28 U
Aroclor 1242			0.16 U	0.28 U
Aroclor 1248			0.16 U	0.28 U
Aroclor 1254			0.70	1.42
Aroclor 1260			0.16 U	0.28 U
Aroclor 1221			0.32 U	0.28 U
Aroclor 1232			0.16 U	0.28 U
Total PCBs			0.70	1.42
TPH (mg/kg)				
Diesel		2000 ^b		
Motor Oil		2000 ^b		

Table 12. Diagonal Ave S CSO/SD inline sediment sample results.

Sampling Station Location	Mainline Stations																			
	M1		M2		M2		MH15		MH16		M3		M4		M5		MH14			
	Mainline w of E Marginal		Mainline at E Marginal Way S		Dupe of M2		Mainline at E Marginal Way S--WQ mon site		Dupe of MH15		Mainline at Colorado Ave S		Mainline at 2nd Ave S		Mainline at 4th Ave S		Mainline at SCL yard			
Structure No.	SQS	CSL	D056-125		D056-126		D056-126		D056-126		D056-126		D056-136		D057-176		D057-088		D057-088	
Compound			DW	OC	DW	OC	DW	OC	DW	OC	DW	OC	DW	OC	DW	OC	DW	OC	DW	OC
Date			(ug/kg)	(mg/kg)	(ug/kg)	(mg/kg)	(ug/kg)	(mg/kg)	(ug/kg)	(mg/kg)	(ug/kg)	(mg/kg)	(ug/kg)	(mg/kg)	(ug/kg)	(mg/kg)	(ug/kg)	(mg/kg)	(ug/kg)	(mg/kg)
Total organic carbon (percent)				0.38		0.58		0.54		1.3		0.96		0.54		0.38		0.63		0.63
LPAH	370	780	993	262	449	78	843	157	709	55	379	39	79 U	15 U	78 U	20 U	77 U	12 U	78 U	12 U
Naphthalene	99	170	78 U	21 U	78 U	13 U	79 U	15 U	79 U	6 U	79 U	8 U	79 U	15 U	78 U	20 U	77 U	12 U	78 U	12 U
Acenaphthylene	66	66	78 U	21 U	78 U	13 U	79 U	15 U	79 U	6 U	79 U	8 U	79 U	15 U	78 U	20 U	77 U	12 U	78 U	12 U
Acenaphthene	16	57	91	24	78 U	13 U	79 U	15 U	43 J	3 J	79 U	8 U	79 U	15 U	78 U	20 U	77 U	12 U	78 U	12 U
Fluorene	23	79	92	24	78 U	13 U	79 U	15 U	53 J	4 J	79 U	8 U	79 U	15 U	78 U	20 U	77 U	12 U	78 U	12 U
Phenanthrene	100	480	660	174	360	62	760	142	560	43	330	34	79 U	15 U	78 U	20 U	77 U	12 U	78 U	12 U
Anthracene	220	1200	150	40	89	15	83	15	53 J	4 J	49 J	5 J	79 U	15 U	78 U	20 U	77 U	12 U	78 U	12 U
2-Methylnaphthalene	38	64	78 U	21 U	78 U	13 U	79 U	15 U	79 U	6 U	79 U	8 U	79 U	15 U	78 U	20 U	77 U	12 U	78 U	12 U
HPAH	960	5,300	3,460	913	10,190	1,763	3,680	685	2,623	202	2,356	245	578	107	78 U	20 U	549	87	143	23
Fluoranthene	160	1,200	820	216	900	156	920	171	810	62	650	68	150	28	78 U	20 U	130	21	52 J	8 J
Pyrene	1,000	1,400	630	166	810	140	750	140	490	38	390	41	160	30	78 U	20 U	130	21	49 J	8 J
Benzo(a)anthracene	110	270	340	90	770	133	270	50	220	17	200	21	79 U	15 U	78 U	20 U	77 U	12 U	78 U	12 U
Chrysene	110	460	380	100	1,100	190	410	76	280	22	260	27	100	19	78 U	20 U	94	15	42 J	7 J
Benzo(b)fluoranthene	230		300	79	1,500	260	350	65	230	18	250	26	82	15	78 U	20 U	110	18	78 U	12 U
Benzo(k)fluoranthene	230		360	95	1,300	225	370	69	200	15	210	22	86	16	78 U	20 U	85	14	78 U	12 U
Benzo(a)pyrene	99	210	330	87	1,700	294	320	60	200	15	210	22	79 U	15 U	78 U	20 U	77 U	12 U	78 U	12 U
Indeno(1,2,3,c-d)pyrene	34	88	160	42	1,000	173	160	30	110	8	98	10	79 U	15 U	78 U	20 U	77 U	12 U	78 U	12 U
Dibenzo(a,h)anthracene	12	33	78 U	21 U	210	36	79 U	15 U	79 U	6 U	79 U	8 U	79 U	15 U	78 U	20 U	77 U	12 U	78 U	12 U
Benzo(g,h,i)perylene	31	78	140	37	900	156	130	24	83	6	88	9	79 U	15 U	78 U	20 U	77 U	12 U	78 U	12 U
Total Benzofluoranthenes	230	450	660	174	2,800	484	720	134	430 U	33 U	460	48	168	31	78 U	20 U	195	31	78 U	12 U
Phthalates																				
Dimethyl phthalate	53	53	78 U	21 U	78 U	13 U	79 U	15 U	79 U	6 U	79 U	8 U	79 U	15 U	78 U	20 U	77 U	12 U	78 U	12 U
Diethyl phthalate	61	110	78 U	21 U	78 U	13 U	79 U	15 U	79 U	6 U	79 U	8 U	79 U	15 U	78 U	20 U	77 U	12 U	78 U	12 U
Di-n-butyl phthalate	220	1,700	78 U	21 U	78 U	13 U	79 U	15 U	79 U	6 U	79 U	8 U	79 U	15 U	78 U	20 U	77 U	12 U	78 U	12 U
Butyl Benzyl phthalate	4.9	64	78 U	20.6 U	78 U	13.5 U	79 U	14.7 U	530	40.8	79 U	8 U	79 U	14.7 U	78 U	20.4 U	77 U	12.3 U	78 U	12 U
Bis(2-ethylhexyl)phthalate	47	78	1,000	264	5,100	882	860	160	630	48.5	580	60	670	125	330	86	710	113	390	62
Di-n-octyl phthalate	58	4,500	78 U	21 U	120	21	79 U	15 U	79 U	6 U	79 U	8 U	130	24	78 U	20 U	77 U	12 U	78 U	12 U
PCBs																				
Aroclor 1016	12		62 U	16 U	61 U	11 U	63 U	12 U	19 U	5 U	19 U	2 U	60 U	11 U	59 U	15 U	56 U	9 U	20 U	3 U
Aroclor 1221	12		62 U	16 U	61 U	11 U	63 U	12 U	19 U	5 U	19 U	2 U	60 U	11 U	59 U	15 U	56 U	9 U	20 U	3 U
Aroclor 1232	12		62 U	16 U	61 U	11 U	63 U	12 U	19 U	5 U	19 U	2 U	60 U	11 U	59 U	15 U	56 U	9 U	20 U	3 U
Aroclor 1242	12		62 U	16 U	61 U	11 U	63 U	12 U	19 U	5 U	19 U	2 U	60 U	11 U	59 U	15 U	56 U	9 U	20 U	3 U
Aroclor 1248	12		62 U	16 U	61 U	11 U	63 U	12 U	19 U	5 U	19 U	2 U	60 U	11 U	59 U	15 U	56 U	9 U	20 U	3 U
Aroclor 1254	12		62 U	16 U	61 U	11 U	63 U	12 U	19 U	5 U	19 U	2 U	60 U	11 U	59 U	15 U	56 U	9 U	20 U	3 U
Aroclor 1260	12		62 U	16 U	61 U	11 U	63 U	12 U	19 U	5 U	19 U	2 U	60 U	11 U	59 U	15 U	56 U	9 U	20 U	3 U
Total PCBs	12	65	62 U	16 U	61 U	11 U	63 U	12 U	19 U	5 U	19 U	2 U	60 U	11 U	59 U	15 U	56 U	9 U	20 U	3 U

a. Located in section of line that has not been cleaned
 U = Not detected at concentration shown.
 J = Concentration less than the reporting limit.
 SQS = Sediment quality standard
 CSL = Cleanup screening level

Exceeds SQS
 Exceeds CSL

Table 12. Diagonal Ave S CSO/SD inline sediment sample results.

Sampling Station Location	Lateral Stations																			
	T2		T2B		MH21		SED1		SED2		SED3		T3A		MH18		T6B			
	Dakota lateral at 2nd Ave S	Dakota lateral at 4th Ave S	Dakota lateral below 2nd Ave S	Sediment removed (vactor pit sample)	Sediment removed (vactor pit sample)	Sediment removed (vactor pit sample)	Duwamish lateral at RR	Duw lateral at 6th and Snoqualmie	Denver lateral at S Alaska St											
Structure No.	SQS	CSL	D057-271	D057-272	D057-180	D057-190	D064-071	DW	OC	DW	OC	DW	OC	DW	OC	DW	OC			
Compound	(ug/kg)	(mg/kg)	(ug/kg)	(mg/kg)	(ug/kg)	(mg/kg)	(ug/kg)	(mg/kg)	(ug/kg)	(mg/kg)	(ug/kg)	(mg/kg)	(ug/kg)	(mg/kg)	(ug/kg)	(mg/kg)	(ug/kg)	(mg/kg)		
Date			2/28/2002		10/29/2004		11/1/2004		11/1/2004		11/1/2004		2/28/2002		2/18/2004		2/28/2002			
Total organic carbon (percent)			0.54		2.64		4.16		6.74		5.64		9.61		7.33		9.5		5.70	
LPAH	370	780	54	10	470	18								910	12	2,011	21	790	14	
Naphthalene	99	170	20 U	4 U	110 U	4 U	NA		140 U	2 U	120	2	57 U	1 U	290 U	4	41	0.4	230 U	4 U
Acenaphthylene	66	66	20 U	4 U	110 U	4 U	NA		140 U	2 U	75 U	1 U	57 U	1 U	290 U	4	79 U	1	230 U	4 U
Acenaphthene	16	57	20 U	4 U	110 U	4 U	NA		140 U	2 U	76	1	57 U	1 U	290 U	4	140	1	230 U	4 U
Fluorene	23	79	20 U	4 U	110 U	4 U	NA		140 U	2 U	89	2	57 U	1 U	290 U	4	140	1	230 U	4 U
Phenanthrene	100	480	54	10	470	18	NA		720	11	610	11	200	2	910	12	1,400	15	790	14
Anthracene	220	1200	20 U	4 U	110 U	4 U	NA		140 U	2 U	98	2	57 U	1 U	290 U	4	250	3	230 U	4 U
2-Methylnaphthalene	38	64	20 U	4 U	110 U	4 U	NA		230	3	91	2	58	1	290 U	4	40 J	0.4	230 U	4 U
HPAH	960	5,300	408	76	4,810	182	NA								7,530	103	8,220	87	5,870	103
Fluoranthene	160	1,200	74	14	1,300	49	NA		1,000	15	760	13	270	3	1,400	19	2,100	22	1,600	28
Pyrene	1,000	1,400	71	13	810	31	NA		1,400	21	900	16	340	4	1,400	19	1,600	17	980	17
Benzo(a)anthracene	110	270	31	6	300	11	NA		380	6	270	5	83	1	530	7	750	8	490	9
Chrysene	110	460	54	10	590	22	NA		620	9	430	8	160	2	880	12	950	10	810	14
Benzo(b)fluoranthene	230		41	8	630	24	NA		800	12	350	6	220	2	1,000	14	740	8	780	14
Benzo(k)fluoranthene	230		56	10	410	16	NA		590	9	200	4	160	2	840	11	840	9	660	12
Benzo(a)pyrene	99	210	37	7	410	16	NA		370	5	300	5	100	1	670	9	730	8	550	10
Indeno(1,2,3,c-d)pyrene	34	88	23	4	170	6	NA		310	5	220	4	86	1	370	5	280	3	230 U	4 U
Dibenzo(a,h)anthracene	12	33	20 U	4 U	110 U	4 U	NA		140 U	2 U	75 U	1 U	57 U	1 U	290 U	4	79 U	1	230 U	4 U
Benzo(g,h,i)perylene	31	78	21	4	190	7	NA		390	6	230	4	120	1	440	6	230	2	230 U	4 U
Total Benzofluoranthenes	230	450	97	18	1,040	39	NA		1,390	21	550	10	380	4	1,840	25	1,580	17	1,440	25
Phthalates																				
Dimethyl phthalate	53	53	140	26	110 U	4 U	NA		140 U	2 U	75 U	1 U	57 U	1	290 U	4	79 U	1	230 U	4 U
Diethyl phthalate	61	110	20 U	4 U	110 U	4 U	NA		140 U	2 U	75 U	1 U	57 U	1	290 U	4	79 U	1	230 U	4 U
Di-n-butyl phthalate	220	1,700	20 U	4 U	110 U	4 U	NA		420	6	75 U	1 U	57 U	1	290 U	4	2,200	23	230 U	4 U
Butyl Benzyl phthalate	4.9	64	23	4.3	110 U	4.2 U	NA		1,900	28	160	3	61	1	600	8.2	230	2	900	15.8
Bis(2-ethylhexyl)phthalate	47	78	230	43	3,800	144	NA		9,800	145	5,300	94	3,400	35	8900	121	3,100	33	5,300	93
Di-n-octyl phthalate	58	4,500	20 U	4 U	230	9			1,800	27	290	5	170	2	690	9	700	7	780	14
PCBs																				
Aroclor 1016	12		60 U	11 U	79 U	3 U	20 U	0.5 U	38 U	1 U	36 U	1 U	11 U	0.1 U	0.12 U	2	19 U	0.2	0.072 U	1 U
Aroclor 1221	12		60 U	11 U	79 U	3 U	39 Y	0.9 Y	13 U	0 U	36 U	1 U	11 U	0.1 U	0.12 U	2	19 U	0.2	0.072 U	1 U
Aroclor 1232	12		60 U	11 U	79 U	3 U	98 Y	2.4 Y	13 U	0.2 U	36 U	1 U	11 U	0.1 U	0.12 U	2	19 U	0.2	0.072 U	1 U
Aroclor 1242	12		60 U	11 U	79 U	3 U	98 Y	2.4 Y	13 U	0.2 U	36 U	1 U	11 U	0.1 U	0.12 U	2	19 U	0.2	0.072 U	1 U
Aroclor 1248	12		60 U	11 U	79 U	3 U	91	2.2	24	0.4	36 U	1 U	11 U	0.1 U	0.12 U	2	290 Y	3.1	370	6.5
Aroclor 1254	12		60 U	11 U	620	23.5	98 Y	2.4 Y	58	1	110 Y	2 Y	17	0.2	220	3.0	180	1.9	0.072 U	1 U
Aroclor 1260	12		60 U	11 U	320	12.1	39 Y	0.9 Y	35	1	140	2	11 U	0.1 U	160	2.2	73 U	0.8	110	1.9
Total PCBs	12	65	60 U	11 U	940	35.6	91	2.2	117	2	140	2	17	0.2	380	5.2	470	4.9	480	8.4

a. Located in section of line that has not been cleaned
 U = Not detected at concentration shown.
 J = Concentration less than the reporting limit.
 SQS = Sediment quality standard
 CSL = Cleanup screening level

Table 12. Diagonal Ave S CSO/SD inline sediment sample results.

Sampling Station Location	Lateral Stations					
			MH17		T8B	
			1st Ave S lateral at RR		1st Ave S lateral at S Andover St	
Structure No.		D057-229		D057-283		
Compound	SQS	CSL	DW	OC	DW	OC
			(ug/kg)	(mg/kg)	(ug/kg)	(mg/kg)
Date			2/18/2004		2/28/2002	
Total organic carbon (percent)				4.1		1.98
LPAH	370	780	461	11	490	25
Naphthalene	99	170	50 J	1	98 U	5 U
Acenaphthylene	66	66	79 U	2	98 U	5 U
Acenaphthene	16	57	120	3	98 U	5 U
Fluorene	23	79	81	2	98 U	5 U
Phenanthrene	100	480	210	5	490	25
Anthracene	220	1200	79 U	2	98 U	5 U
2-Methylnaphthalene	38	64	79 U	2	98 U	5 U
HPAH	960	5,300	1,671	41	4,840	244
Fluoranthene	160	1,200	470	11	1,200	61
Pyrene	1,000	1,400	340	8	680	34
Benzo(a)anthracene	110	270	110	3	400	20
Chrysene	110	460	200	5	590	30
Benzo(b)fluoranthene	230		180	4	570	29
Benzo(k)fluoranthene	230		120	3	630	32
Benzo(a)pyrene	99	210	130	3	470	24
Indeno(1,2,3,c-d)pyrene	34	88	60 J	1	150	8
Dibenzo(a,h)anthracene	12	33	79 U	2	98 U	5 U
Benzo(g,h,i)perylene	31	78	61 J	1	150	8
Total Benzofluoranthenes	230	450	300	7	1,200	61
Phthalates						
Dimethyl phthalate	53	53	44 J	1	98 U	5 U
Diethyl phthalate	61	110	79 U	2	98 U	5 U
Di-n-butyl phthalate	220	1,700	79 U	2	98 U	5 U
Butyl Benzyl phthalate	4.9	64	73 J	2	100	5.1
Bis(2-ethylhexyl)phthalate	47	78	2,500	61	5,500	278
Di-n-octyl phthalate	58	4,500	110	3	700	35
PCBs						
Aroclor 1016	12		20 U	0.5	67 U	3 U
Aroclor 1221	12		20 U	0.5	67 U	3 U
Aroclor 1232	12		20 U	0.5	67 U	3 U
Aroclor 1242	12		20 U	0.5	67 U	3 U
Aroclor 1248	12		20 U	0.5	67 U	3 U
Aroclor 1254	12		20 U	0.5	67 U	3 U
Aroclor 1260	12		20 U	0.5	67 U	3 U
Total PCBs	12	65	20.0 U	0.5	67 U	3 U

a. Located in section of line that has not been cleaned
 U = Not detected at concentration shown.
 J = Concentration less than the reporting limit.
 SQS = Sediment quality standard
 CSL = Cleanup screening level

Table 13: Dallas Ave S and Vicinity Sample Results.

Map Label	Sample ID	Sample Date	Location	Sample Depth (ft)	TOC (%)	TPH-Diesel (mg/kg)	TPH-Oil (mg/kg)	PCBs (mg/kg OC)	BEHP ^a (ug/kg DW)	BEHP ^a (mg/kg OC)	PCBs (ppm)
Dirt Collected From Roadway Surface and Catch Basins											
SD1	ROWT1	7/22/2004	W edge of Dallas Ave S at OWSEP1	0	0.78	180	730	33	800	103	0.26
SD2	ROWT2	7/22/2004	E edge of Dallas Ave S at entrance to T117	0	2.18	1,200	4,200	73	N/A	N/A	1.6
SD3	ROWT3	7/22/2004	CB on Dallas Ave S at NW corner of Port bldg at S end T117	0	7.37	4,600	9,500	95	N/A	N/A	7
SD4	ROWT4	7/22/2004	5-pt composite from storage area in ROW S of S Donovan St	0	2.82	3,200	8,300	78	N/A	N/A	2.2
SD5	ROWT5	7/22/2004	N edge of S Donovan St at SE corner of Basin Oil prop	0	1.84	55	310	261	N/A	N/A	4.8
SD6	ROWT6	7/22/2004	NW corner of S Donovan St and 17th Ave S	0	1.01	34	190	47	N/A	N/A	0.47
SD7	ROWT7	7/22/2004	5-pt composite along east edge of 17th Ave S between	0	3.36	370	2,200	182	N/A	N/A	6.1
SD8	ROWT8	7/22/2004	CB on west side of 17th Ave S at #8609	0	4.35	650	3,000	211	990	23	9.2
SD9	ROWT9	7/22/2004	2-pt composite N and S edge of Dallas Ave S and W of 17th Ave S	0	2.14	88	790	89	N/A	N/A	1.9
SD10	ROWT10	9/23/2004	Inlet at SE corner of 14th Ave S and S Trenton St	0	5.80	N/A	N/A	0.48	N/A	N/A	0.028
SD11	ROWT11	9/23/2004	Composite of street dust and dirt from inlet on S Cloverdale St on E side 14th Ave S	0	6.48	N/A	N/A	9	N/A	N/A	0.58
SD12	ROWT12	9/23/2004	Composite of street dust and dirt from inlet on S Donovan St just east of 14th Ave S	0	4.08	N/A	N/A	11	N/A	N/A	0.46
SD13	ROWT13	9/23/2004	Duplicate of 12	0	4.57	N/A	N/A	10	N/A	N/A	0.46
SD14	ROWT14	9/23/2004	Inlet at SE corner of 14th Ave S and Dallas Ave S	0	9.41	N/A	N/A	1.8	N/A	N/A	0.17
SD15	ROWT15	9/23/2004	Composite of street dust on N and S side of Dallas Ave	0	1.38	N/A	N/A	225	N/A	N/A	3.1
SD16	ROWT16	9/23/2004	CB sample at SE corner of 16th Ave S and S Cloverdale St	0	3.67	N/A	N/A	10	N/A	N/A	0.36
SD17	ROWT17	9/23/2004	Composite of street dust on N side of S Donovan St just west of 16th Ave S	0	2.59	N/A	N/A	13	N/A	N/A	0.34
SD18	ROWT18	9/23/2004	Catch basin at 17th Ave S and S Donovan St	0	2.88	N/A	N/A	13	N/A	N/A	0.36
SD19	ROWT19	10/26/2004	Road shoulder in front of 8523 Dallas Ave S	0							0.163
SD20	ROWT20	10/27/2004	Road shoulder across street from 8525 Dallas Ave S	0							1.3
SD21	ROWT21	10/27/2004	Road shoulder in front of 8519 Dallas Ave S	0							0.075
SD22	ROWT22	10/27/2004	Road shoulder in front driveway at 1437 S Donovan St	0							0.028
SD25	ROWT25	12/8/2004	CB at SE Corner of S Cloverdale St and 10th Ave S	0	8.35						<0.04
SD27	ROWT27	12/8/2004	CB at SW Corner of S Sullivan St and 8th Ave S	0	6.01						<0.05
SD28	ROWT28	12/8/2004	CB at NE corner of S Sullivan St and 12th Ave S	0	7.44						<0.02
SD29	ROWT29	12/8/2004	CB at NW corner of S Cloverdale St and 12th Ave S	0	0.00						<0.039
SD30	ROWT30	12/8/2004	CB at SW corner of S Donovan St and 12th Ave S	0	0.00						0.82
Soil Samples from Right-of-Way											
TP1	TP1-0.5	11/16/2004	Dallas Ave S at W edge 17th Ave S	0.5'							9.8
TP1	TP1-1.0	11/16/2004	Dallas Ave S at W edge 17th Ave S	1'							1.1
TP2	TP2-0.5	11/16/2004	Dallas Ave S and 17th Ave S	0.5'							7
TP2	TP2-1.0	11/16/2004	Dallas Ave S and 17th Ave S	1'							0.36
TP3	TP3-0.5	11/16/2004	17th Ave S at S edge Dallas Ave S	0.5'							4.7
TP3	TP3-1.0	11/16/2004	17th Ave S at S edge Dallas Ave S	1'							1.7
TP4	TP4-0.5	11/16/2004	17th Ave S at #8609	0.5'							38
TP4	TP4-1.0	11/16/2004	17th Ave S at #8609	1'							0.28
TP5	TP5-1.0	11/16/2004	17th Ave S at S edge #8609	1'							0.47
TP5	TP5-2.0	11/16/2004	17th Ave S at S edge #8609	2'							0.038
TP5	TP5-3.0	11/16/2004	17th Ave S at S edge #8609	3'							0.055

Table 13: Dallas Ave S and Vicinity Sample Results.

Map Label	Sample ID	Sample Date	Location	Sample Depth (ft)	TOC (%)	TPH-Diesel (mg/kg)	TPH-Oil (mg/kg)	PCBs (mg/kg OC)	BEHP ^a (ug/kg DW)	BEHP ^a (mg/kg OC)	PCBs (ppm)
TP5	TP5-4.0	11/16/2004	17th Ave S at S edge #8609	4'							<0.04
TP5	TP5-5.0	11/16/2004	17th Ave S at S edge #8609	5'							<0.039
TP6	TP6-1.0	11/16/2004	Dallas Ave S at BO1	1'							12
TP6	TP6-2.0	11/16/2004	Dallas Ave S at BO1	2'							0.34
TP6	TP6-3.0	11/16/2004	Dallas Ave S at BO1	3'							0.1
TP7	TP7-1.0	11/17/2004	Dallas Ave S at BO2	1'							7.5
TP7	TP7-2.0	11/17/2004	Dallas Ave S at BO2	2'							0.59
TP7	TP7-3.0	11/17/2004	Dallas Ave S at BO2	3'							0.15
TP8	TP8-1.0	11/17/2004	Dallas Ave S at BO3	1'							11
TP8	TP8-2.0	11/17/2004	Dallas Ave S at BO3	2'							0.24
TP8	TP8-3.0	11/17/2004	Dallas Ave S at BO3	3'							0.045
TP9	TP9-1.0	11/17/2004	Dallas Ave S at S Donovan St	1'							18
TP9	TP9-2.0	11/17/2004	Dallas Ave S at S Donovan St	2'							21
TP9	TP9-3.0	11/17/2004	Dallas Ave S at S Donovan St	3'							<0.042
TP10	TP10-1.0	11/17/2004	CB at Dallas Ave S and S Donovan St	1'							2.6
TP10	TP10-2.0	11/17/2004	CB at Dallas Ave S and S Donovan St	2'							0.17
TP10	TP10-3.0	11/17/2004	CB at Dallas Ave S and S Donovan St	3'							0.046
TP10	TP10-4.0	11/17/2004	CB at Dallas Ave S and S Donovan St	4'							0.031
TP10	TP10-5.0	11/17/2004	CB at Dallas Ave S and S Donovan St	5'							0.031
TP11	TP11-1.0	11/17/2004	S Donovan St1	1'							1.9
TP11	TP11-2.0	11/17/2004	S Donovan St1	2'							0.15
TP11	TP11-3.0	11/17/2004	S Donovan St1	3'							0.082
TP12	TP12-1.0	11/17/2004	S Donovan St2	1'							46
TP12	TP12-2.0	11/17/2004	S Donovan St2	2'							7.6
TP12	TP12-3.0	11/17/2004	S Donovan St2	3'							0.36
TP13	TP13-1.0	11/17/2004	S Donovan St3	1'							18
TP13	TP13-2.0	11/17/2004	S Donovan St3	2'							0.81
TP13	TP13-3.0	11/17/2004	S Donovan St3	3'							0.2
TP14	TP14-1.0	11/17/2004	S Donovan St4	1'							0.41
TP14	TP14-2.0	11/17/2004	S Donovan St4	2'							0.12
TP14	TP14-3.0	11/17/2004	S Donovan St4	3'							0.059
TP15	17-C-0.5	11/3/2004	17th Ave S and S Donovan St center	0.5'							3.3
TP15	17-C-1.0	11/3/2004	17th Ave S and S Donovan St center	1'							5.5
TP16	17-C2-0.5	11/3/2004	17th Ave S @ 8617 center	0.5'							0.94
TP16	17-C2-1.0	11/3/2004	17th Ave S @ 8617 center	1'							0.16
TP17	17-C3-0.5	11/4/2004	17th Ave S road end center	0.5'							0.014
TP17	17-C3-1.0	11/4/2004	17th Ave S road end center	1'							0.016
TP18	17-E1-0.5	11/3/2004	17th Ave S @ 8620 east	0.5'							1.5
TP18	17-E1-1.0	11/3/2004	17th Ave S @ 8620 east	1'							0.94
TP19	17-E2-0.5	11/3/2004	17th Ave S @ N end Basin oil east	0.5'							14
TP19	17-E2-1.0	11/3/2004	17th Ave S @ N end Basin oil east	1'							11
TP19	17-E2-2.0	11/3/2004	17th Ave S @ N end Basin oil east	2'							12
TP20	17-W1-0.5	11/2/2004	17th Ave S @ 8609 west	0.5'							6.3
TP20	17-W1-1.0	11/2/2004	17th Ave S @ 8609 west	1'							4.5
TP20	17-W1-2.0	11/2/2004	17th Ave S @ 8609 west	2'							1.6
TP21	17-W2-0.5	11/2/2004	17th Ave S @ 8601 west	0.5'							8.6
TP21	17-W2-1.0	11/2/2004	17th Ave S @ 8601 west	1'							0.88
TP21	17-W2-2.0	11/2/2004	17th Ave S @ 8601 west	2'							1.2
TP22	17-W3-0.5	11/3/2004	17th Ave S @ 8620 west	0.5'							0.12
TP22	17-W3-1.0	11/3/2004	17th Ave S @ 8620 west	1'							0.09

Table 13: Dallas Ave S and Vicinity Sample Results.

Map Label	Sample ID	Sample Date	Location	Sample Depth (ft)	TOC (%)	TPH-Diesel (mg/kg)	TPH-Oil (mg/kg)	PCBs (mg/kg OC)	BEHP ^a (ug/kg DW)	BEHP ^a (mg/kg OC)	PCBs (ppm)
TP23	D-C1-0.5	11/3/2004	Dallas Ave S across from Basin Oil entrance center	0.5'							4.9
TP23	D-C1-1.0	11/3/2004	Dallas Ave S across from Basin Oil entrance center	1'							1.7
TP24	D-E1-0.5	11/4/2004	Dallas Ave S @ T117 south entrance	0.5'							7
TP24	D-E1-1.0	11/4/2004	Dallas Ave S @ T117 south entrance	1'							1.9
TP25	D-E2-0.5	11/2/2004	E side Dallas Ave S @ T117 (mid)	0.5'							6.8
TP25	D-E2-1.0	11/2/2004	E side Dallas Ave S @ T117 (mid)	1'							6.5
TP26	D-E3-0.5	11/2/2004	E side Dallas Ave S @ center entrance	0.5'							66
TP26	D-E3-1.0	11/2/2004	E side Dallas Ave S @ center entrance	1'							13
TP27	D-N2-0.5	11/4/2004	N side Dallas Ave S @ marina N entrance	0.5'							0.66
TP27	D-N2-1.0	11/4/2004	N side Dallas Ave S @ marina N entrance	1'							0.1
TP28	D-S1-0.5	11/2/2004	S side Dallas Ave S W of 17th Ave S	0.5'							9.5
TP28	D-S1-1.0	11/2/2004	S side Dallas Ave S W of 17th Ave S	1'							8.7
TP29	D-S2-0.5	11/3/2004	S side Dallas Ave S W of 16th Ave S	0.5'							18
TP29	D-S2-1.0	11/3/2004	S side Dallas Ave S W of 16th Ave S	1'							3.6
TP30	D-S3-0.5	11/3/2004	S side Dallas Ave S @ marina N entrance	0.5'							0.3
TP30	D-S3-1.0	11/3/2004	S side Dallas Ave S @ marina N entrance	1'							0.13
TP31	TP31-0.5	12/7/2004	8523 Dallas Ave S (base of 6" excavation)	0.5							0.82
TP32	TP32-0.5	12/7/2004	8525 Dallas Ave S (base of 6" excavation)	0.5							0.019
TP33	TP33-0.5	12/8/2004	8529 Dallas Ave S (base of 6" excavation)	0.5							0.02
TP34	TP34-0.5	12/8/2004	Dupe of TP33	0.5							0.02
TP35	TP35-1.0	12/8/2004	1440 S Cloverdale (base of 12" excavation)	1							0.46
TP36	TP36-0.5	12/9/2004	S Park Marina east (base of 6" excavation)	0.5							0.02
TP37	TP37-0.5	12/9/2004	Dallas Ave across from boat storage yard (base of 6" exc	0.5							5.8
TP39	TP39-0.5	12/9/2004	S Park Marina west (base of 6" excavation)	0.5							0.44
TP40	TP40-0.5	12/10/2004	8601 17th Ave S (Dallas side #1)-base of 6" excavation	0.5							480
TP40	TP40-1.0	12/10/2004	8601 17th Ave S (Dallas side #1)	1							0.68
TP40	TP40-2.0	12/10/2004	8601 17th Ave S (Dallas side #1)	2							0.34
TP41	TP41-0.5	12/10/2004	Dallas Ave S at boat storage yard--base of 6" excavation	0.5							140
TP41	TP41-1.0	12/10/2004	Dallas Ave S at boat storage yard	1							12
TP41	TP41-2.0	12/10/2004	Dallas Ave S at boat storage yard	2							5.9
TP42	TP42-0.5	12/10/2004	8601 17th Ave S (Dallas side #2-in front of garage)--base	0.5							100
TP42	TP42-1.0	12/10/2004	8601 17th Ave S (Dallas side #2-in front of garage)	1							0.57
TP42	TP42-2.0	12/10/2004	8601 17th Ave S (Dallas side #2-in front of garage)	2							0.28
TP43	TP43-1.0	12/12/2004	8601 17th Ave S (17th side #1)--base of 12" excavation	1							0.019
TP43	TP43-2.0	12/12/2004	8601 17th Ave S (17th side #1)	2							0.02
TP44	TP44-1.0	12/12/2004	8601 17th Ave S (17th side #2)--base of 12" excavation	1							0.02
TP44	TP44-2.5	12/12/2004	8601 17th Ave S (17th side #2)	2.5							0.02
TP45	ROWS0-1	10/26/2004	Outside fence at 8609 17th Ave S	0							4.9
TP45	ROWS6-1	10/26/2004	Outside fence at 8609 17th Ave S	6"							3.6
TP46	ROWS0-2	10/26/2004	Outside fence at 8601 17th Ave S	0							21
TP46	ROWS6-2	10/26/2004	Outside fence at 8601 17th Ave S	6"							93
TP47	ROWS0-3	10/26/2004	Outside fence at 1440 S Cloverdale (Dallas ave side)	0							6.2
TP47	ROWS6-3	10/26/2004	6-in depth at 1440	6"							2.8
TP48	ROWS0-4	10/26/2004	Surface soil next to sidewalk at 8529 Dallas Ave S	0							2.2
TP48	ROWS6-4	10/26/2004	8529 Dallas Ave S	6"							0.99
TP49	ROWS0-5	10/27/2004	Surface soil next to sidewalk at 8523 Dallas Ave S	0							1.2
TP49	ROWS6-5	10/27/2004	6-in depth at 8523	6"							0.85
TP49	ROWS0-6	10/27/2004	Dupe of ROWS0-5	0							1.1

Table 13: Dallas Ave S and Vicinity Sample Results.

Map Label	Sample ID	Sample Date	Location	Sample Depth (ft)	TOC (%)	TPH-Diesel (mg/kg)	TPH-Oil (mg/kg)	PCBs (mg/kg OC)	BEHP ^a (ug/kg DW)	BEHP ^a (mg/kg OC)	PCBs (ppm)
TP50	ROWS0-7	10/27/2004	Front yard at 8519 Dallas Ave S	0							0.32
TP50	ROWS6-7	10/27/2004	6-in depth at 8519	6"							0.066
Yard Samples											
YS1	8519-1	11/17/2004	8519 Dallas Ave S (west side front yard)	2"							0.097
YS1	8519-2	11/17/2004	8519 Dallas Ave S (west side front yard)	4"							0.087
YS2	8519-3	11/17/2004	8519 Dallas Ave S (east side front yard)	2"							0.091
YS2	8519-4	11/17/2004	8519 Dallas Ave S (east side front yard)	4"							0.086
YS3	8525-1	11/17/2004	8525 Dallas Ave S (east side of house)	2"							0.2
YS3	8525-2	11/17/2004	8525 Dallas Ave S (east side of house)	4"							0.22
YS4	8525-3	11/17/2004	8525 Dallas Ave S (backyard by alley)	2"							0.15
YS4	8525-4	11/17/2004	8525 Dallas Ave S (backyard by alley)	4"							0.14
YS5	8529-1	11/17/2004	8529 Dallas Ave S (west of entry walk)	2"							0.34
YS5	8529-2	11/17/2004	8529 Dallas Ave S (west of entry walk)	4"							0.34
YS6	8529-3	11/17/2004	8529 Dallas Ave S (east of driveway)	2"							0.13
YS6	8529-4	11/17/2004	8529 Dallas Ave S (east of driveway)	4"							0.18
YS7	8529-5	11/17/2004	8529 Dallas Ave S (backyard)	2"							0.15
YS8	1440-7	11/17/2004	1440 S Cloverdale St (west end garden)	2"							<0.067
YS8	1440-8	11/17/2004	1440 S Cloverdale St (west end garden)	4"							<0.067
YS9	1440-5	11/17/2004	1440 S Cloverdale St (adj to pond)	2"							0.43
YS9	1440-6	11/17/2004	1440 S Cloverdale St (adj to pond)	4"							0.2
YS10	1417-1	11/17/2004	1417 S Cloverdale St (front yard)	2"							0.088
YS11	1417-2	11/17/2004	1417 S Cloverdale St (garden in backyard)	2"							0.15
YS12	1412-1	11/17/2004	1412 S Donovan St (garden in front yard)	2"							0.073
YS13	1412-2	11/17/2004	1412 S Donovan St (garden in backyard)	2"							0.083
YS14	8609-5	11/17/2004	8609 17th Ave S (garden in backyard)	2"							<0.058
YS15	8523-3	11/17/2004	8523 Dallas Ave S (front yard)	2"							0.22
YS15	8523-4	11/17/2004	8523 Dallas Ave S (front yard)	4"							0.11
YS16	8523-1	11/17/2004	8523 Dallas Ave S (front yard)	2"							0.12
YS16	8523-2	11/17/2004	8523 Dallas Ave S (front yard)	4"							0.097
YS17	8601-1	10/27/2004	8601 17th Ave S (front yard)	1"							37
YS17	8601-2	10/27/2004	8601 17th Ave S (front yard)	4"							46
YS18	8609-1	10/27/2004	8609 17th Ave S (next to sump)	1"							3.4
YS18	8609-2	10/27/2004	8609 17th Ave S (next to sump)	4"							1.4
YS19	8609-3	10/27/2004	8609 17th Ave S (just north of sidewalk entrance)	1"							0.85
YS19	8609-4	10/27/2004	8609 17th Ave S (just north of sidewalk entrance)	4"							0.53
YS20	1440-3	10/27/2004	1440 S Cloverdale St (west end garden)	4"							0.99
YS21	1440-4	10/27/2004	1440 S Cloverdale St (east end garden)	4"							0.17
YS22	1440-1	10/27/2004	1440 S Cloverdale (next to sidewalk on Dallas Ave S)	1"							ND
YS22	1440-2	10/27/2004	1440 S Cloverdale (next to sidewalk on Dallas Ave S)	4"							ND

Exceeds state cleanup level for unrestricted land use (1 ppm PCBs)

FIGURES

FIGURES

- Figure 1. Areas discharging to the Lower Duwamish Waterway.
- Figure 2. Outfalls in the Lower Duwamish Waterway.
- Figure 3. Businesses inspected June – December, 2004.
- Figure 4. Key manhole sampling locations.
- Figure 5. Catch basin sampling locations.
- Figure 6. Diagonal Ave S CSO/SD basin.
- Figure 7. Land use in Diagonal Ave S CSO/SD basin.
- Figure 8. Businesses inspected in Diagonal Ave S CSO/SD basin.
- Figure 9. Sediment trap locations in Diagonal Ave S CSO/SD basin.
- Figure 10. Catch basin samples collected in the Diagonal Ave S CSO/SD basin.
- Figure 11. Sediment sampling locations in Diagonal Ave S CSO/SD.
- Figure 12. Diagonal Ave S CSO/SD cleaning.
- Figure 13. Businesses inspected in Slip 4 drainage basin.
- Figure 14. Proposed sediment trap locations in Slip 4 storm drains.
- Figure 15. Businesses inspected in areas draining to Slip 5 and Slip 6.
- Figure 16. Sampling locations in vicinity of T117.
- Figure 17. Dallas Ave S sampling locations.

APPENDIX A

Business Inspection Process and Field Form

BUSINESS INSPECTION PROGRAM

Cross-Training

In January 2003, KCIW and SPU organized an initial training session to ensure that all inspectors involved in the project were well versed in the inspection procedures and capable of completing all aspects of an inspection (e.g., stormwater, industrial waste, and hazardous waste). The training was attended by more than 30 inspectors from 6 agencies. A training manual with accompanying reference material was provided to each inspector. In addition, a field form was developed to help the inspectors and ensure consistency (see Appendix A). Each of the four county and city agencies involved in the inspection program has designated a lead inspector who is responsible for coordinating the work of the other inspectors in their agency, distributing information, and meeting with the two project co-leads to discuss project procedures.

Business Inspection Process

Inspections are conducted in a specific geographic area. Inspections are initiated as follows:

- Postcards are mailed to all businesses in a given geographical area alerting them that inspectors will be coming to their neighborhood. The business lists used for mailing are purchased from a vendor.
- Inspectors are assigned to geographic subareas and given lists of known businesses in the subareas plus any other information available in county and/or city files including detailed drainage maps. With this information, inspectors conduct a sweep through the area to visually survey all businesses and determine which need to be inspected. In areas served by separated storm drains, inspectors conduct a complete sweep of the entire basin. In areas served by a combined system, inspectors survey only the commercial, industrial, institutional, and mixed use (retail/housing) areas. Residential areas are not surveyed.
- Businesses that do not conduct outside activities and those that do not use hazardous materials or involve industrial processing are not inspected. A list of businesses not inspected is being maintained to record all businesses evaluated as part of this effort.

Often it is not possible to determine if a full inspection is warranted at some businesses from a simple visual survey. In those cases, inspectors conduct an abbreviated inspection, termed a screening visit to assess whether a full inspection is needed. During a screening visit, inspectors talk to businesses about their site activities and based on this conversation determine if a full inspection is needed. If not, the inspector collects a business card and fills out a form documenting basic site information.

Full Inspections

Teams of 1 to 2 inspectors conduct onsite inspections of high-risk businesses. Inspectors check the following issues:

Industrial wastewater. Inspectors look for industrial processes that use water and/or generate wastewater, inspect any pretreatment systems, and note chemicals expected to be discharged.

Companies required to have industrial waste permits/authorizations but do not are referred to King County Industrial Waste for permitting.

Wastes/materials disposal. Inspectors review storage, handling, and disposal practices for a long list of waste/materials (e.g., acids, antifreeze, fluorescent light tubes, oils, solvents, phthalate-containing materials, and PCB-containing materials).

Spill Prevention. Inspectors evaluate spill prevention and cleanup practices for inside and outside areas at each facility.

Stormwater. Inspectors check outdoor areas for activities that have a high risk of polluting stormwater. High-risk pollution generating activities include fueling operations, vehicle/equipment maintenance and washing, outside storage (liquids in above ground or portable containers, vehicles/equipment, and non-containerized materials, by-products, or finished products), manufacturing, equipment/vehicle/building/ship maintenance and repair, painting or finishing of vehicles/boats/buildings/equipment, landscape maintenance/construction, and construction activities. In addition, inspectors examine onsite catch basins and other stormwater structures to ensure that these facilities are maintained correctly.

Corrective Actions and Follow-up

Inspectors discuss pollution prevention requirements with company representatives during the inspection and also send a follow up letter that identifies what corrective actions are needed and establishes deadlines for completing those actions. Unless the problem poses an immediate threat to the environment, businesses are typically allowed 30 days to make the necessary improvements. After the deadline, the inspector re-inspects. If the company has not made the necessary improvements at the time of the re-inspection, the inspector refers the problem to the agency with primary authority (SPU for stormwater issues, King County for industrial pretreatment issues, and Ecology for contaminated site issues) enforcement actions.

Businesses with the potential to recontaminate sediment offshore of the Diagonal Ave S CSO/SD following cleanup will be placed on more intensive routine inspection schedules than they would have received prior to the inspection project and may be monitored for specific chemicals of concern.

Data Management

All information collected during inspections is maintained in hard copy files at SPU. Files typically include the following information: original inspection field forms, photo documentation, site maps, copies of all letters sent to the business, copies of industrial waste discharge authorizations, and miscellaneous information provided by the business such as material safety data sheets (MSDS), spill prevention plans, or waste disposal manifests. In addition, information from field inspection forms is entered into an Access database built specifically for this project.

Attach
Business Card

**Joint Inspection Program
Lower Duwamish Waterway
King County Industrial Waste
Seattle Public Utilities,
Local Hazardous Waste
Management Program**

Date _____ Initial Inspection Follow-Up Inspection Screening Visit
Lead Inspector _____ Agency and Team _____
Other Inspector _____ Agency and Team _____
Business Name _____ DBA _____
Business Type _____
SIC CODE _____ NAICS CODE _____ Observed SIC Code _____

Site Address:

Street _____
City _____ Zip _____
Site Guide _____ Position / Title _____
Phone No. _____ Cell Number _____ Fax _____
Drainage Basin/Sub Basin: _____ Combined Separated Partially separated

Mail Address:

Same as Site Address Home Based Business Multiple sites in Area?
Street /P.O. Box _____
City _____ Zip _____
Owner / Manager _____
Phone No. _____ Cell Number _____ Fax _____

Recommend for CB sampling? Y / N CB sampling date _____

Date of Completed Inspections:

HW _____ IW _____ Stormwater _____

Date Corrective Actions Requested:

HW _____ IW _____ Stormwater _____ Spill Mngt _____

Date of Agency Referrals:

Referred to KCHW _____ Referred to KCIW _____ Referred to SPU _____

Date Corrective Action Achieved:

HW _____ IW _____ Stormwater _____ Spill Mngt _____

DATE OBSERVED OVERALL COMPLIANCE ACHIEVED _____

Company Name: _____

General Abbreviation Guide:

Y = Yes
N = No
U = Unknown
NA = Not Applicable
SS = Sanitary Sewer
SD = Storm Drain

Disposal Code Guide:

Air = Air Release
B = Burned on site for energy recovery
BIO = Disposed in biohazardous waste
HHW = Household Hazardous Waste drop-off site
SOIL = Disposed of onto the ground (an impervious surface)
REC = Recycled On-Site
SD = Discharged to storm drain or surface water
SEP = Discharged to septic system
SS = Discharged to sanitary sewer
SW = Solid waste
TBG = Treated by generator (specific method)
TSDR = Off-site treatment, storage, disposal or recycler/reclaimer
ND = Never disposed of / accumulating
UN = Unknown

Use only these codes for Volume, Mass or Unit of Product or Waste

G = Gallons
LB = Pounds
EA = Each

Use only these codes for Time (for use in rate for disposal)

D = Day
W = Week
M = Month
Q = Quarterly
Y = Annually

Company Name: _____

CORRECTIVE ACTION REQUESTED

INDUSTRIAL WASTE CORRECTIONS:

- Facility needs to be permitted
- Discharge needs pretreatment
- Inadequate maintenance of pretreatment system

HAZARDOUS WASTE CORRECTIONS:

- Waste improperly disposed
- No waste disposal documentation
- Product/Waste improperly stored
- Containers improperly labeled Degraded or open chemical containers

SPILL MANAGEMENT CORRECTIONS:

- Inadequate spill response procedures
- Inadequate spill response materials
- No employee education on spill response

STORMWATER CORRECTIONS:

- Storm drain facility needs to be cleaned
- Missing or damaged components to storm drain facility
- Storm drain facility parts inaccessible
- Illegal plumbing connection
- Washwater or process wastewater discharged to storm
- Leaks and spills from storage areas
- Inadequate housekeeping
- Improper container storage
- Improper non-containerized material storage
- Improper loading/unloading areas
- Improper material transfer practices
- Improper fueling operations
- Improper application of pesticides and herbicides
- Improper maintenance of vehicles and equipment
- Improper washing practices

Company Name: _____

INDUSTRIAL WASTEWATER – *Select any industrial processes or activities generating wastewater discharged to sanitary sewer*

<input type="checkbox"/>	N/A – No industrial wastewater discharged to sewer		
<input type="checkbox"/>	<u>Industrial process/activity generating wastewater</u>	<u>Quantity / Time (Use Codes)</u>	<u>Method O.K.?</u>
<input type="checkbox"/>	Cleaning & rinsing manufactured parts	_____	<u>Y/N/U</u>
<input type="checkbox"/>	Cleaning production equipment	_____	<u>Y/N/U</u>
<input type="checkbox"/>	Cleaning & sanitation of production area	_____	<u>Y/N/U</u>
<input type="checkbox"/>	Photo processing wastewater	_____	<u>Y/N/U</u>
<input type="checkbox"/>	Parts tumbler / deburr	_____	<u>Y/N/U</u>
<input type="checkbox"/>	Non-contact cooling water	_____	<u>Y/N/U</u>
<input type="checkbox"/>	Contact cooling water	_____	<u>Y/N/U</u>
<input type="checkbox"/>	Boiler feed/blow down	_____	<u>Y/N/U</u>
<input type="checkbox"/>	Silk screen washing	_____	<u>Y/N/U</u>
<input type="checkbox"/>	Water jet cutting	_____	<u>Y/N/U</u>
<input type="checkbox"/>	Aqueous Parts Cleaning	_____	<u>Y/N/U</u>
<input type="checkbox"/>	Other _____	_____	<u>Y/N/U</u>

Observations: _____

PRETREATMENT - Describe wastewater pretreatment system(s) for discharges to sanitary/combined sewers

<input type="checkbox"/>	N/A – No industrial wastes discharged to the sanitary/combined sewer		
<input type="checkbox"/>	N/A – No pretreatment provided for industrial wastes discharged to sewer		
<input type="checkbox"/>	<u>Pretreatment System</u>	<u>Purpose</u>	<u>Maintenance schedule</u>
1.	<u>Oil/Water Separator</u>	_____	_____
2.	<u>pH Neutralization</u>	_____	_____
3.	<u>Filtration</u>	_____	_____
4.	<u>Chemical Precipitation</u>	_____	_____
5.	_____	_____	_____

Observations regarding condition/operation/maintenance: _____

Pollutants expected to be discharged to the sanitary sewer following pretreatment:

- None Oils Heavy metals (specify) Solids BTEX
 Solvents PCBs Acidic solutions Caustic solutions Detergents
 Phthalates Other (Specify) _____

Notes: _____

Company Name: _____

WASTES/MATERIAL DISPOSAL - Describe liquid wastes and sludges removed by means other than sanitary / combined sewers (e.g., temporarily stored onsite and shipped offsite for disposal)?

Type of Waste / Substance	Quantity / Time (use codes)	Manifests	Labeling	Disposal Method (use codes)	Method O.K. ?
Acids		Y / N	Y / N		Y / N / U
Antifreeze		Y / N	Y / N		Y / N / U
Batteries		Y / N	Y / N		Y / N / U
Caustic Bases		Y / N	Y / N		Y / N / U
Dyes and Inks		Y / N	Y / N		Y / N / U
Fluorescent Light Tubes		Y / N	Y / N		Y / N / U
Metals		Y / N	Y / N		Y / N / U
Paints / Coatings		Y / N	Y / N		Y / N / U
Pesticides / Herbicides/ Fertilizers		Y / N	Y / N		Y / N / U
Petroleum / Oils (e.g., hydraulic, cutting, motor oil)		Y / N	Y / N		Y / N / U
Photochemicals / X-ray Fixer		Y / N	Y / N		Y / N / U
Solvents		Y / N	Y / N		Y / N / U
Toxics / Poisons		Y / N	Y / N		Y / N / U
Phthalate Containing Materials		Y / N	Y / N		Y / N / U
PCB Containing Materials		Y / N	Y / N		Y / N / U
Other:		Y / N	Y / N		Y / N / U

SPILL PREVENTION - Describe spill prevention measures at each area below:

Area	Inside/ Outside	Interior floor drains to sewer	Secondary Containment	Notes
Fueling	In	SS / SD / None / U	Y / N / NA	
	Out		Y / N / NA	
Chemical Storage	In	SS / SD / None / U	Y / N / NA	
	Out		Y / N / NA	
Waste Storage	In	SS / SD / None / U	Y / N / NA	
	Out		Y / N / NA	
Pretreatment	In	SS / SD / None / U	Y / N / NA	
	Out		Y / N / NA	
Loading / Unloading	In	SS / SD / None / U	Y / N / NA	
	Out		Y / N / NA	
Manufacturing / Processing	In	SS / SD / None / U	Y / N / NA	
	Out		Y / N / NA	
Other: _____ _____	In	SS / SD / None / U	Y / N / NA	
	Out		Y / N / NA	

Company Name: _____

OUTDOOR ACTIVITIES

HIGH RISK POLLUTION GENERATING ACTIVITIES (check all that are appropriate)

- Fueling operations
- Vehicle, equipment, or building washing or cleaning
- Truck or rail loading or unloading of liquid or solid materials
- Liquid storage in stationary aboveground tanks
- Outside portable container storage of liquids, food wastes, or dangerous wastes
- Outside storage of non-containerized materials, by-products, or finished products
- Outside manufacturing activity
- Vehicle and equipment maintenance and repair
- Parking or storage of vehicles and equipment
- Building, repair, and maintenance of ships and boats
- Painting or finishing of vehicles, boats, buildings, or equipment
- Commercial animal handling
- Landscape construction or maintenance business
- Active onsite construction operations with excavated/exposed soil that could be eroded/transported to storm drains

SPILL PREVENTION

Is there a Spill Plan for the facility? Y / N

Is the plan posted in a suitable location? Y / N

Are employees trained and aware of the Spill Plan? Y / N

Circle closest to frequency of training Monthly Quarterly Annually

Are spill clean-up materials kept on-site? Y / N

Select materials kept on-site from the following list sorbent booms sorbent pads,
granular sorbent, kitty litter drip pans drain cover acid/base neutralizer solvent absorbent,

Are cleanup materials appropriate for the chemicals stored on-site? Y / N

Are cleanup materials stored in a container clearly labeled "SPILL KIT" ? Y / N

Are spill kits located near high-risk spill areas? Y / N

STORMWATER RELATED STRUCTURES

Are catch basins (CBs) on site? Y / N

If yes, how many? _____

Are CBs equipped with outlet traps? Y / N

Select outlet trap type PVC Elbow Metal Elbow

Has material accumulated to within 18 inches of the invert of the outlet pipe? Y / N

Select material(s) in CB Sediment Plants Trash

Is there evidence of contaminants in CBs? Y / N

Select contaminant Oil/Grease Paint Solvent Sewage

Unknown

Other: _____

Are catch basins regularly inspected and cleaned? Y / N

Circle closest to frequency of inspection Monthly Quarterly Annually As needed

Circle closest to frequency of cleaning Monthly Quarterly Annually As needed

Company Name: _____

GENERAL MAINTENANCE PRACTICES

Are the outdoor paved areas regularly swept? Y / N
Are the outdoor paved areas washed? Y / N
What is the frequency of sweeping/washing? Daily Weekly Monthly As Needed

WASHWATER PRACTICES

Are vehicles or equipment washed outside? Y / N
Select Type of Vehicles? Passenger 10-ton truck >10-ton trucks
Select Type of Equipment Forklifts Backhoes
Other: _____
What is the frequency of washing? Daily Weekly Monthly Annually
What is the number of units washed per period indicated above? _____
Where does washwater drain to? Sanitary Sewer Storm System Infiltration
What cleaning materials are used? Liquid Wax Soap Detergent Brand Name _____
Does facility conduct auto detailing? Y / N

VEHICLE AND HEAVY EQUIPMENT STORAGE AND MAINTENANCE

Are trucks and heavy equipment parked outside? Y / N.
Select Type of Vehicles? Passenger 10-ton truck >10-ton trucks
Select Type of Equipment Forklifts Construction related Other

Are there signs of leaking vehicles? Y / N
Is there repair and maintenance of vehicles outside? Y / N

STATIONARY FUELING OPERATIONS

Is there a fixed location for vehicle fueling on-site (i.e. permanent fuel pumps / tanks)? Y / N
Select type of fuel used. Diesel Gasoline
Where are tanks located? Underground Aboveground
Is there a fuel pad? Y / N
Is the fueling area covered? Y / N
Does the fuel pad have a separate drainage system? Y / N

MOBILE FUELING OPERATIONS

Is a truck mounted diesel tank or tanker truck used to fuel other vehicles on site? Y / N
Where is refueling performed? Single Location Wherever Vehicles Parked
Are CBs in vicinity of fueling location(s) Y / N
Are required cleanup materials for mobile fueling present on the fueling vehicle? Y / N
 Non-water absorbents capable of absorbing 16 gallons of diesel
 A storm drain cover / plug kit A minimum 10-foot length containment boom

OUTDOOR STORAGE AREAS

Circle types of materials stored outside Containerized products Stockpiled Material New
Equipment Used Equipment Equipment/Materials Awaiting Disposal/Recycling Other _____
Are storage areas paved? Y / N
Are storage areas and materials covered? Y / N
Are storage areas protected from stormwater run-on/run-off (i.e., berms or other barriers) Y / N
Does yard area have oil staining or visible sheen? – Y / N Signs of distressed vegetation? Y / N
Rate General Housekeeping in Storage Areas Unacceptable Needs Some Work Good

APPENDIX B

Summary Tables from Business Inspection Database

TABLE B-1

Summary of inspections completed June – December 2004

NOTES

Diagonal Ave S CSO/SD area is divided into the following basins and subbasins:

Basin	Subbasin	Description
Duwamish	Diagonal SD	Totally separated basin: Stormwater runoff discharges to the Diagonal separated storm drain system, wastewater discharges to Diagonal combined sewer system
Diagonal CSO	Diagonal CSO	Totally combined basin: Wastewater and stormwater discharge to Diagonal combined sewer system
Diagonal CSO	Lake Washington South	Partially separated basin: Wastewater discharges to the Diagonal combined sewer system and stormwater discharges to the storm drain system that flows to Lake Washington

Slips 4, 5, and 6 Drainage Basins:

Basin	Subbasin	Description
Duwamish	Slip 4	The inspected portion of Slip 4 is totally separated: Stormwater runoff is collected in one of 4 storm drains that discharges to Slip 4. Wastewater discharges to the sanitary sewer system.
Duwamish	Slip 5	Totally separated basin: Stormwater is collected in a King County airport storm drain that discharges near the former Slip 5 and wastewater discharges to the sanitary sewer system.
Duwamish	Slip 6	Totally separated basin: Stormwater runoff is collected in a King County airport storm drain that discharges to Slip 6 and wastewater discharges to sanitary sewer system.

The **East Waterway** service area is divided into the following basins and subbasins:

Basin	Subbasin	Description
Duwamish	Hanford CSO	Totally combined basin: Wastewater and stormwater discharge to the combined sewer system (in the areas that do not overlap with the Diagonal Ave S CSO/SD combined sewer service area).
Duwamish	Lander SD	Partially separated basin: Stormwater is collected in the S Lander St storm drain. The Lander system is equipped with a bypass that diverts low flows to the sanitary sewer. High flows are discharged directly to the East Waterway. Wastewater discharges to the combined sewer system.

Duwamish Source Control Program Database
Site Summary by Visit Type Report

Dates: Jun 1, 2004 to Dec 31, 2004
Basin: Duwamish
Subbasin: Diagonal SD

Initial Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
Charles Street- Maintenance Facility	805 S Dearborn ST Seattle, WA 98134	Duwamish	Diagonal SD	7538	Jul 28, 2004	N
CL Auto Repair	2901 17th Ave S Seattle, WA 98144	Duwamish	Diagonal SD	7538	Dec 15, 2004	N
Emerald Services	1500 Airport Wy S Seattle, WA 98134	Duwamish	Diagonal SD	4953	Jul 26, 2004	Y
GSA - FBI Shop	4735 E Marginal Wy S Seattle, WA 98134	Duwamish	Diagonal SD	7538	Jun 25, 2004	N
GSA - Federal Center South		Duwamish	Diagonal SD	9199	Jun 25, 2004	N
Jackson Motors, Inc.	401 Rainier Ave S Seattle, WA 98144	Duwamish	Diagonal SD	5511	Jul 29, 2004	Y
Mr. Detail		Duwamish	Diagonal SD	7542	Jul 29, 2004	Y
Utility Inc.	3931 1st Ave S Seattle, WA 98134	Duwamish	Diagonal SD	7389	Sep 8, 2004	Y
Wendy's	2543 Rainier Ave S Seattle, WA 98144	Duwamish	Diagonal SD	5812	Jun 17, 2004	Y

Initial Visits Count: 9

Followup Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
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** In Compliance as of the Report Ending Date.*

Site Summary by Visit Type Report (continued)

Followup Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
C.C. Filson Co.	3851 1st Ave S Seattle, WA 98134	Duwamish	Diagonal SD	2389	Aug 4, 2004	Y
El Centro de la Raza	2524 16th Ave S Seattle, WA 98144	Duwamish	Diagonal SD	8399	Jun 29, 2004	Y
Jackson Motors, Inc.	401 Rainier Ave S Seattle, WA 98144	Duwamish	Diagonal SD	5511	Sep 27, 2004	Y
MacMillan Piper Inc.	655 S Edmunds St Seattle, WA 98108	Duwamish	Diagonal SD	4212	Jul 20, 2004	N
		Duwamish	Diagonal SD	4212	Sep 27, 2004	N
Mail Movers	4500 4th Ave S Seattle, WA 98134	Duwamish	Diagonal SD	7349	Jun 16, 2004	Y
Mandarin Apartments	1701 12th Ave S Seattle, WA 98144	Duwamish	Diagonal SD	6513	Jun 4, 2004	Y
Medgar Evers Pool/Seattle Parks & Recreation	500 23rd Ave Seattle, WA 98122	Duwamish	Diagonal SD	7999	Dec 9, 2004	N
Merlino Foods	5200 Denver Ave S Seattle, WA 98108	Duwamish	Diagonal SD	5141	Aug 5, 2004	Y
Nile Auto Repair	1622 Yesler Wy Seattle, WA 98122	Duwamish	Diagonal SD	7538	Jul 15, 2004	Y
North Star Casteel	3901 9th Ave S Seattle, WA 98108	Duwamish	Diagonal SD	3325	Dec 9, 2004	Y
Pro Express Inc.	4800 Denver Ave S Seattle, WA 98134	Duwamish	Diagonal SD	4225	Jun 30, 2004	N
Rent-A-Center	2301 S Jackson St, #202 Seattle, WA 98144	Duwamish	Diagonal SD	5999	Sep 3, 2004	Y
Rite Aid Pharmacies	2707 Rainier Ave S Seattle, WA 98155	Duwamish	Diagonal SD	5912	Jul 20, 2004	Y

Site Summary by Visit Type Report (continued)

Followup Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
Utility Inc.	3931 1st Ave S Seattle, WA 98134	Duwamish	Diagonal SD	7389	Nov 16, 2004	Y
Widget Works	3834 4th Ave SE Seattle, WA 98134	Duwamish	Diagonal SD	3315	Jul 1, 2004	Y
		Duwamish	Diagonal SD	3315	Aug 20, 2004	Y

Followup Visits Count: 17

Report Total: 26 Visits

Site Summary by Visit Type Report

Basin: Diagonal CSO

Screening Visits

Facility	Address	Basin	Subbasin	SIC	Visit Date	In Compliance *
DSHS	2809 26th Ave S Seattle, WA 98144	Diagonal CSO	Diagonal CSO	9199	Jun 15, 2004	N/A
Kelly Ross Pharmacy	1120 Harvard St Seattle, WA 98122	Diagonal CSO	Diagonal CSO	5912	Jun 29, 2004	N/A
Materials/Geotechnical Lab	707 S Plummer St Seattle, WA 98134	Diagonal CSO	Diagonal CSO		Aug 20, 2004	N/A
Pacific Sleep Center	726 Broadway, #305 Seattle, WA 98122	Diagonal CSO	Diagonal CSO	8093	Jun 29, 2004	N/A

Screening Visits Count: 4

Initial Visits

Facility	Address	Basin	Subbasin	SIC	Visit Date	In Compliance *
Beacon 76	2415 Beacon Ave S Seattle, WA 98144	Diagonal CSO	Lander	5541	Dec 20, 2004	N
Charles Street - Fire Truck Repair Shop	815 S Dearborn St Seattle, WA 98134	Diagonal CSO	Diagonal CSO	7538	Aug 24, 2004	N
Charles Street - Testing Station	805 S Dearborn St Seattle, WA 98134	Diagonal CSO	Diagonal CSO	9651	Sep 3, 2004	N
Charles Street Auto Shop	805 S Charles St Seattle, WA 98134	Diagonal CSO	Diagonal CSO	7538	Aug 24, 2004	N
Charles Street SDOT Facility	801 S Plummer St Seattle, WA 98134	Diagonal CSO	Diagonal CSO	7699	Sep 1, 2004	N

* In Compliance as of the Report Ending Date.

Site Summary by Visit Type Report (continued)

Initial Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
Charles Street Tire Shop	814 8th Ave S Seattle, WA 98104	Diagonal CSO	Diagonal CSO	7538	Aug 26, 2004	Y
Deeny Construction Co. Inc.	2545 Rainier Ave S Seattle, WA 98144	Diagonal CSO	Diagonal CSO	1623	Jun 18, 2004	Y
Lioe's Automotive Service	2400 Beacon Ave S Seattle, WA 98144	Diagonal CSO	Lander	7538	Dec 8, 2004	N
Swedish Family Medicine	1401 Madison St Seattle, WA 98112	Diagonal CSO	Diagonal CSO	8093	Jun 4, 2004	Y
Vy Da	1200 S Jackson St, #8 Seattle, WA 98144	Diagonal CSO	Diagonal CSO	5812	Jul 7, 2004	Y
Westview Apartments	2525 14th Ave S Seattle, WA 98144	Diagonal CSO	Lander	6513	Dec 15, 2004	N
Work Source	2531 Rainier Ave S Seattle, WA 98144	Diagonal CSO	Diagonal CSO	9199	Jun 17, 2004	Y

Initial Visits Count: 12

Followup Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
Arco AM/PM/E1-Assa/Inc.	665 23rd Ave Seattle, WA 98122	Diagonal CSO	Diagonal CSO	5541	Oct 14, 2004	Y
		Diagonal CSO	Diagonal CSO	5541	Nov 24, 2004	Y
AT Systems	1401 E Yesler St Seattle, WA 98122	Diagonal CSO	Diagonal CSO	7381	Jul 1, 2004	Y
		Diagonal CSO	Diagonal CSO	7381	Aug 11, 2004	Y

Site Summary by Visit Type Report (continued)

Followup Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
Beacon Hill Dry Cleaners	4850 Beacon Ave S Seattle, WA 98108	Diagonal CSO	Diagonal CSO	7216	Jun 14, 2004	Y
Copy Mart	1018 E Seneca St Seattle, WA 98122	Diagonal CSO	Diagonal CSO	2741	Sep 8, 2004	Y
		Diagonal CSO	Diagonal CSO	2741	Dec 13, 2004	Y
Deeny Construction Co. Inc.	2545 Rainier Ave S Seattle, WA 98144	Diagonal CSO	Diagonal CSO	1623	Jul 9, 2004	Y
Enterprise Rent-A-Car	3711 Rainier Ave S Seattle, WA 98144	Diagonal CSO	Lake Washington South	7514	Jul 9, 2004	Y
Express Tires & Auto Service	5000 Martin Luther King Jr Wy S Seattle, WA 98118	Diagonal CSO	Lake Washington South	5531	Jun 1, 2004	N
Genesee Plaza	4400 Rainier Ave S Seattle, WA	Diagonal CSO	Lake Washington South	5999	Jun 2, 2004	Y
Girlie Press	1658 21ST AVE Seattle, WA 98122	Diagonal CSO	Diagonal CSO	2731	Oct 5, 2004	Y
Harborview Medical Center	325 9th Ave Seattle, WA 98104	Diagonal CSO	Diagonal CSO	8062	Aug 5, 2004	Y
Image Star Shots	4801 Rainier Ave S Seattle, WA 98118	Diagonal CSO	Lake Washington South	7384	Jun 16, 2004	Y
Isaacs Chiropractic Clinic	5200 Rainier Ave S Seattle, WA 98118	Diagonal CSO	Lake Washington South	8041	Jul 7, 2004	Y
John Muir Elementary School	3301 S Horton St Seattle, WA 98144	Diagonal CSO	Lake Washington South	8211	Jul 9, 2004	Y
Jone's Clavier Academy of Music, Inc.	3847 Rainier Ave S Seattle, WA 98118	Diagonal CSO	Lake Washington South	8299	Jul 9, 2004	Y
Joslin Diabetes Center	910 Boylston Ave Seattle, WA 98104	Diagonal CSO	Diagonal CSO	8049	Jun 2, 2004	Y

Site Summary by Visit Type Report (continued)

Followup Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
K-1 Auto Body Shop	5223 Rainier Ave S Seattle, WA 98118	Diagonal CSO	Lake Washington South	7532	Jun 30, 2004	Y
		Diagonal CSO	Lake Washington South	7532	Jul 21, 2004	Y
Longs Drugs	3820 Rainier Ave S Seattle, WA 98118	Diagonal CSO	Diagonal CSO	5912	Jun 16, 2004	Y
Malay Satay Hut	212 12th Ave S Seattle, WA 98144	Diagonal CSO	Diagonal CSO	5812	Aug 20, 2004	Y
Mekong Rainier Market & Gift	3400 Rainier Ave S Seattle, WA 98144	Diagonal CSO	Lake Washington South	5411	Jul 9, 2004	Y
		Diagonal CSO	Lake Washington South	5411	Sep 8, 2004	Y
Money Tree	1400 Madison St Seattle, WA 98104	Diagonal CSO	Diagonal CSO	6099	Jul 9, 2004	Y
Mount Zion Baptist Church	1634 19th Ave Seattle, WA 98122	Diagonal CSO	Diagonal CSO	8661	Jun 1, 2004	Y
National Pride Car Wash	3151 Rainier Ave S Seattle, WA 98108	Diagonal CSO	Lake Washington South	7542	Nov 10, 2004	N
Nha Hang Ngoc Huong	1200 S Jackson St, #8 Seattle, WA 98144	Diagonal CSO	Diagonal CSO	5812	Jul 7, 2004	Y
PCC Natural Markets	5041 Wilson Ave S Seattle, WA 98118	Diagonal CSO	Lake Washington South	5411	Jun 22, 2004	Y
Rainier Auto	3300 4th Ave S Seattle, WA 98134	Diagonal CSO	Lake Washington South	7539	Jun 17, 2004	Y
Saigon Viet Nam Deli	1200 S Jackson St, #7 Seattle, WA 98144	Diagonal CSO	Diagonal CSO	5812	Jul 7, 2004	Y
		Diagonal CSO	Diagonal CSO	5812	Aug 20, 2004	Y

Site Summary by Visit Type Report (continued)

Followup Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
Saint Gobain	3711 S Hudson St Seattle, WA 98118	Diagonal CSO	Lake Washington South	3086	Jul 15, 2004	N
Seattle Fire Department	3224 4th Ave S Seattle, WA 98134	Diagonal CSO	Diagonal CSO	9224	Jun 7, 2004	Y
Seattle University - Drainage	900 Broadway Seattle, WA 98122	Diagonal CSO	Diagonal CSO	8211	Dec 6, 2004	Y
Shell Mini Mart	3611 SE Genesee St Seattle, WA 98118	Diagonal CSO	Diagonal CSO	5541	Jun 10, 2004	Y
Shiomi and Chinn Investments LLC	1032 S Jackson St Seattle, WA	Diagonal CSO	Diagonal CSO	7389	Jun 14, 2004	Y
Sons of Haiti	153 14th Ave Seattle, WA 98122	Diagonal CSO	Diagonal CSO	8661	Jun 4, 2004	Y
		Diagonal CSO	Diagonal CSO	8661	Jun 16, 2004	Y
Super Saver Furniture	4208 Rainier Ave S Seattle, WA 98118	Diagonal CSO	Lake Washington South	5999	Jul 15, 2004	N
Swedish Family Medicine	1401 Madison St Seattle, WA 98112	Diagonal CSO	Diagonal CSO	8093	Jul 30, 2004	Y
Swedish Medical Center	801 Broadway Seattle, WA 98122	Diagonal CSO	Diagonal CSO	8062	Aug 5, 2004	Y
Tacos El Asadero	3513 Rainier Ave S Seattle, WA 98144	Diagonal CSO	Lake Washington South	5812	Jul 9, 2004	Y
		Diagonal CSO	Lake Washington South	5812	Jul 29, 2004	Y
The Polyclinic	1145 Broadway Seattle, WA 98122	Diagonal CSO	Diagonal CSO	8011	Jul 30, 2004	Y
U-Haul of Western WA	2515 Rainier Ave S Seattle, WA 98144	Diagonal CSO	Diagonal CSO	7513	Dec 2, 2004	N

Site Summary by Visit Type Report (continued)

Followup Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
U-Haul of Western WA	2515 Rainier Ave S Seattle, WA 98144	Diagonal CSO	Diagonal CSO	7513	Dec 29, 2004	N
University of Washington Consolidated Laundry	2901 27th Ave S Seattle, WA 98144	Diagonal CSO	Diagonal CSO	7211	Jun 8, 2004	Y
Vy Da	1200 S Jackson St, #8 Seattle, WA 98144	Diagonal CSO	Diagonal CSO	5812	Aug 20, 2004	Y
Wash's Auto Repair	5021 Rainier Ave S Seattle, WA 98118	Diagonal CSO	Lake Washington South	7538	Jun 1, 2004	Y
		Diagonal CSO	Lake Washington South	7538	Jul 21, 2004	Y
Wholesale Transmissions	4527 Rainier Ave S Seattle, WA 98118	Diagonal CSO	Diagonal CSO	7537	Jun 16, 2004	N
Work Source	2531 Rainier Ave S Seattle, WA 98144	Diagonal CSO	Diagonal CSO	9199	Aug 9, 2004	Y
Zion Prep Academy	4730 32nd Ave S Seattle, WA 98118	Diagonal CSO	Lake Washington South	8211	Jun 1, 2004	Y

Followup Visits Count: 54

Report Total: 70 Visits

Duwamish Source Control Program Database

Site Summary by Visit Type Report

Dates: Jun 1, 2004 to Dec 31, 2004

Basin: Duwamish

Subbasin: Slip 4

Screening Visits

Facility	Address	Basin	Subbasin	SIC	Visit Date	In Compliance *
American Avionics, Inc.	7023 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4581	Aug 27, 2004	N/A
Helijet	7277 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4581	Sep 27, 2004	N/A
Kenmore Air		Duwamish	Slip 4	4581	Aug 12, 2004	N/A
King County Public Health - Asthma	7300 Perimeter Rd, #128 Seattle, WA 98108	Duwamish	Slip 4	9431	Sep 22, 2004	N/A
King County Sheriff's Office - Special Operations	7300 Perimeter Rd S, #134 Seattle, WA 98108	Duwamish	Slip 4	9221	Aug 3, 2004	N/A
Office of Emergency Management	7300 Perimeter Rd S, #129 Seattle, WA 98108	Duwamish	Slip 4	9229	Sep 29, 2004	N/A
Perspective Image	6309 Corgiat Dr S Seattle, WA 98108	Duwamish	Slip 4	7221	Jun 17, 2004	N/A
San Juan Airlines	7277 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4581	Sep 24, 2004	N/A

Screening Visits Count: 8

Initial Visits

Facility	Address	Basin	Subbasin	SIC	Visit Date	In Compliance *
Air Lift Northwest	6987 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4581	Sep 20, 2004	Y

* In Compliance as of the Report Ending Date.

Site Summary by Visit Type Report (continued)

Initial Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
Airpac Airlines	7001 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4581	Sep 20, 2004	Y
Alaska Logistics	7400 8th Ave S Seattle, WA 98124	Duwamish	Slip 4	4499	Jun 22, 2004	N
Arco	7200 E Marginal Wy S Seattle, WA 98108	Duwamish	Slip 4	5541	Oct 12, 2004	N
Cacallori Marble	1535 S Albro St Seattle, WA 98108	Duwamish	Slip 4	1743	Jun 16, 2004	N
Chinese Baptist Church	5801 Beacon Ave S Seattle, WA	Duwamish	Slip 4	8661	Jul 26, 2004	N
Classic Helicopters	6505 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4522	Aug 5, 2004	Y
Federal Aviation Administration	6526 Ellis Ave S Seattle, WA 98108	Duwamish	Slip 4	4581	Aug 5, 2004	Y
Ferguson Property	1915 Ursula Pl S Seattle, WA 98108	Duwamish	Slip 4	9111	Jun 9, 2004	Y
Fire Station # 27	1000 S Myrtle St Seattle, WA 98108	Duwamish	Slip 4	9224	Aug 20, 2004	Y
Galvin Flying Service, Inc.	7001 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4581	Aug 11, 2004	Y
	7023 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4581	Aug 11, 2004	Y
	7149 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4581	Aug 11, 2004	Y
	7201 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4581	Aug 11, 2004	Y
	6987 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4581	Aug 11, 2004	Y

Site Summary by Visit Type Report (continued)

Initial Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
Garlatz/Seattle Air Corp	1115 S Elizabeth St Seattle, WA 98108	Duwamish	Slip 4	6512	Oct 6, 2004	Y
Georgetown Management	6801 Perimeter Rd S, #A Seattle, WA 98108	Duwamish	Slip 4	4522	Aug 17, 2004	Y
Georgetown Powerplant Museum	6605 13th Ave S Seattle, WA 98108	Duwamish	Slip 4	8412	Nov 4, 2004	Y
Jensen Family LTD Partners	1001 S Myrtle St Seattle, WA 98108	Duwamish	Slip 4	6531	Sep 29, 2004	N
King County Maintenance Facility	6518 Ellis Ave Seattle, WA 98108	Duwamish	Slip 4	7538	Dec 22, 2004	N
Kohl & Madden	1017 S Myrtle St Seattle, WA 98108	Duwamish	Slip 4	2893	Sep 30, 2004	Y
Larry's Market	1001 S Myrtle St Seattle, WA 98108	Duwamish	Slip 4	2099	Nov 3, 2004	N
Mente LLC	6771 Perimeter Rd S, #B Seattle, WA 98108	Duwamish	Slip 4	4522	Aug 25, 2004	Y
National Aviation	7170 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4581	Aug 25, 2004	Y
NE T-Hangars	6300 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4522	Oct 8, 2004	N
Neon Sign Systems	6606 Ursula Pl S Seattle, WA 98108	Duwamish	Slip 4	2531	Jun 9, 2004	Y
Nichols Truck Tire	6311 Corgiat Dr S Seattle, WA 98108	Duwamish	Slip 4	5531	Jun 16, 2004	N
NW Truck Transmission Inc.	6327 18th Ave S Seattle, WA 98108	Duwamish	Slip 4	7538	Jun 9, 2004	Y
Olde Thyme Aviation	6505 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4522	Jul 30, 2004	Y

Site Summary by Visit Type Report (continued)

Initial Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
O'Neill And Sons	6640 Ellis Ave S Seattle, WA 98108	Duwamish	Slip 4	7538	Aug 20, 2004	Y
Show Quality Metal Finishing	1115 S Elizabeth St Seattle, WA 98108	Duwamish	Slip 4	3471	Oct 6, 2004	N
Shultz Distributing - KC Airport	1495 S Hardy St Seattle, WA 98134	Duwamish	Slip 4	5541	Oct 15, 2004	N
Starbucks Coffee Company - Corporate Aviation	6771 Perimeter Rd S, #A Seattle, WA 98108	Duwamish	Slip 4	4522	Aug 17, 2004	Y
Tenrikyo High Seattle	2007 S Orcas St Seattle, WA 98109	Duwamish	Slip 4	8661	Jul 26, 2004	Y
Troll Motors	1115 S Elizabeth St Seattle, WA 98108	Duwamish	Slip 4	7538	Oct 6, 2004	Y
UltraBlock Inc.	6300 17th Ave S Seattle, WA 98108	Duwamish	Slip 4	1771	Jun 16, 2004	N
WA Air National Guard	6736 Ellis Ave S Seattle, WA 98108	Duwamish	Slip 4	9711	Jul 29, 2004	Y
Washington Square Fruit & Produce	1622 S Graham ST Seattle, WA 98108	Duwamish	Slip 4	5148	Nov 29, 2004	Y

Initial Visits Count: 38

Followup Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
Air Lift Northwest	6987 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4581	Dec 7, 2004	Y
Airpac Airlines	7001 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4581	Dec 7, 2004	Y

Site Summary by Visit Type Report (continued)

Followup Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
AV Factory	1900 S Corgiat Dr Seattle, WA 98108	Duwamish	Slip 4	7359	Jul 1, 2004	Y
		Duwamish	Slip 4	7359	Sep 24, 2004	Y
Chinese Baptist Church	5801 Beacon Ave S Seattle, WA	Duwamish	Slip 4	8661	Nov 29, 2004	N
Classic Helicopters	6505 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4522	Oct 13, 2004	Y
Envelope Converting Service	6603 Ursula Ave S Seattle, WA 98108	Duwamish	Slip 4	2677	Jul 1, 2004	Y
Federal Aviation Administration	6526 Ellis Ave S Seattle, WA 98108	Duwamish	Slip 4	4581	Nov 9, 2004	Y
Ferguson Property	1915 Ursula Pl S Seattle, WA 98108	Duwamish	Slip 4	9111	Aug 5, 2004	Y
Fire Station # 27	1000 S Myrtle St Seattle, WA 98108	Duwamish	Slip 4	9224	Oct 13, 2004	Y
Galvin Flying Service, Inc.	7001 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4581	Dec 7, 2004	Y
	7023 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4581	Dec 7, 2004	Y
	7149 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4581	Dec 7, 2004	Y
	7201 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4581	Dec 7, 2004	Y
	6987 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4581	Dec 7, 2004	Y
Garlatz/Seattle Air Corp	1115 S Elizabeth St Seattle, WA 98108	Duwamish	Slip 4	6512	Dec 16, 2004	Y

Site Summary by Visit Type Report (continued)

Followup Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
Georgetown Management	6801 Perimeter Rd S, #A Seattle, WA 98108	Duwamish	Slip 4	4522	Sep 14, 2004	Y
Jensen Family LTD Partners	1001 S Myrtle St Seattle, WA 98108	Duwamish	Slip 4	6531	Dec 16, 2004	N
National Aviation	7170 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 4	4581	Oct 18, 2004	Y
Nichols Truck Tire	6311 Corgiat Dr S Seattle, WA 98108	Duwamish	Slip 4	5531	Nov 29, 2004	N
NW Truck Transmission Inc.	6327 18th Ave S Seattle, WA 98108	Duwamish	Slip 4	7538	Nov 29, 2004	Y
O'Neill And Sons	6640 Ellis Ave S Seattle, WA 98108	Duwamish	Slip 4	7538	Dec 16, 2004	Y
Pacific Multiforms Co., Inc.	6600 Ursula PL S Seattle, WA 98108	Duwamish	Slip 4	2759	Jul 1, 2004	Y
Puget Sound Energy	6500 Ursula Ave S Seattle, WA 98108	Duwamish	Slip 4	4932	Jul 20, 2004	Y
		Duwamish	Slip 4	4932	Aug 6, 2004	Y
		Duwamish	Slip 4	4932	Oct 27, 2004	Y
Show Quality Metal Finishing	1115 S Elizabeth St Seattle, WA 98108	Duwamish	Slip 4	3471	Nov 26, 2004	N

Followup Visits Count: 27

Report Total: 73 Visits

Duwamish Source Control Program Database

Site Summary by Visit Type Report

Dates: Jun 1, 2004 to Dec 31, 2004

Basin: Duwamish

Subbasin: Slip 5, Slip 6

Screening Visits

Facility	Address	Basin	Subbasin	SIC	Visit Date	In Compliance *
Civil Air Patrol	7827 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	4522	Sep 20, 2004	N/A
Federal Drug Enforcement	8700 E Marginal Wy S, #B Seattle, WA 98108	Duwamish	Slip 5	4522	Jul 29, 2004	N/A

Screening Visits Count: 2

Initial Visits

Facility	Address	Basin	Subbasin	SIC	Visit Date	In Compliance *
Aeroflight	8555 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	4581	Aug 12, 2004	N
Airtech Instrument Co., Inc.	8490 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	5065	Sep 22, 2004	Y
Airwest Repair Services	8167 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	4581	Aug 5, 2004	Y
Amerflight	7575 Perimeter Rd S Seattle, WA 98134	Duwamish	Slip 5	4581	Jun 4, 2004	N
ARFF - King County Airport	8190 E Marginal Wy S Seattle, WA 98108	Duwamish	Slip 5	9224	Sep 24, 2004	Y
BAX Global	8201 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	4731	Aug 12, 2004	Y
Caliber Inspection	7500 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	7389	Aug 18, 2004	N

* In Compliance as of the Report Ending Date.

Site Summary by Visit Type Report (continued)

Initial Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
Cascade AirFrame Repair Inc.	8500 Perimeter Rd S, #A4 Seattle, WA 98108	Duwamish	Slip 5	4581	Nov 2, 2004	Y
Clay Lacy Aviation	8285 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	4581	Aug 4, 2004	Y
Corporate Jets, Inc	8167 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	4581	Aug 5, 2004	Y
DHL	8075 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	4513	Aug 6, 2004	Y
FAA ATCT Control Tower	8200 E Marginal Wy S Seattle, WA 98108	Duwamish	Slip 5	9621	Sep 29, 2004	Y
Galvin Flying Service, Inc.	7777 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	4581	Aug 11, 2004	Y
GBA	8167 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	3721	Aug 5, 2004	Y
GSM Inc.	7575 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	4581	Aug 19, 2004	Y
Helicopters Northwest, Inc.	8500 Perimeter Rd S, #2 Seattle, WA 98108	Duwamish	Slip 5	4522	Sep 29, 2004	Y
King County Sheriff- Air Support Unit	8600 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 6	4522	Aug 3, 2004	Y
Midfield Airpark T-Hangars	8700 E Marginal Wy S Seattle, WA 98108	Duwamish	Slip 5		Sep 24, 2004	N
MJL Partners	7827 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	4581	Sep 20, 2004	Y
Nordstrom	7979 Perimeter Rd Seattle, WA 98108	Duwamish	Slip 5	4522	Oct 29, 2004	Y
Puget Sound Aviators	8167 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	8299	Aug 5, 2004	Y

Site Summary by Visit Type Report (continued)

Initial Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
Reed Aviation	8490 Perimeter Rd S, #a2 Seattle, WA 98103	Duwamish	Slip 5	4581	Oct 4, 2004	N
SSCC - Aviation Department Hangar	8900 E Marginal Wy S Seattle, WA 98108	Duwamish	Slip 5	3721	Aug 11, 2004	Y
Startube		Duwamish	Slip 5	3724	Aug 11, 2004	Y
SW T-Hangars	9230 E Marginal Wy S Seattle, WA 98108	Duwamish	Slip 5	4522	Sep 10, 2004	N
The Museum of Flight	9404 E Marginal Wy S Seattle, WA 98108	Duwamish	Slip 6	8412	Oct 14, 2004	Y
UPS	7575 S Perimeter Rd Seattle, WA 98108	Duwamish	Slip 5	4522	Aug 4, 2004	Y
Vulcan	7675 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	4522	Oct 8, 2004	N
Washington Avionics	8525 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	3812	Sep 15, 2004	Y
Western Metal Products, Inc	7696 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	3499	Oct 7, 2004	N
Wings Aloft	8467 Perimeter Rd SE Seattle, WA 98108	Duwamish	Slip 5	8299	Sep 13, 2004	N

Initial Visits Count: 31

Followup Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
BAX Global	8201 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	4731	Nov 24, 2004	Y

Site Summary by Visit Type Report (continued)

Followup Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
Clay Lacy Aviation	8285 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	4581	Nov 24, 2004	Y
		Duwamish	Slip 5	4581	Dec 16, 2004	Y
Corporate Jets, Inc	8167 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	4581	Dec 8, 2004	Y
Galvin Flying Service, Inc.	7777 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	4581	Dec 7, 2004	Y
King County Sheriff- Air Support Unit	8600 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 6	4522	Sep 30, 2004	Y
MJL Partners	7827 Perimeter Rd S Seattle, WA 98108	Duwamish	Slip 5	4581	Dec 7, 2004	Y
SSCC - Aviation Department Hangar	8900 E Marginal Wy S Seattle, WA 98108	Duwamish	Slip 5	3721	Nov 19, 2004	Y
Startube		Duwamish	Slip 5	3724	Nov 19, 2004	Y

Followup Visits Count: 9

Report Total: 42 Visits

Duwamish Source Control Program Database
Site Summary by Visit Type Report

Dates: Jun 1, 2004 to Dec 31, 2004
Basin: Duwamish
Subbasin: Hanford CSO,Lander SD

Screening Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
European Vine Selection of WA	522 15th Ave E Seattle, WA 98112	Duwamish	Hanford CSO	5921	Dec 13, 2004	N/A
Flyright Productions	2304 E Madison St Seattle, WA 98112	Duwamish	Hanford CSO	7335	Dec 20, 2004	N/A
Helen B Ratcliff House	1531 13th Ave S Seattle, WA 98144	Duwamish	Hanford CSO	7021	Dec 2, 2004	N/A
North Hill Bakery	518 15th Ave E Seattle, WA 98112	Duwamish	Hanford CSO	5461	Dec 16, 2004	N/A
Olympia Pizza & Spaghetti House	516 15th Ave E Seattle, WA 98112	Duwamish	Hanford CSO	5812	Dec 16, 2004	N/A
Outcome Concept Systems	1818 E Mercer St Seattle, WA 98112	Duwamish	Hanford CSO	5734	Dec 13, 2004	N/A
Samui Thai Cuisine	524 15th Ave E Seattle, WA 98112	Duwamish	Hanford CSO	5812	Dec 16, 2004	N/A
Shoprite	432 15th Ave E Seattle, WA 98112	Duwamish	Hanford CSO	5999	Dec 2, 2004	N/A

Screening Visits Count: 8

Initial Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
Beacon Hill Elementary School	2025 14TH Ave S Seattle, WA 98144	Duwamish	Lander SD	8211	Dec 16, 2004	Y

** In Compliance as of the Report Ending Date.*

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rptSiteSumByVisitType

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Site Summary by Visit Type Report (continued)

Initial Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
Canterbury Ales & Eats	534 15th Ave E Seattle, WA 98144	Duwamish	Hanford CSO	5813	Dec 15, 2004	N
Courtesy Tires	2102 E Madison St Seattle, WA 98112	Duwamish	Hanford CSO	7538	Dec 16, 2004	N
First Call Plus	526 19th Ave E Seattle, WA 98112	Duwamish	Hanford CSO	7261	Dec 7, 2004	Y
Holiday Gift & Craft Shop		Duwamish	Hanford CSO	5947	Dec 13, 2004	N
Holy Name Academy	728 21ST Ave E Seattle, WA 98112	Duwamish	Hanford CSO	8211	Dec 28, 2004	Y
JD OTT Co.	2244 6th Ave S Seattle, WA 98134	Duwamish	Lander SD	3451	Nov 19, 2004	N
Jehovah's Witnesses Kingdom Hall	333 19th Ave Seattle, WA 98112	Duwamish	Hanford CSO	8661	Dec 3, 2004	N
Key Bank	1920 1st Ave S Seattle, WA	Duwamish	Lander SD	6021	Dec 21, 2004	Y
King County Credit Union	2265 1st Ave S Seattle, WA 98134	Duwamish	Lander SD	6061	Dec 21, 2004	Y
Meany Middle School	301 21st Ave E Seattle, WA 98112	Duwamish	Hanford CSO	8211	Dec 16, 2004	Y
Mercer Professional Bldg	607 19TH Ave E Seattle, WA 98112	Duwamish	Hanford CSO	6531	Dec 29, 2004	N
Miller Community Center	400 19th St E Seattle, WA 98112	Duwamish	Hanford CSO	7997	Dec 13, 2004	N
Miller Community Playfield	310 19TH Ave E Seattle, WA 98112	Duwamish	Hanford CSO	7997	Dec 13, 2004	N
Monsoon	615 19th Ave E Seattle, WA 98104	Duwamish	Hanford CSO	5812	Dec 29, 2004	N

Site Summary by Visit Type Report (continued)

Initial Visits

<i>Facility</i>	<i>Address</i>	<i>Basin</i>	<i>Subbasin</i>	<i>SIC</i>	<i>Visit Date</i>	<i>In Compliance *</i>
Palermo Pizza and Pasta	350 15th Ave E Seattle, WA 98112	Duwamish	Hanford CSO	5812	Dec 2, 2004	Y
Paper Zone	1911 1st Ave S Seattle, WA 98134	Duwamish	Lander SD	5999	Dec 28, 2004	N
Pecos Pit BBQ Inc Restaurant	2260 1st Ave S Seattle, WA 98134	Duwamish	Lander SD	5812	Dec 28, 2004	N
Shell	2424 Beacon Ave S Seattle, WA 98144	Duwamish	Lander SD	5541	Dec 16, 2004	N
The Kingfish Cafe	602 19th Ave E Seattle, WA 98112	Duwamish	Hanford CSO	5812	Dec 13, 2004	N
Union Gospel Mission	1808 18TH AVE Seattle, WA 98122	Duwamish	Hanford CSO	8331	Dec 16, 2004	N
Vertigo High Access Services	2221 13th Ave S Seattle, WA 98144	Duwamish	Hanford CSO	7312	Dec 15, 2004	Y
Walgreens Drug Store - 15th Ave	500 15th Ave E Seattle, WA 98112	Duwamish	Hanford CSO	5912	Dec 2, 2004	Y
Wood Specialties	1908 E Mercer St Seattle, WA 98112	Duwamish	Hanford CSO	2434	Dec 9, 2004	N

Initial Visits Count: 24

Report Total: 32 Visits

TABLE B-2

Site summary reports for all areas inspected

Duwamish/Diagonal CSO Summary Report

Cycle Totals Dates: Jun 1, 2004 to Dec 31, 2004

New Inspections

Full Inspections	116
Screening Inspections	22
Total New Inspections	138
 Follow-up Inspections	 108

Compliance This Cycle - (from Initial Visits during the Cycle)

Sites Achieving Compliance This Cycle	30
No Action Needed This Cycle	38

For Sites Out of Compliance in Prior Cycle

These Sites Achieved Partial Compliance	0
These Sites Achieved Overall Compliance	50

Overall Totals (All Sites - through Dec 31, 2004)

Sites Out of Compliance

Total Sites	# of Sites	57
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By Regulatory Area:

Hazardous Waste	21	Sites may have more than one problem area
Industrial Waste	4	
Spill Prevention	34	
Stormwater	32	

Sites with Corrective Action Requested

# of Sites w/Corr. Act. Req.	# of Sites with Full Initial Visits	
428	654	65%

* Sites with one or more corr. actions requested as a % of total sites with full initial visits

Sites achieving Overall Compliance

# of Sites achieving compliance	# of Sites w/Corr. Act. Req.	
372	428	87%

* Sites achieving overall compliance as a % of sites with one or more corr. actions requested

Business Inspection Summary Report

Dates: Jun 1, 2004 to Dec 31, 2004

Basin: Duwamish, Diagonal CSO

Cycle Totals

New Inspections

Full Inspections	116
Screening Inspections	22
Total New Inspections	138

Follow-up Inspections 108

Sites Out of Compliance

# of Sites	# of Sites
.....	33
<i>by Regulatory Area (sites may need corrective actions in more than one area)</i>	
Hazardous Waste	9
Industrial Waste	1
Spill Prevention	23
Stormwater	20

Sites with Corrective Action Requested

# of Sites	% of Sites
63	54%

* Sites with one or more corr. actions requested as a % of total sites with full initial visits

Sites achieving Overall Compliance

# of Sites	% of Sites
30	48%

* Sites achieving overall compliance as a % of sites with one or more corr. actions requested

Sites where no Action was needed

# of Sites	% of Sites
38	33%

* Sites with no corrective actions requested, as a % of sites with full initial visits.

Business Inspection Summary Report

Dates: Jun 1, 2004 to Dec 31, 2004

Basin: Duwamish

Subbasin: Diagonal SD

Cycle Totals

New Inspections

Full Inspections	9
Screening Inspections	0
Total New Inspections	9

Follow-up Inspections 17

Sites Out of Compliance

	# of Sites
# of Sites	4
<i>by Regulatory Area (sites may need corrective actions in more than one area)</i>	
Hazardous Waste	3
Industrial Waste	0
Spill Prevention	1
Stormwater	4

	# of Sites	% of Sites
Sites with Corrective Action Requested	6	67%

* Sites with one or more corr. actions requested as a % of total sites with full initial visits

	# of Sites	% of Sites
Sites achieving Overall Compliance	2	33%

* Sites achieving overall compliance as a % of sites with one or more corr. actions requested

	# of Sites	% of Sites
Sites where no Action was needed	3	33%

* Sites with no corrective actions requested, as a % of sites with full initial visits.

Business Inspection Summary Report

Dates: Jun 1, 2004 to Dec 31, 2004

Basin: Diagonal CSO

Cycle Totals

New Inspections

Full Inspections	12
Screening Inspections	4
Total New Inspections	16

Follow-up Inspections 54

Sites Out of Compliance

	# of Sites
# of Sites	7
<i>by Regulatory Area (sites may need corrective actions in more than one area)</i>	
Hazardous Waste	2
Industrial Waste	1
Spill Prevention	6
Stormwater	4

	# of Sites	% of Sites
Sites with Corrective Action Requested	10	83%

* Sites with one or more corr. actions requested as a % of total sites with full initial visits

	# of Sites	% of Sites
Sites achieving Overall Compliance	3	30%

* Sites achieving overall compliance as a % of sites with one or more corr. actions requested

	# of Sites	% of Sites
Sites where no Action was needed	2	17%

* Sites with no corrective actions requested, as a % of sites with full initial visits.

Duwamish Source Control Program Database

Business Inspection Summary Report

Dates: Jun 1, 2004 to Dec 31, 2004

Basin: Duwamish

Subbasin: Slip 4

Cycle Totals

New Inspections

<i>Full Inspections</i>	38
<i>Screening Inspections</i>	8
<i>Total New Inspections</i>	46

Follow-up Inspections 27

Sites Out of Compliance

	<i># of Sites</i>	
<i># of Sites</i>	8	
<i>by Regulatory Area (sites may need corrective actions in more than one area)</i>		
<i>Hazardous Waste</i>	2	
<i>Industrial Waste</i>	0	
<i>Spill Prevention</i>	5	
<i>Stormwater</i>	4	

	<i># of Sites</i>	<i>% of Sites</i>
<i>Sites with Corrective Action Requested</i>	24	63%

** Sites with one or more corr. actions requested as a % of total sites with full initial visits*

	<i># of Sites</i>	<i>% of Sites</i>
<i>Sites achieving Overall Compliance</i>	16	67%

** Sites achieving overall compliance as a % of sites with one or more corr. actions requested*

	<i># of Sites</i>	<i>% of Sites</i>
<i>Sites where no Action was needed</i>	11	29%

** Sites with no corrective actions requested, as a % of sites with full initial visits.*

Duwamish Source Control Program Database

Business Inspection Summary Report

Dates: Jun 1, 2004 to Dec 31, 2004

Basin: Duwamish

Subbasin: Slip 5, Slip 6

Cycle Totals

New Inspections

<i>Full Inspections</i>	31
<i>Screening Inspections</i>	2
<i>Total New Inspections</i>	33

Follow-up Inspections 9

Sites Out of Compliance

	<i># of Sites</i>
<i># of Sites</i>	4
<i>by Regulatory Area (sites may need corrective actions in more than one area)</i>	
<i>Hazardous Waste</i>	2
<i>Industrial Waste</i>	0
<i>Spill Prevention</i>	4
<i>Stormwater</i>	1

	<i># of Sites</i>	<i>% of Sites</i>
<i>Sites with Corrective Action Requested</i>	12	39%

** Sites with one or more corr. actions requested as a % of total sites with full initial visits*

	<i># of Sites</i>	<i>% of Sites</i>
<i>Sites achieving Overall Compliance</i>	8	67%

** Sites achieving overall compliance as a % of sites with one or more corr. actions requested*

	<i># of Sites</i>	<i>% of Sites</i>
<i>Sites where no Action was needed</i>	14	45%

** Sites with no corrective actions requested, as a % of sites with full initial visits.*

Business Inspection Summary Report

Dates: Jun 1, 2004 to Dec 31, 2004

Basin: Duwamish

Subbasin: Hanford CSO, Lander SD

Cycle Totals

New Inspections

Full Inspections	24
Screening Inspections	8
Total New Inspections	32

Follow-up Inspections 0

Sites Out of Compliance

	# of Sites
# of Sites	10
<i>by Regulatory Area (sites may need corrective actions in more than one area)</i>	
Hazardous Waste	0
Industrial Waste	0
Spill Prevention	7
Stormwater	7

	# of Sites	% of Sites
Sites with Corrective Action Requested	10	42%

* Sites with one or more corr. actions requested as a % of total sites with full initial visits

	# of Sites	% of Sites
Sites achieving Overall Compliance	0	0%

* Sites achieving overall compliance as a % of sites with one or more corr. actions requested

	# of Sites	% of Sites
Sites where no Action was needed	8	33%

* Sites with no corrective actions requested, as a % of sites with full initial visits.

TABLE B-3

Corrective actions requested (grouped by regulatory area)

NOTES

Diagonal Ave S CSO/SD area is divided into the following basins and subbasins:

Basin	Subbasin	Description
Duwamish	Diagonal SD	Totally separated basin: Stormwater runoff discharges to the Diagonal separated storm drain system, wastewater discharges to Diagonal combined sewer system
Diagonal CSO	Diagonal CSO	Totally combined basin: Wastewater and stormwater discharge to Diagonal combined sewer system
Diagonal CSO	Lake Washington South	Partially separated basin: Wastewater discharges to the Diagonal combined sewer system and stormwater discharges to the storm drain system that flows to Lake Washington

Slips 4, 5, and 6 Drainage Basins:

Basin	Subbasin	Description
Duwamish	Slip 4	The inspected portion of Slip 4 is totally separated: Stormwater runoff is collected in one of 4 storm drains that discharges to Slip 4. Wastewater discharges to the sanitary sewer system.
Duwamish	Slip 5	Totally separated basin: Stormwater is collected in a King County airport storm drain that discharges near the former Slip 5 and wastewater discharges to the sanitary sewer system.
Duwamish	Slip 6	Totally separated basin: Stormwater runoff is collected in a King County airport storm drain that discharges to Slip 6 and wastewater discharges to sanitary sewer system.

The **East Waterway** service area is divided into the following basins and subbasins:

Basin	Subbasin	Description
Duwamish	Hanford CSO	Totally combined basin: Wastewater and stormwater discharge to the combined sewer system (in the areas that do not overlap with the Diagonal Ave S CSO/SD combined sewer service area).
Duwamish	Lander SD	Partially separated basin: Stormwater is collected in the S Lander St storm drain. The Lander system is equipped with a bypass that diverts low flows to the sanitary sewer. High flows are discharged directly to the East Waterway. Wastewater discharges to the combined sewer system.

Corrective Actions Sorted by Basin and Subbasin

Dates: Jun 1, 2004 to Dec 31, 2004

Basin: Duwamish, Diagonal CSO

Duwamish Basin

Diagonal SD Subbasin

Hazardous Waste - 7

- 2 Properly dispose of Waste
- 3 Properly store Product/Waste
- 2 Properly label Containers

Spill Prevention and Cleanup - 8

- 2 Improve or create spill response procedures
- 4 Improve or purchase adequate spill response materials
- 2 Properly educate employees

Stormwater - 15

- 4 Storm drain facility needs to be cleaned
- 2 Missing or damaged components to storm drain facility need replacement/repair
- 2 Implement proper housekeeping
- 2 Don't discharge washwater or process wastewater to stormdrain
- 2 Properly store non-containerized materials
- 2 Clean and eliminate leaks and spills from storage areas
- 1 Properly perform maintenance of vehicles and equipment

Diagonal SD Subbasin Total: 30

South Park Subbasin

Spill Prevention and Cleanup - 3

- 1 Improve or create spill response procedures
- 1 Improve or purchase adequate spill response materials
- 1 Properly educate employees

South Park Subbasin Total: 3

Slip 4 Subbasin

Hazardous Waste - 9

- 4 Properly dispose of Waste
- 1 Properly document waste disposal
- 3 Properly store Product/Waste
- 1 Properly label Containers

Spill Prevention and Cleanup - 48

- 19 Improve or create spill response procedures
- 11 Improve or purchase adequate spill response materials
- 18 Properly educate employees

Stormwater - 18

- 9 Storm drain facility needs to be cleaned
- 1 Missing or damaged components to storm drain facility need replacement/repair
- 1 Implement proper washing practices
- 2 Properly store containerized materials
- 3 Properly store non-containerized materials
- 2 Clean and eliminate leaks and spills from storage areas

Corrective Actions Sorted by Basin and Subbasin (continued)

Duwamish Basin

Slip 4 Subbasin

Slip 4 Subbasin Total: 75

Slip 5 Subbasin

Hazardous Waste - 2

- 2 Properly store Product/Waste

Spill Prevention and Cleanup - 23

- 11 Improve or create spill response procedures
- 7 Improve or purchase adequate spill response materials
- 5 Properly educate employees

Stormwater - 3

- 1 Storm drain facility needs to be cleaned
- 1 Correct illegal plumbing connection
- 1 Implement proper washing practices

Slip 5 Subbasin Total: 28

Slip 6 Subbasin

Spill Prevention and Cleanup - 3

- 1 Improve or create spill response procedures
- 1 Improve or purchase adequate spill response materials
- 1 Properly educate employees

Slip 6 Subbasin Total: 3

Hanford CSO Subbasin

Hazardous Waste - 2

- 1 Properly document waste disposal
- 1 Properly store Product/Waste

Spill Prevention and Cleanup - 14

- 5 Improve or create spill response procedures
- 4 Improve or purchase adequate spill response materials
- 5 Properly educate employees

Stormwater - 6

- 3 Storm drain facility needs to be cleaned
- 2 Missing or damaged components to storm drain facility need replacement/repair
- 1 Make storm drain facility parts accessible

Hanford CSO Subbasin Total: 22

Lander SD Subbasin

Spill Prevention and Cleanup - 6

- 2 Improve or create spill response procedures
- 2 Improve or purchase adequate spill response materials
- 2 Properly educate employees

Stormwater - 4

- 2 Storm drain facility needs to be cleaned
- 2 Missing or damaged components to storm drain facility need replacement/repair

Corrective Actions Sorted by Basin and Subbasin (continued)

Duwamish Basin

Lander SD Subbasin

Lander SD Subbasin Total: 10

Duwamish Basin Total: 171

Diagonal CSO Basin

Diagonal CSO Subbasin

Hazardous Waste - 7

- 4 Properly dispose of Waste
- 2 Properly store Product/Waste
- 1 Properly label Containers

Industrial Waste - 2

- 1 Implement pretreatment for discharge
- 1 Provide better/more maintenance for pretreatment system

Spill Prevention and Cleanup - 18

- 5 Improve or create spill response procedures
- 8 Improve or purchase adequate spill response materials
- 5 Properly educate employees

Stormwater - 7

- 4 Storm drain facility needs to be cleaned
- 1 Missing or damaged components to storm drain facility need replacement/repair
- 1 Implement proper housekeeping
- 1 Properly store non-containerized materials

Diagonal CSO Subbasin Total: 34

Lake Washington South Subbasin

Hazardous Waste - 4

- 1 Properly document waste disposal
- 1 Properly store Product/Waste
- 1 Properly label Containers
- 1 Repair or replace degraded open chemical containers

Industrial Waste - 1

- 1 Implement pretreatment for discharge

Spill Prevention and Cleanup - 5

- 2 Improve or create spill response procedures
- 2 Improve or purchase adequate spill response materials
- 1 Properly educate employees

Stormwater - 3

- 1 Storm drain facility needs to be cleaned
- 1 Implement proper housekeeping
- 1 Properly store containerized materials

Lake Washington South Subbasin Total:

13

Corrective Actions Sorted by Basin and Subbasin (continued)

Diagonal CSO Basin

Lander Subbasin

Spill Prevention and Cleanup - 5

- 2 Improve or create spill response procedures
- 1 Improve or purchase adequate spill response materials
- 2 Properly educate employees

Stormwater - 4

- 1 Storm drain facility needs to be cleaned
- 2 Missing or damaged components to storm drain facility need replacement/repair
- 1 Implement proper housekeeping

Lander Subbasin Total: 9

Diagonal CSO Basin Total: 56

	<i>HW</i>	<i>IW</i>	<i>Spill Prev.</i>	<i>Stormwater</i>	<i>All</i>
<i>Report Totals:</i>	31	3	133	60	227

Duwamish Source Control Program Database

Corrective Actions Sorted by Basin and Subbasin

Dates: Jun 1, 2004 to Dec 31, 2004

Basin: Duwamish

Subbasin: Diagonal SD

Duwamish Basin

Diagonal SD Subbasin

Hazardous Waste - 7

- 2 Properly dispose of Waste
- 3 Properly store Product/Waste
- 2 Properly label Containers

Spill Prevention and Cleanup - 8

- 2 Improve or create spill response procedures
- 4 Improve or purchase adequate spill response materials
- 2 Properly educate employees

Stormwater - 15

- 4 Storm drain facility needs to be cleaned
- 2 Missing or damaged components to storm drain facility need replacement/repair
- 2 Implement proper housekeeping
- 2 Don't discharge washwater or process wastewater to stormdrain
- 2 Properly store non-containerized materials
- 2 Clean and eliminate leaks and spills from storage areas
- 1 Properly perform maintenance of vehicles and equipment

Diagonal SD Subbasin Total: 30

Duwamish Basin Total: 30

	<i>HW</i>	<i>IW</i>	<i>Spill Prev.</i>	<i>Stormwater</i>	<i>All</i>
Report Totals:	7	0	8	15	30

Corrective Actions Sorted by Basin and Subbasin

Dates: Jun 1, 2004 to Dec 31, 2004

Basin: Diagonal CSO

Diagonal CSO Basin

Diagonal CSO Subbasin

Hazardous Waste - 7

- 4 Properly dispose of Waste
- 2 Properly store Product/Waste
- 1 Properly label Containers

Industrial Waste - 2

- 1 Implement pretreatment for discharge
- 1 Provide better/more maintenance for pretreatment system

Spill Prevention and Cleanup - 18

- 5 Improve or create spill response procedures
- 8 Improve or purchase adequate spill response materials
- 5 Properly educate employees

Stormwater - 7

- 4 Storm drain facility needs to be cleaned
- 1 Missing or damaged components to storm drain facility need replacement/repair
- 1 Implement proper housekeeping
- 1 Properly store non-containerized materials

Diagonal CSO Subbasin Total: 34

Lake Washington South Subbasin

Hazardous Waste - 4

- 1 Properly document waste disposal
- 1 Properly store Product/Waste
- 1 Properly label Containers
- 1 Repair or replace degraded open chemical containers

Industrial Waste - 1

- 1 Implement pretreatment for discharge

Spill Prevention and Cleanup - 5

- 2 Improve or create spill response procedures
- 2 Improve or purchase adequate spill response materials
- 1 Properly educate employees

Stormwater - 3

- 1 Storm drain facility needs to be cleaned
- 1 Implement proper housekeeping
- 1 Properly store containerized materials

Lake Washington South Subbasin Total:

13

Corrective Actions Sorted by Basin and Subbasin (continued)

Diagonal CSO Basin

Lander Subbasin

Spill Prevention and Cleanup - 5

- 2 Improve or create spill response procedures
- 1 Improve or purchase adequate spill response materials
- 2 Properly educate employees

Stormwater - 4

- 1 Storm drain facility needs to be cleaned
- 2 Missing or damaged components to storm drain facility need replacement/repair
- 1 Implement proper housekeeping

Lander Subbasin Total: 9

Diagonal CSO Basin Total: 56

	<i>HW</i>	<i>IW</i>	<i>Spill Prev.</i>	<i>Stormwater</i>	<i>All</i>
Report Totals:	11	3	28	14	56

Corrective Actions Sorted by Basin and Subbasin

Dates: Jun 1, 2004 to Dec 31, 2004

Basin: Duwamish

Subbasin: Slip 4

Duwamish Basin

Slip 4 Subbasin

Hazardous Waste - 9

- 4 Properly dispose of Waste
- 1 Properly document waste disposal
- 3 Properly store Product/Waste
- 1 Properly label Containers

Spill Prevention and Cleanup - 48

- 19 Improve or create spill response procedures
- 11 Improve or purchase adequate spill response materials
- 18 Properly educate employees

Stormwater - 18

- 9 Storm drain facility needs to be cleaned
- 1 Missing or damaged components to storm drain facility need replacement/repair
- 1 Implement proper washing practices
- 2 Properly store containerized materials
- 3 Properly store non-containerized materials
- 2 Clean and eliminate leaks and spills from storage areas

Slip 4 Subbasin Total: 75

Duwamish Basin Total: 75

	<i>HW</i>	<i>IW</i>	<i>Spill Prev.</i>	<i>Stormwater</i>	<i>All</i>
Report Totals:	9	0	48	18	75

Duwamish Source Control Program Database

Corrective Actions Sorted by Basin and Subbasin

Dates: Jun 1, 2004 to Dec 31, 2004

Basin: Duwamish

Subbasin: Slip 5, Slip 6

Duwamish Basin

Slip 5 Subbasin

Hazardous Waste - 2

- 2 Properly store Product/Waste

Spill Prevention and Cleanup - 23

- 11 Improve or create spill response procedures
- 7 Improve or purchase adequate spill response materials
- 5 Properly educate employees

Stormwater - 3

- 1 Storm drain facility needs to be cleaned
- 1 Correct illegal plumbing connection
- 1 Implement proper washing practices

Slip 5 Subbasin Total: 28

Slip 6 Subbasin

Spill Prevention and Cleanup - 3

- 1 Improve or create spill response procedures
- 1 Improve or purchase adequate spill response materials
- 1 Properly educate employees

Slip 6 Subbasin Total: 3

Duwamish Basin Total: 31

	<i>HW</i>	<i>IW</i>	<i>Spill Prev.</i>	<i>Stormwater</i>	<i>All</i>
Report Totals:	2	0	26	3	31

Corrective Actions Sorted by Basin and Subbasin

Dates: Jun 1, 2004 to Dec 31, 2004

Basin: Duwamish

Subbasin: Hanford CSO, Lander SD

Duwamish Basin

Hanford CSO Subbasin

Hazardous Waste - 2

- 1 Properly document waste disposal
- 1 Properly store Product/Waste

Spill Prevention and Cleanup - 14

- 5 Improve or create spill response procedures
- 4 Improve or purchase adequate spill response materials
- 5 Properly educate employees

Stormwater - 6

- 3 Storm drain facility needs to be cleaned
- 2 Missing or damaged components to storm drain facility need replacement/repair
- 1 Make storm drain facility parts accessible

Hanford CSO Subbasin Total: 22

Lander SD Subbasin

Spill Prevention and Cleanup - 6

- 2 Improve or create spill response procedures
- 2 Improve or purchase adequate spill response materials
- 2 Properly educate employees

Stormwater - 4

- 2 Storm drain facility needs to be cleaned
- 2 Missing or damaged components to storm drain facility need replacement/repair

Lander SD Subbasin Total: 10

Duwamish Basin Total: 32

	<i>HW</i>	<i>IW</i>	<i>Spill Prev.</i>	<i>Stormwater</i>	<i>All</i>
Report Totals:	2	0	20	10	32

TABLE B-4

Corrective actions requested (grouped by basin and subbasin)

Duwamish Source Control Program Database

Site History by Basin

Dates: Jun 1, 2004 to Dec 31, 2004

Basin: Duwamish

Subbasin: Diagonal SD

Duwamish Basin

Diagonal SD Subbasin

<i>Business Name</i>	<i>Sewer Class</i>	<i>In Compliance*</i>	<i>Corr. Actions Requested</i>				<i>Visit Date</i>	<i>Visit Type</i>	<i>Inspector</i>
			<i>HW</i>	<i>IW</i>	<i>Spill</i>	<i>Storm</i>			
C.C. Filson Co.	Combined	Y				2	02/19/04 08/04/04	Initial Followup	Tuomisto
Charles Street- Maintenance Facility	Combined	N				3	07/28/04	Initial	Treat
CL Auto Repair	Combined	N	2		4	5	05/21/03 12/15/04 07/25/03	Initial Initial Followup	Brown Treat Brown
El Centro de la Raza	Separated	Y	1		3	1	10/23/03 01/26/04 04/29/04 06/29/04	Initial Followup Followup Followup	Agasid
Emerald Services	Combined	Y					07/26/04	Initial	Uzunow
GSA - FBI Shop	Direct	N	3			2	06/25/04	Initial	Treat
GSA - Federal Center South	Direct	N	1		1	2	06/25/04	Initial	Treat

** In Compliance as of the Report Ending Date.*

Printed Jan 25, 2005 12:33 pm

rptSiteHistByBasin

Page 1 of 4

Site History by Basin (continued)

Duwamish Basin

Diagonal SD Subbasin

Business Name	Sewer Class	In Compliance*	Corr. Actions Requested			Visit Date	Visit Type	Inspector
			HW	IW	Spill			
Jackson Motors, Inc.	Separated	Y	1					
						07/29/04	Initial	Treat
						09/27/04	Followup	
MacMillan Piper Inc.	Separated	N	2		3			
						06/04/03	Initial	Treat
						08/26/03	Followup	
						10/06/03	Followup	
						01/26/04	Followup	
						05/18/04	Followup	
						07/20/04	Followup	
						09/27/04	Followup	
Mail Movers	Combined	Y	2		1			
						03/19/03	Initial	Sifford
						06/16/04	Followup	Hamilton
Mandarin Apartments	Separated	Y						
						06/10/03	Initial	Brown
						10/15/03	Followup	
						06/04/04	Followup	Uzunow
Medgar Evers Pool/Seattle Parks & Recreation	Separated		1		3			
						11/04/03	Initial	Perry
						12/09/04	Followup	Uzunow

Site History by Basin (continued)

Duwamish Basin

Diagonal SD Subbasin

<i>Business Name</i>	<i>Sewer Class</i>	<i>In Compliance*</i>	<i>Corr. Actions Requested</i>				<i>Visit Date</i>	<i>Visit Type</i>	<i>Inspector</i>
			<i>HW</i>	<i>IW</i>	<i>Spill</i>	<i>Storm</i>			
Merlino Foods	Separated	Y	1		2	4	05/29/03	Initial	Treat
							08/22/03	Followup	
							08/05/04	Followup	
Mr. Detail	Separated	Y					07/29/04	Initial	Treat
Nile Auto Repair	Separated	Y	1		3	5	09/24/03	Initial	Treat
							01/28/04	Followup	
							05/18/04	Followup	
							07/15/04	Followup	
North Star Casteel	Combined	Y	4	1	3	4	05/22/03	Initial	Joyce
							05/05/04	Initial	Uzunow
							08/19/03	Followup	Joyce
							12/09/04	Followup	Uzunow
Pro Express Inc.	Separated	N	2		1	2	03/18/03	Initial	Mayfield
							06/30/04	Followup	
							12/04/03	Followup	
Rent-A-Center	Separated	Y	1			1	08/05/03	Initial	Niehaus
							09/03/04	Followup	

Site History by Basin (continued)

Duwamish Basin

Diagonal SD Subbasin

Business Name	Sewer Class	In Compliance*	Corr. Actions Requested				Visit Date	Visit Type	Inspector
			HW	IW	Spill	Storm			
Rite Aid Pharmacies	Separated	Y	1	1					
						10/20/03	Initial	Mayfield	
						07/20/04	Followup		
Utility Inc.	Separated	Y	1		3				
						09/29/03	Screening	Tuomisto	
						09/08/04	Initial		
						11/16/04	Followup		
Wendy's	Separated	Y							
						06/17/04	Initial	Uzunow	
Widget Works	Separated	Y	2		3				
						04/05/04	Initial	Uzunow	
						05/21/04	Followup		
						07/01/04	Followup		
						08/20/04	Followup		

***Report Totals:**

Screening Visits:	1
Initial Visits:	24
Followup Visits:	31

* Visits from prior time periods are included in order to see a full Site History for Sites that were visited during the report cycle.

Site History by Basin

Diagonal CSO Basin

Diagonal CSO Subbasin

Business Name	Sewer Class	In Compliance*	Corr. Actions Requested				Visit Date	Visit Type	Inspector
			HW	IW	Spill	Storm			
Arco AM/PM/E1-Assa/Inc.	Combined	Y			3	1	04/01/04	Initial	Stewart
							10/14/04	Followup	
							11/24/04	Followup	
AT Systems	Combined	Y			3	2	03/04/04	Initial	Uzunow
							07/01/04	Followup	
							08/11/04	Followup	
Beacon Hill Dry Cleaners	Combined	Y			3	2	02/02/04	Initial	Stewart
							06/14/04	Followup	
Charles Street - Fire Truck Repair Shop	Combined	N		1	3		08/24/04	Initial	Uzunow
Charles Street - Testing Station	Combined	N			3		09/03/04	Initial	Treat
Charles Street Auto Shop	Combined	N	1		3	1	08/24/04	Initial	Uzunow
Charles Street SDOT Facility	Combined	N	1		1	1	09/01/04	Initial	Uzunow
Charles Street Tire Shop	Combined	Y					08/26/04	Initial	Uzunow

* In Compliance as of the Report Ending Date.

Site History by Basin (continued)

Diagonal CSO Basin

Diagonal CSO Subbasin

<i>Business Name</i>	<i>Sewer Class</i>	<i>In Compliance*</i>	<i>Corr. Actions Requested</i>				<i>Storm</i>	<i>Visit Date</i>	<i>Visit Type</i>	<i>Inspector</i>
			<i>HW</i>	<i>IW</i>	<i>Spill</i>					
Copy Mart	Combined	Y				1	03/10/04	Initial	Rivera	
							09/08/04	Followup	Uzunow	
							12/13/04	Followup		
Deeny Construction Co. Inc.	Combined	Y	1		2	1	10/22/03	Initial	Brown	
							06/18/04	Initial	Bassett	
							07/09/04	Followup		
DSSH	Separated	N/A					06/15/04	Screening	Uzunow	
Girlie Press	Combined	Y			3		03/17/04	Initial	Tuomisto	
							10/05/04	Followup		
Harborview Medical Center	Combined	Y	1	1	1		04/27/04	Initial	Waddell	
							08/05/04	Followup		
Joslin Diabetes Center	Combined	Y				1	04/14/04	Initial	Rivera	
							06/02/04	Followup		
Kelly Ross Pharmacy	Combined	N/A					06/29/04	Screening	Agasid	
Longs Drugs	Combined	Y			2		02/27/04	Initial	Agasid	
							06/16/04	Followup		

Site History by Basin (continued)

Diagonal CSO Basin

Diagonal CSO Subbasin

<i>Business Name</i>	<i>Sewer Class</i>	<i>In Compliance*</i>	<i>Corr. Actions Requested</i>				<i>Visit Date</i>	<i>Visit Type</i>	<i>Inspector</i>
			<i>HW</i>	<i>IW</i>	<i>Spill</i>	<i>Storm</i>			
Malay Satay Hut	Combined	Y			2				
						03/16/04	Initial	Bassett	
						08/20/04	Followup		
Materials/Geotechnical Lab	Combined	N/A							
						08/20/04	Screening	Uzunow	
Money Tree	Combined	Y						1	
						04/14/04	Initial	Rivera	
						07/09/04	Followup	Uzunow	
Mount Zion Baptist Church	Combined	Y						2	
						03/24/04	Initial	Tuomisto	
						06/01/04	Followup		
Nha Hang Ngoc Huong	Combined	Y	1		3			1	
						03/16/04	Initial	Bassett	
						07/07/04	Followup		
Pacific Sleep Center	Combined	N/A							
						06/29/04	Screening	Agasid	
Saigon Viet Nam Deli	Combined	Y	1		3			1	
						03/16/04	Initial	Bassett	
						07/07/04	Followup		
						08/20/04	Followup		
Seattle Fire Department - #7	Combined	Y						1	
						05/16/03	Initial	Peacock	
						04/05/04	Followup	Bassett	
						06/07/04	Followup		

Site History by Basin (continued)

Diagonal CSO Basin

Diagonal CSO Subbasin

Business Name	Sewer Class	In Compliance*	Corr. Actions Requested				Visit Date	Visit Type	Inspector
			HW	IW	Spill	Storm			
Seattle University - Drainage	Combined	Y				2	04/05/04	Initial	Treat
							12/06/04	Followup	
Shell Mini Mart	Separated	Y	1		3	3	02/12/04	Initial	Bassett
							06/10/04	Followup	
Shiomi and Chinn Investments LLC	Combined	Y				2	04/15/04	Initial	Bassett
							06/14/04	Followup	
Sons of Haiti	Combined	Y				1	03/12/04	Initial	Uzunow
							04/22/04	Followup	
							05/18/04	Followup	
							05/27/04	Followup	
							06/04/04	Followup	
							06/16/04	Followup	
Swedish Family Medicine	Combined	Y				1	06/04/04	Initial	Agasid
							07/30/04	Followup	
Swedish Medical Center	Combined	Y				1	04/08/04	Initial	Waddell
							08/05/04	Followup	

Site History by Basin (continued)

Diagonal CSO Basin

Diagonal CSO Subbasin

<i>Business Name</i>	<i>Sewer Class</i>	<i>In Compliance*</i>	<i>Corr. Actions Requested</i>				<i>Visit Date</i>	<i>Visit Type</i>	<i>Inspector</i>
			<i>HW</i>	<i>IW</i>	<i>Spill</i>	<i>Storm</i>			
The Polyclinic	Combined	Y				1	05/05/04	Initial	Agasid
							07/30/04	Followup	
U-Haul of Western WA	Separated	N			3	2	10/22/03	Initial	Brown
							05/05/04	Followup	Basett
							12/02/04	Followup	
							12/29/04	Followup	
University of Washington Consolidated Laundry	Separated	Y	1	1	2		03/23/04	Initial	Girard
							06/08/04	Followup	
Vy Da	Combined	Y	1		3	1	07/07/04	Initial	Basett
							08/20/04	Followup	
Wholesale Transmissions	Combined	N	1		2		02/12/04	Initial	Agasid
							06/16/04	Followup	
Work Source	Combined	Y				2	06/17/04	Initial	Uzunow
							08/09/04	Followup	

Site History by Basin (continued)

Diagonal CSO Basin

Lake Washington South Subbasin

*In Compliance**

Corr. Actions Requested

<i>Business Name</i>	<i>Sewer Class</i>	<i>In Compliance*</i>	<i>HW</i>	<i>IW</i>	<i>Spill</i>	<i>Storm</i>	<i>Visit Date</i>	<i>Visit Type</i>	<i>Inspector</i>
Enterprise Rent-A-Car	Separated	Y				1	02/09/04	Initial	Rivera
							07/09/04	Followup	Uzunow
Express Tires & Auto Service	Separated	N	1			2	03/01/04	Initial	Girard
							04/27/04	Followup	
							06/01/04	Followup	
Genesee Plaza	Separated	Y				2	04/22/04	Initial	Uzunow
							06/02/04	Followup	
Image Star Shots	Combined	Y	1		2		02/05/04	Initial	Agasid
							06/16/04	Followup	
Isaacs Chiropractic Clinic	Separated	Y		1			02/04/04	Initial	Uzunow
							03/23/04	Followup	
							07/07/04	Followup	Hamilton
John Muir Elementary School	Separated	Y				1	02/23/04	Initial	Rivera
							07/09/04	Followup	Uzunow
Jone's Clavier Academy of Music, Inc.	Separated	Y				2	03/03/04	Initial	Rivera
							07/09/04	Followup	Uzunow

Site History by Basin (continued)

Diagonal CSO Basin

Lake Washington South Subbasin

<i>Business Name</i>	<i>Sewer Class</i>	<i>In Compliance*</i>	<i>Corr. Actions Requested</i>				<i>Visit Date</i>	<i>Visit Type</i>	<i>Inspector</i>
			<i>HW</i>	<i>IW</i>	<i>Spill</i>	<i>Storm</i>			
K-1 Auto Body Shop	Separated	Y	1		3	4	02/25/03	Initial	Tuomisto
							04/22/04	Initial	
							10/09/03	Followup	
							06/30/04	Followup	
							07/21/04	Followup	
Mekong Rainier Market & Gift	Combined	Y				1	02/23/04	Initial	Rivera
							07/09/04	Followup	Uzunow
							09/08/04	Followup	
National Pride Car Wash	Separated	N			3	2	03/02/04	Initial	Treat
							11/10/04	Followup	Uzunow
PCC Natural Markets	Combined	Y				1	02/09/04	Initial	Waddell
							06/22/04	Followup	
Rainier Auto	Combined	Y	3		3	2	07/11/03	Initial	Bassett
							06/17/04	Followup	
Saint Gobain	Separated	N	1		2	1	05/25/04	Initial	Mayfield
							07/15/04	Followup	Uzunow

Site History by Basin (continued)

Diagonal CSO Basin

Lake Washington South Subbasin

Business Name	Sewer Class	In Compliance*	Corr. Actions Requested				Visit Date	Visit Type	Inspector
			HW	IW	Spill	Storm			
Super Saver Furniture	Combined	N				1	02/12/04	Initial	Niehaus
							05/19/04	Followup	Treat
							07/15/04	Followup	
Tacos El Asadero	Combined	Y				1	02/09/04	Initial	Rivera
							07/09/04	Followup	Uzunow
							07/29/04	Followup	Treat
Wash's Auto Reair	Part. Sep.	Y	1	2	5		02/05/04	Initial	Uzunow
							04/22/04	Followup	
							05/13/04	Followup	
							06/01/04	Followup	Girard
							07/21/04	Followup	
Zion Prep Academy	Separated	Y	1			2	02/12/04	Initial	Girard
							06/01/04	Followup	

Lander Subbasin

Business Name	Sewer Class	In Compliance*	Corr. Actions Requested				Visit Date	Visit Type	Inspector
			HW	IW	Spill	Storm			
Beacon 76	Separated	N			3	2	12/20/04	Initial	Stewart

Site History by Basin (continued)

Diagonal CSO Basin

Lander Subbasin

<i>Business Name</i>	<i>Sewer Class</i>	<i>In Compliance*</i>	<i>Corr. Actions Requested</i>				<i>Visit Date</i>	<i>Visit Type</i>	<i>Inspector</i>
			<i>HW</i>	<i>IW</i>	<i>Spill</i>	<i>Storm</i>			
Lioe's Automotive Service	Separated	N			2				
Westview Apartments	Separated	N				2			
						12/08/04	Initial	Stewart	
						12/15/04	Initial	Stewart	

***Report Totals:**

<i>Screening Visits:</i>	4
<i>Initial Visits:</i>	54
<i>Followup Visits:</i>	65

* Visits from prior time periods are included in order to see a full Site History for Sites that were visited during the report cycle.

Duwamish Source Control Program Database

Site History by Basin

Dates: Jun 1, 2004 to Dec 31, 2004

Basin: Duwamish

Subbasin: Slip 4

Duwamish Basin

Slip 4 Subbasin

<i>Business Name</i>	<i>Sewer Class</i>	<i>In Compliance*</i>	<i>Corr. Actions Requested</i>				<i>Visit Date</i>	<i>Visit Type</i>	<i>Inspector</i>
			<i>HW</i>	<i>IW</i>	<i>Spill</i>	<i>Storm</i>			
Air Lift Northwest	Separated	Y			3		09/20/04	Initial	Bassett
							12/07/04	Followup	
Airpac Airlines	Separated	Y			2		09/20/04	Initial	Bassett
							12/07/04	Followup	
Alaska Logistics - Crowley	Direct	N	1		2	2	06/22/04	Initial	Treat
American Avionics, Inc.	Separated	N/A					08/27/04	Screening	Bassett
Arco - E Margin	Separated	N			3	2	10/12/04	Initial	Stewart
AV Factory	Combined	Y				2	05/19/04	Initial	Uzunow
							07/01/04	Followup	
							09/24/04	Followup	
Cacallori Marble	Combined	N					06/16/04	Initial	Tuomisto
Chinese Baptist Church	Combined		1			1	07/26/04	Initial	Tuomisto
							11/29/04	Followup	

** In Compliance as of the Report Ending Date.*

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Site History by Basin (continued)

Duwamish Basin

Slip 4 Subbasin

<i>Business Name</i>	<i>Sewer Class</i>	<i>In Compliance*</i>	<i>Corr. Actions Requested</i>				<i>Visit Date</i>	<i>Visit Type</i>	<i>Inspector</i>
			<i>HW</i>	<i>IW</i>	<i>Spill</i>	<i>Storm</i>			
Classic Helicopters	Separated	Y			3				
						08/05/04	Initial	Uzunow	
						10/13/04	Followup		
Envelope Converting Service	Combined	Y			3				
						05/19/04	Initial	Uzunow	
						07/01/04	Followup		
Federal Aviation Administration	Combined	Y			2	2			
						08/05/04	Initial	Uzunow	
						11/09/04	Followup		
Ferguson Property	Combined	Y						1	
						06/09/04	Initial	Uzunow	
						08/05/04	Followup		
Fire Station # 27	Combined	Y						1	
						08/20/04	Initial	Uzunow	
						10/13/04	Followup		
Galvin Flying Service, Inc. - 7001	Separated	Y			2				
						08/11/04	Initial	Bassett	
						12/07/04	Followup		
Galvin Flying Service, Inc. - 7023	Separated	Y			2				
						08/11/04	Initial	Bassett	
						12/07/04	Followup		
Galvin Flying Service, Inc. - 7149	Separated	Y			2	1			
						08/11/04	Initial	Bassett	
						12/07/04	Followup		

Site History by Basin (continued)

Duwamish Basin

Slip 4 Subbasin

<i>Business Name</i>	<i>Sewer Class</i>	<i>In Compliance*</i>	<i>Corr. Actions Requested</i>				<i>Visit Date</i>	<i>Visit Type</i>	<i>Inspector</i>
			<i>HW</i>	<i>IW</i>	<i>Spill</i>	<i>Storm</i>			
Galvin Flying Service, Inc. - 7201	Separated	Y			2				
						08/11/04	Initial	Bassett	
						12/07/04	Followup		
Galvin Flying Service, Inc. - 6987	Separated	Y			2				
						08/11/04	Initial	Bassett	
						12/07/04	Followup		
Garlatz/Seattle Air Corp	Separated	Y							
						10/06/04	Initial	Stewart	
						12/16/04	Followup		
Georgetown Management	Separated	Y			3				
						08/17/04	Initial	Uzunow	
						09/14/04	Followup	Treat	
Georgetown Powerplant Museum	Separated	Y							
						11/04/04	Initial	Uzunow	
Helijet	Separated	N/A							
						09/27/04	Screening	Treat	
Jensen Family LTD Partners	Separated	N							
						09/29/04	Initial	Uzunow	
						12/16/04	Followup		
Kenmore Air	Separated	N/A							
						08/12/04	Screening	Treat	
King County Maintenance Facility - Airport	Separated	N							
						12/22/04	Initial	Treat	

Site History by Basin (continued)

Duwamish Basin

Slip 4 Subbasin

Business Name	Sewer Class	In Compliance*	Corr. Actions Requested				Visit Date	Visit Type	Inspector
			HW	IW	Spill	Storm			
King County Public Health - Asthma	Separated	N/A							
						09/22/04	Screening	Treat	
King County Sheriff's Office - Special Operations	Separated	N/A							
						08/03/04	Screening	Uzunow	
Kohl & Madden	Separated	Y							
						09/30/04	Initial	Uzunow	
Larry's Market - E Myrtle	Separated	N			3				
						11/03/04	Initial	Stewart	
Mente LLC	Separated	Y							
						08/25/04	Initial	Uzunow	
National Aviation	Separated	Y			2				
						08/25/04	Initial	Bassett	
						10/18/04	Followup		
NE T-Hangars	Separated	N							
						10/08/04	Initial	Treat	
Neon Sign Systems	Combined	Y							
						06/09/04	Initial	Uzunow	
Nichols Truck Tire	Combined	N	1		3				
						06/16/04	Initial	Tuomisto	
						11/29/04	Followup		
NW Truck Transmission Inc.	Combined	Y	3		1	1			
						06/09/04	Initial	Tuomisto	
						11/29/04	Followup		

Site History by Basin (continued)

Duwamish Basin

Slip 4 Subbasin

<i>Business Name</i>	<i>Sewer Class</i>	<i>In Compliance*</i>	<i>Corr. Actions Requested</i>				<i>Visit Date</i>	<i>Visit Type</i>	<i>Inspector</i>
			<i>HW</i>	<i>IW</i>	<i>Spill</i>	<i>Storm</i>			
Office of Emergency Management	Separated	N/A					09/29/04	Screening	Treat
Olde Thyme Aviation	Separated	Y					07/30/04	Initial	Uzunow
O'Neill And Sons	Separated	Y	1		2	2	08/20/04	Initial	Uzunow
							12/16/04	Followup	
Pacific Multiforms Co., Inc.	Combined	Y				1	05/19/04	Initial	Uzunow
							07/01/04	Followup	
Perspective Image	Combined	N/A					06/17/04	Screening	Tuomisto
Puget Sound Energy	Combined	Y	1		3	1	05/27/04	Initial	Uzunow
							07/20/04	Followup	
							08/06/04	Followup	
							10/27/04	Followup	
San Juan Airlines	Separated	N/A					09/24/04	Screening	Treat
Show Quality Metal Finishing	Separated	N	1		3	1	10/06/04	Initial	Stewart
							11/26/04	Followup	
Shultz Distributing - KC Airport	Separated	N					10/15/04	Initial	Treat

Site History by Basin (continued)

Duwamish Basin

Slip 4 Subbasin

<i>Business Name</i>	<i>Sewer Class</i>	<i>In Compliance*</i>	<i>Corr. Actions Requested</i>				<i>Visit Date</i>	<i>Visit Type</i>	<i>Inspector</i>
			<i>HW</i>	<i>IW</i>	<i>Spill</i>	<i>Storm</i>			
Starbucks Coffee Company - Corporate Aviation	Separated	Y					08/17/04	Initial	Uzunow
Tenrikyo High Seattle	Separated	Y					07/26/04	Initial	Tuomisto
Troll Motors	Separated	Y					10/06/04	Initial	Stewart
UltraBlock Inc.	Separated	N			3		06/16/04	Initial	Tuomisto
WA Air National Guard	Separated	Y					07/29/04	Initial	Uzunow
Washington Square Fruit & Produce	Combined	Y					11/29/04	Initial	Tuomisto

***Report Totals:**
Screening Visits: 8
Initial Visits: 42
Followup Visits: 27

* Visits from prior time periods are included in order to see a full Site History for Sites that were visited during the report cycle.

Duwamish Source Control Program Database

Site History by Basin

Dates: Jun 1, 2004 to Dec 31, 2004

Basin: Duwamish

Subbasin: Slip 5, Slip 6

Duwamish Basin

Slip 5 Subbasin

Business Name	Sewer Class	In Compliance*	Corr. Actions Requested				Visit Date	Visit Type	Inspector
			HW	IW	Spill	Storm			
Aeroflight	Separated	N			1	08/12/04	Initial	Stewart	
Airtech Instrument Co., Inc.	Separated	Y				09/22/04	Initial	Stewart	
Airwest Repair Services	Separated	Y				08/05/04	Initial	Stewart	
Ameriflight	Separated	N	1		3	06/04/04	Initial	Treat	
ARFF - King County Airport	Combined	Y				09/24/04	Initial	Uzunow	
BAX Global	Separated	Y			2	08/12/04 11/24/04	Initial Followup	Stewart	
Caliber Inspection	Separated	N				08/18/04	Initial	Treat	
Cascade AirFrame Repair Inc.	Separated	Y				11/02/04	Initial	Stewart	
Civil Air Patrol	Separated	N/A				09/20/04	Screening	Bassett	

* In Compliance as of the Report Ending Date.

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Site History by Basin (continued)

Duwamish Basin

Slip 5 Subbasin

<i>Business Name</i>	<i>Sewer Class</i>	<i>In Compliance*</i>	<i>Corr. Actions Requested</i>				<i>Visit Date</i>	<i>Visit Type</i>	<i>Inspector</i>
			<i>HW</i>	<i>IW</i>	<i>Spill</i>	<i>Storm</i>			
Clay Lacy Aviation	Separated	Y			2	1	08/04/04	Initial	Stewart
							11/24/04	Followup	
							12/16/04	Followup	
Corporate Jets, Inc	Separated	Y			1		08/05/04	Initial	Stewart
							12/08/04	Followup	
DHL	Separated	Y					08/06/04	Initial	Stewart
FAA ATCT Control Tower	Combined	Y					09/29/04	Initial	Uzunow
Federal Drug Enforcement	Separated	N/A					07/29/04	Screening	Uzunow
Galvin Flying Service, Inc. - 7777	Separated	Y			3		08/11/04	Initial	Bassett
							12/07/04	Followup	
GBA	Separated	Y					08/05/04	Initial	Stewart
GSM Inc.	Separated	Y					08/19/04	Initial	Treat
Helicopters Northwest, Inc.	Separated	Y					09/29/04	Initial	Treat
Midfield Airpark T-Hangars	Direct	N					09/24/04	Initial	Treat

Site History by Basin (continued)

Duwamish Basin

Slip 5 Subbasin

<i>Business Name</i>	<i>Sewer Class</i>	<i>In Compliance*</i>	<i>Corr. Actions Requested</i>				<i>Visit Date</i>	<i>Visit Type</i>	<i>Inspector</i>
			<i>HW</i>	<i>IW</i>	<i>Spill</i>	<i>Storm</i>			
MJL Partners	Separated	Y			3				
						09/20/04	Initial	Bassett	
						12/07/04	Followup		
Nordstrom	Separated	Y							
						10/29/04	Initial	Uzunow	
Puget Sound Aviators	Separated	Y							
						08/05/04	Initial	Stewart	
Reed Aviation	Separated	N			1				
						10/04/04	Initial	Stewart	
SSCC - Aviation Department Hangar	Combined	Y			3				
						08/11/04	Initial	Uzunow	
						11/19/04	Followup		
Startube	Combined	Y			3				
						08/11/04	Initial	Uzunow	
						11/19/04	Followup		
SW T-Hangars	Separated	N							
						09/10/04	Initial	Treat	
UPS	Separated	Y							
						08/04/04	Initial	Treat	
Vulcan	Separated	N							
						10/08/04	Initial	Treat	
Washington Avionics	Separated	Y							
						09/15/04	Initial	Stewart	

Site History by Basin (continued)

Duwamish Basin

Slip 5 Subbasin

Business Name	Sewer Class	In Compliance*	Corr. Actions Requested				Visit Date	Visit Type	Inspector
			HW	IW	Spill	Storm			
Western Metal Products, Inc	Separated	N							
Wings Aloft	Separated	N	1		1	10/07/04	Initial	Treat	
						09/13/04	Initial	Stewart	

Slip 6 Subbasin

Business Name	Sewer Class	In Compliance*	Corr. Actions Requested				Visit Date	Visit Type	Inspector
			HW	IW	Spill	Storm			
King County Sheriff- Air Support Unit	Separated	Y			3	08/03/04	Initial	Uzunow	
The Museum of Flight	Separated	Y				09/30/04	Followup		
						10/14/04	Initial	Stewart	

***Report Totals:**
 Screening Visits: 2
 Initial Visits: 31
 Followup Visits: 9

* Visits from prior time periods are included in order to see a full Site History for Sites that were visited during the report cycle.

Duwamish Source Control Program Database

Site History by Basin

Dates: Jun 1, 2004 to Dec 31, 2004

Basin: Duwamish

Subbasin: Hanford CSO, Lander SD

Duwamish Basin

Hanford CSO Subbasin

<i>Business Name</i>	<i>Sewer Class</i>	<i>In Compliance*</i>	<i>Corr. Actions Requested</i>				<i>Visit Date</i>	<i>Visit Type</i>	<i>Inspector</i>
			<i>HW</i>	<i>IW</i>	<i>Spill</i>	<i>Storm</i>			
Canterbury Ales & Eats	Combined	N			2				
						12/15/04	Initial	Treat	
Courtesy Tires	Combined	N			3	1			
						12/16/04	Initial	Stewart	
European Vine Selection of WA	Combined	N/A							
						12/13/04	Screening	Uzunow	
First Call Plus	Combined	Y							
						12/07/04	Initial	Uzunow	
Flyright Productions	Combined	N/A							
						12/20/04	Screening	Stewart	
Helen B Ratcliff House	Combined	N/A							
						12/02/04	Screening	Stewart	
Holiday Gift & Craft Shop	Combined	N				1			
						12/13/04	Initial	Uzunow	
Holy Name Academy	Combined	Y							
						12/28/04	Initial	Uzunow	
Jehovah's Witnesses Kingdom Hall	Combined	N				2			
						12/03/04	Initial	Uzunow	
Meany Middle School	Combined	Y							
						12/16/04	Initial	Uzunow	

** In Compliance as of the Report Ending Date.*

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Site History by Basin (continued)

Duwamish Basin

Hanford CSO Subbasin

<i>Business Name</i>	<i>Sewer Class</i>	<i>In. Compliance*</i>	<i>Corr. Actions Requested</i>				<i>Visit Date</i>	<i>Visit Type</i>	<i>Inspector</i>
			<i>HW</i>	<i>IW</i>	<i>Spill</i>	<i>Storm</i>			
Mercer Professional Bldg	Combined	N					12/29/04	Initial	Uzunow
Miller Community Center	Combined	N					12/13/04	Initial	Uzunow
Miller Community Playfield	Combined	N					12/13/04	Initial	Uzunow
Monsoon	Combined	N					12/29/04	Initial	Uzunow
North Hill Bakery	Combined	N/A					12/16/04	Screening	Treat
Olympia Pizza & Spaghetti House	Combined	N/A					12/16/04	Screening	Treat
Outcome Concept Systems	Combined	N/A					12/13/04	Screening	Uzunow
Palermo Pizza and Pasta	Combined	Y					12/02/04	Initial	Uzunow
Samui Thai Cuisine	Combined	N/A					12/16/04	Screening	Treat
Shoprite	Combined	N/A					12/02/04	Screening	Uzunow
The Kingfish Cafe	Combined	N	1		3		12/13/04	Initial	Uzunow

Site History by Basin (continued)

Duwamish Basin

Hanford CSO Subbasin

<i>Business Name</i>	<i>Sewer Class</i>	<i>In Compliance*</i>	<i>Corr. Actions Requested</i>				<i>Visit Date</i>	<i>Visit Type</i>	<i>Inspector</i>
			<i>HW</i>	<i>IW</i>	<i>Spill</i>	<i>Storm</i>			
Union Gospel Mission	Combined	N			3	2	12/16/04	Initial	Treat
Vertigo High Access Services	Combined	Y					12/15/04	Initial	Treat
Walgreens Drug Store - 15th Ave - 15th Ave	Combined	Y					12/02/04	Initial	Uzunow
Wood Specialties	Combined	N	1		3		12/09/04	Initial	Uzunow

Lander SD Subbasin

<i>Business Name</i>	<i>Sewer Class</i>	<i>In Compliance*</i>	<i>Corr. Actions Requested</i>				<i>Visit Date</i>	<i>Visit Type</i>	<i>Inspector</i>
			<i>HW</i>	<i>IW</i>	<i>Spill</i>	<i>Storm</i>			
Beacon Hill Elementary School	Separated	Y					12/16/04	Initial	Stewart
JD OTT Co.	Separated	N					11/19/04	Initial	Bassett
Key Bank - 1st ave	Separated	Y					12/21/04	Initial	Stewart
King County Credit Union	Separated	Y					12/21/04	Initial	Stewart
Paper Zone	Separated	N				1	12/28/04	Initial	Treat

Site History by Basin (continued)

Duwamish Basin

Lander SD Subbasin

<i>Business Name</i>	<i>Sewer Class</i>	<i>In Compliance*</i>	<i>Corr. Actions Requested</i>				<i>Visit Date</i>	<i>Visit Type</i>	<i>Inspector</i>
			<i>HW</i>	<i>IW</i>	<i>Spill</i>	<i>Storm</i>			
Pecos Pit BBQ Inc Restaurant	Separated	N			3	2	12/28/04	Initial	Treat
Shell - Beacon	Part. Sep.	N			3	1	12/16/04	Initial	Stewart

***Report Totals:**
Screening Visits: 8
Initial Visits: 24
Followup Visits: 0

* Visits from prior time periods are included in order to see a full Site History for Sites that were visited during the report cycle.

TABLE B-5

Site history by basin

Duwamish Source Control Program Database

Corrective Actions Requested, Grouped by Regulatory Area

Dates: Jun 1, 2004 to Dec 31, 2004

Regulatory Area:

Industrial Waste

<i>Site</i>	<i>Letter Date</i>	<i>Inspector</i>	<i>Corrective Action Requested</i>
Broadway Sports & Internal Medicine	6/2/2004	Mayfield	Implement pretreatment for discharge
Charles Street - Fire Truck Repair Shop	9/15/2004	Uzunow	Provide better/more maintenance for pretreatment system

2 Sites with 2 Corrective Actions Requested

Regulatory Area:

Hazardous Waste

<i>Site</i>	<i>Letter Date</i>	<i>Inspector</i>	<i>Corrective Action Requested</i>
Alaska Logistics Crowley	7/14/2004	Thomas	Properly store Product/Waste
Ameriflight	9/16/2004	Treat	Properly store Product/Waste
Broadway Sports & Internal Medicine	6/2/2004	Mayfield	Properly dispose of Waste
Charles Street Auto Shop	9/15/2004	Uzunow	Properly store Product/Waste
Charles Street SDOT Facility	10/4/2004	Uzunow	Properly label Containers
Chinese Baptist Church	8/9/2004	Tuomisto	Properly dispose of Waste
GSA - FBI Shop	7/9/2004	Thomas	Properly dispose of Waste Properly store Product/Waste Properly label Containers
GSA - Federal Center South	7/9/2004	Thomas	Properly store Product/Waste
Jackson Motors, Inc.	8/11/2004	Treat	Properly store Product/Waste
Nichols Truck Tire	8/18/2004	Tuomisto	Properly dispose of Waste
North Star Casteel	6/24/2004	Uzunow	Properly label Containers
NW Truck Transmission Inc.	6/10/2004	Tuomisto	Properly dispose of Waste Properly document waste disposal Properly label Containers
O'Neill And Sons	10/20/2004	Uzunow	Properly store Product/Waste

Corrective Actions Requested, Grouped by Regulatory Area (continued)

Regulatory Area:

Hazardous Waste

<i>Site</i>	<i>Letter Date</i>	<i>Inspector</i>	<i>Corrective Action Requested</i>
Puget Sound Energy	6/8/2004	Uzunow	Properly store Product/Waste
Rainier Auto	8/6/2004	Bassett	Properly store Product/Waste Properly label Containers Repair or replace degraded open chemical containers
Robert Grenley, M.D.	6/3/2004	Mayfield	Properly dispose of Waste
Saint Gobain	6/2/2004	Mayfield	Properly document waste disposal
Show Quality Metal Finishing	10/13/2004	Stewart	Properly dispose of Waste
The Kingfish Cafe	12/20/2004	Uzunow	Properly document waste disposal
Utility Inc.	9/23/2004	Tuomisto	Properly dispose of Waste
Vy Da	7/7/2004	Bassett	Properly dispose of Waste
Wings Aloft	10/1/2004	Stewart	Properly store Product/Waste
Wood Specialties	12/20/2004	Uzunow	Properly store Product/Waste

23 Sites with 29 Corrective Actions Requested

Regulatory Area:

Spill Prevention and Cleanup

<i>Site</i>	<i>Letter Date</i>	<i>Inspector</i>	<i>Corrective Action Requested</i>
Aeroflight	8/25/2004	Stewart	Improve or create spill response procedures
Air Lift Northwest	10/14/2004	Bassett	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
Airpac Airlines	10/14/2004	Bassett	Improve or create spill response procedures Properly educate employees
Alaska Logistics Crowley	7/14/2004	Thomas	Improve or create spill response procedures Improve or purchase adequate spill response materials
Ameriflight	9/16/2004	Treat	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees

Corrective Actions Requested, Grouped by Regulatory Area (continued)

Regulatory Area:

Spill Prevention and Cleanup	<i>Letter</i>	<i>Inspector</i>	<i>Corrective Action Requested</i>
<i>Site</i>	<i>Date</i>	<i>Inspector</i>	<i>Corrective Action Requested</i>
Arco E Margin	10/21/2004	Stewart	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
BAX Global	8/25/2004	Stewart	Improve or create spill response procedures Improve or purchase adequate spill response materials
Beacon 76	12/21/2004	Stewart	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
Broadway Sports & Internal Medicine	6/2/2004	Mayfield	Improve or purchase adequate spill response materials
Canterbury Ales & Eats	12/23/2004	Treat	Improve or create spill response procedures Properly educate employees
Charles Street - Fire Truck Repair Shop	9/15/2004	Uzunow	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
Charles Street - Testing Station	9/9/2004	Treat	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
Charles Street Auto Shop	9/15/2004	Uzunow	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
Charles Street SDOT Facility	10/4/2004	Uzunow	Improve or create spill response procedures
CL Auto Repair	12/23/2004	Treat	Improve or purchase adequate spill response materials
Classic Helicopters	8/17/2004	Uzunow	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
Clay Lacy Aviation	8/25/2004	Stewart	Improve or create spill response procedures Improve or purchase adequate spill response materials
Corporate Jets, Inc	8/25/2004	Stewart	Improve or create spill response procedures

Corrective Actions Requested, Grouped by Regulatory Area (continued)

Regulatory Area:

Spill Prevention and Cleanup	<i>Letter Date</i>	<i>Inspector</i>	<i>Corrective Action Requested</i>
<i>Site</i> Courtesy Tires	12/22/2004	Stewart	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
Da Vinci Gourmet	8/27/2004	Bassett	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
Federal Aviation Administration	8/17/2004	Uzunow	Improve or create spill response procedures Properly educate employees
Galvin Flying Service, Inc. 6987	9/8/2004	Bassett	Improve or create spill response procedures Properly educate employees
Galvin Flying Service, Inc. 7001	9/8/2004	Bassett	Improve or create spill response procedures Properly educate employees
Galvin Flying Service, Inc. 7023	9/8/2004	Bassett	Improve or create spill response procedures Properly educate employees
Galvin Flying Service, Inc. 7149	9/8/2004	Bassett	Improve or create spill response procedures Properly educate employees
Galvin Flying Service, Inc. 7201	9/8/2004	Bassett	Improve or create spill response procedures Properly educate employees
Galvin Flying Service, Inc. 7777	9/8/2004	Bassett	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
Georgetown Management	8/19/2004	Uzunow	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
GSA - Federal Center South	7/9/2004	Thomas	Improve or purchase adequate spill response materials
King County Sheriff- Air Support Unit	8/12/2004	Uzunow	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees

Corrective Actions Requested, Grouped by Regulatory Area (continued)

Regulatory Area:

Spill Prevention and Cleanup

<i>Site</i>	<i>Letter Date</i>	<i>Inspector</i>	<i>Corrective Action Requested</i>
Larry's Market E Myrtle	11/8/2004	Stewart	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
Lioe's Automotive Service	12/8/2004	Stewart	Improve or create spill response procedures Properly educate employees
Malay Satay Hut	6/11/2004	Bassett	Improve or purchase adequate spill response materials Properly educate employees
MJL Partners	10/14/2004	Bassett	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
National Aviation	9/8/2004	Bassett	Improve or purchase adequate spill response materials Properly educate employees
Nichols Truck Tire	8/18/2004	Tuomisto	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
North Star Casteel	6/24/2004	Uzunow	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
NW Truck Transmission Inc.	6/10/2004	Tuomisto	Improve or create spill response procedures
O'Neill And Sons	10/20/2004	Uzunow	Improve or create spill response procedures Properly educate employees
Pecos Pit BBQ Inc Restaurant	12/29/2004	Treat	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
Puget Sound Energy	6/8/2004	Uzunow	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees

Corrective Actions Requested, Grouped by Regulatory Area (continued)

Regulatory Area:

Spill Prevention and Cleanup	<i>Letter</i>	<i>Date</i>	<i>Inspector</i>	<i>Corrective Action Requested</i>
Rainier Auto		8/6/2004	Bassett	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
Reed Aviation		10/21/2004	Stewart	Improve or create spill response procedures
Saint Gobain		6/2/2004	Mayfield	Improve or create spill response procedures Improve or purchase adequate spill response materials
Seattle University Engr Bld		6/21/2004	Rivera	Improve or purchase adequate spill response materials
Seattle University Services		6/21/2004	Rivera	Improve or purchase adequate spill response materials
Shell Beacon		12/20/2004	Stewart	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
Show Quality Metal Finishing		10/13/2004	Stewart	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
SSCC - Aviation Department Hangar		8/23/2004	Uzunow	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
Startube		8/23/2004	Uzunow	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
The Kingfish Cafe		12/20/2004	Uzunow	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
UltraBlock Inc.		11/22/2004	Tuomisto	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
Union Gospel Mission		12/23/2004	Treat	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees

Corrective Actions Requested, Grouped by Regulatory Area (continued)

Regulatory Area:

Spill Prevention and Cleanup

<i>Site</i>	<i>Letter Date</i>	<i>Inspector</i>	<i>Corrective Action Requested</i>
Utility Inc.	9/23/2004	Tuomisto	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
Vy Da	7/7/2004	Bassett	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees
Wings Aloft	10/1/2004	Stewart	Improve or create spill response procedures
Wood Specialties	12/20/2004	Uzunow	Improve or create spill response procedures Improve or purchase adequate spill response materials Properly educate employees

57 Sites with 133 Corrective Actions Requested

Regulatory Area:

Stormwater

<i>Site</i>	<i>Letter Date</i>	<i>Inspector</i>	<i>Corrective Action Requested</i>
Alaska Logistics Crowley	7/14/2004	Thomas	Storm drain facility needs to be cleaned Clean and eliminate leaks and spills from storage areas
Ameriflight	9/16/2004	Treat	Storm drain facility needs to be cleaned Correct illegal plumbing connection
Arco E Margin	10/21/2004	Stewart	Storm drain facility needs to be cleaned Properly store containerized materials
Beacon 76	12/21/2004	Stewart	Storm drain facility needs to be cleaned Missing or damaged components to storm drain facility need replacement/repair
Charles Street Auto Shop	9/15/2004	Uzunow	Storm drain facility needs to be cleaned
Charles Street- Maintenance Facility	10/20/2004	Uzunow	Storm drain facility needs to be cleaned Implement proper housekeeping Properly store non-containerized materials
Charles Street SDOT Facility	10/4/2004	Uzunow	Implement proper housekeeping
Chinese Baptist Church	8/9/2004	Tuomisto	Storm drain facility needs to be cleaned

Corrective Actions Requested, Grouped by Regulatory Area (continued)

Regulatory Area:

Stormwater

<i>Site</i>	<i>Letter Date</i>	<i>Inspector</i>	<i>Corrective Action Requested</i>
CL Auto Repair	12/23/2004	Treat	Properly store non-containerized materials Clean and eliminate leaks and spills from storage areas
Clay Lacy Aviation	8/25/2004	Stewart	Implement proper washing practices
Courtesy Tires	12/22/2004	Stewart	Make storm drain facility parts accessible
Federal Aviation Administration	8/17/2004	Uzunow	Storm drain facility needs to be cleaned Properly store non-containerized materials
Ferguson Property	7/7/2004	Uzunow	Storm drain facility needs to be cleaned
Fire Station # 27	8/23/2004	Uzunow	Storm drain facility needs to be cleaned
Galvin Flying Service, Inc. 7149	9/8/2004	Bassett	Clean and eliminate leaks and spills from storage areas
Garlatz/Seattle Air Corp	10/21/2004	Stewart	Properly store non-containerized materials
GSA - FBI Shop	7/9/2004	Thomas	Storm drain facility needs to be cleaned Missing or damaged components to storm drain facility need replacement/repair
GSA - Federal Center South	7/9/2004	Thomas	Storm drain facility needs to be cleaned Missing or damaged components to storm drain facility need replacement/repair
Holiday Gift & Craft Shop	12/20/2004	Uzunow	Storm drain facility needs to be cleaned
Jackson Motors, Inc.	8/11/2004	Treat	Don't discharge washwater or process wastewater to storm drain
Jehovah's Witnesses Kingdom Hall	12/13/2004	Uzunow	Storm drain facility needs to be cleaned Missing or damaged components to storm drain facility need replacement/repair
Jensen Family LTD Partners	10/1/2004	Uzunow	Storm drain facility needs to be cleaned Missing or damaged components to storm drain facility need replacement/repair
North Star Casteel	6/24/2004	Uzunow	Storm drain facility needs to be cleaned Implement proper housekeeping Clean and eliminate leaks and spills from storage areas
NW Truck Transmission Inc.	6/10/2004	Tuomisto	Properly perform maintenance of vehicles and equipment
O'Neill And Sons	10/20/2004	Uzunow	Properly store containerized materials Storm drain facility needs to be cleaned Implement proper washing practices
Paper Zone	12/29/2004	Treat	Storm drain facility needs to be cleaned

Corrective Actions Requested, Grouped by Regulatory Area (continued)

Regulatory Area:

Stormwater

<i>Site</i>	<i>Letter Date</i>	<i>Inspector</i>	<i>Corrective Action Requested</i>
Pecos Pit BBQ Inc Restaurant	12/29/2004	Treat	Storm drain facility needs to be cleaned
Puget Sound Energy	6/8/2004	Uzunow	Missing or damaged components to storm drain facility need replacement/repair
Rainier Auto	8/6/2004	Bassett	Storm drain facility needs to be cleaned
Saint Gobain	6/2/2004	Mayfield	Implement proper housekeeping
Shell Beacon	12/20/2004	Stewart	Properly store containerized materials
Show Quality Metal Finishing	10/13/2004	Stewart	Storm drain facility needs to be cleaned
Swedish Family Medicine	6/29/2004	Agasid	Missing or damaged components to storm drain facility need replacement/repair
The Polyclinic	6/30/2004	Agasid	Properly store non-containerized materials
Union Gospel Mission	12/23/2004	Treat	Storm drain facility needs to be cleaned
Utility Inc.	9/23/2004	Tuomisto	Storm drain facility needs to be cleaned
Vy Da	7/7/2004	Bassett	Missing or damaged components to storm drain facility need replacement/repair
Westview Apartments	12/16/2004	Stewart	Don't discharge washwater or process wastewater to stormdrain
Work Source	7/1/2004	Uzunow	Properly store non-containerized materials
			Implement proper housekeeping
			Storm drain facility needs to be cleaned
			Missing or damaged components to storm drain facility need replacement/repair

39 Sites with 60 Corrective Actions Requested

Report Totals: 73 Unique Sites with 224 Corrective Actions Requested

APPENDIX C

Phthalate Air Monitoring Information

TECHNICAL MEMORANDUM

From: Bruce Tiffany

To: Elsie Hulsizer

Cc:

Date: January 21, 2005

Re: Lower Duwamish Waterway Source Control - Status of Passive Deposition Sampling

INTRODUCTION

Source control efforts in the Lower Duwamish Waterway (LDW) have focused on potential point source discharges of chemicals of concern caused by industrial stormwater runoff. Another potential source of contamination to the LDW is from the atmospheric deposition of chemicals of concern.

The focus of this memorandum is to provide an update on the status of air deposition assessment for selected chemicals of concern for the LDW. Of the chemicals of concern for the LDW, this project is focused on two classes of chemicals: Phthalates and polycyclic aromatic hydrocarbons (PAH).

BACKGROUND

Air deposition of chemicals of concern can occur through either “dry” or “wet” deposition. Dry deposition is an atmospheric process where gaseous or particulate phase contaminants deposit directly on a surface via gravity. Wet deposition is an atmospheric process where gaseous or particulate phase contaminants become dissolved or interspersed in an aqueous suspension that then deposits on a surface via gravity (e.g., rainfall).

Dry deposition is generally evaluated by use of high-volume (i.e., “Hi-Vol”) samplers. Wet deposition is generally evaluated by use of a sampler that only collects precipitation when rainfall is occurring. It is common to find both types of samplers in an air deposition sampling station.

Because of the complexity and expense of developing a full sampling station, passive air deposition sampling was selected for this initial phase of the project. In passive air deposition sampling no vacuum is applied to draw air into the sampler. This type of sampler is designed to collect rainfall (i.e., wet deposition) although some dry particulate also may be collected.

AIR DEPOSITION STUDIES

A review indicated limited research in the area of atmospheric deposition of phthalates, but several efforts that include PAH. The monitoring efforts that are of most interest include the following:

- **U.S. Environmental Protection Agency/Environment Canada – Integrated Atmospheric Deposition Network (IADN) – Great Lakes:** Data collected from 1992 through 2000. Includes dry and wet deposition sampling for PAH but no monitoring for phthalates.
- **Washington State Department of Ecology/Air Quality Program:** Dry deposition sampling for PAH occurred at several Puget Sound stations from 2002 through 2003. No phthalate monitoring was conducted.
- **Environment Canada – Atmospheric Monitoring in the Georgia Basin Airshed (S.W. British Columbia):** Dry and wet deposition sampling for phthalates and PAH occurred at two (2) stations in southwest British Columbia from 1999 through 2001.
- **Puget Sound Clean Air Agency – Monitoring Network:** The Puget Sound Clean Air Agency (PSCAA) maintains air monitoring stations at several locations around the Puget Sound. Although PSCAA does not monitor for phthalates and PAH, they collect other information that may be of importance such as PM_{2.5} (particulate <2.5µm), PM₁₀ (particulate <10µm), and meteorological data.

These studies provide good reference points for evaluating results from future air deposition monitoring efforts in the LDW.

REVIEW OF SAMPLING AND ANALYSIS METHODS

Atmospheric deposition sampling and analysis techniques were reviewed. These techniques were divided into “dry” or “wet” deposition techniques.

DRY DEPOSITION SAMPLING

This is the typical technique for evaluating general deposition of chemicals of concern. This technique involves drawing a high volume of air through a sampler, typically for 24-hours. This sampler is equipped with a quartz fiber filter to collect particulate matter and backed by a polyurethane foam (PUF) plug to capture extremely fine particulate and gaseous phase chemicals. Air is pulled through the “Hi-Vol” sampler at a rate of up to 10 cubic feet per minute (CFM) which equates to approximately 280 liters per minute. The sampling and analysis method to use is EPA Method TO-13A, which can be modified to substitute the PUF backing plug with one made of a mixture of PUF and the adsorbing resin material XAD-2.

The high sampling rate of air for a “Hi-Vol” sampler allows for more mass of chemical to be collected, which in turn allows lower detection limits than other techniques. A drawback to the technique is that it provides an atmospheric concentration only, typically in units of micrograms or nanograms per cubic meter of air (µg/m³ or ng/m³). In order to

derive a deposition flux to terrestrial surfaces (e.g., $\mu\text{g}/\text{m}^2/\text{day}$), a deposition velocity must be derived. The average deposition velocity is a function of the particle size distribution of the air sample in question. This can be experimentally determined, but researchers often use typical values. As an example, one researcher is known to use a “typical” deposition velocity of 0.1 cm/s and another researcher is known to use a “typical” deposition velocity of 0.2 cm/s. Given these differences, the deposition flux would differ by a factor of 2 depending on the “typical” deposition velocity selected.

Despite some of the drawbacks, air sampling with a “Hi-Vol” sampler is a useful technique that might prove beneficial for future sampling events. However, because of the complexity and expense of this technique, the first phase of air deposition sampling will be limited to collecting aqueous data directly through use of a passive deposition sampler.

WET DEPOSITION SAMPLING

A typical wet deposition (precipitation) sampler functions by use of a moisture-sensitive sensor that opens and closes a retractable roof so that precipitation is only collected during a rain or snow event. The precipitation that falls into the sampler is first collected in a basin. The precipitation can then either be collected directly in a container or pass through a column containing an adsorbent material (e.g., XAD-2) to trap the chemicals.

PASSIVE (TOTAL) DEPOSITION SAMPLING

Passive (total) deposition sampling is similar to wet deposition sampling. The only difference is that the passive deposition sampler is constantly open; therefore, the sampler collects rainfall and some atmospheric particulate.

LABORATORY TESTING OF SAMPLING MEDIA

Because phthalates are common contaminants, environmental sampling media were tested for their presence at the King County Environmental Laboratory (KCEL). Two types of media were tested: polyurethane foam (PUF) and XAD-2 resin. These two media were selected because they both can be used in air sampling techniques (e.g., EPA Method TO-13A). In addition, XAD-2 is also used as an adsorbent in water testing, such as looking for low-level concentrations of chlorinated pesticides in river water.

Bulk samples of PUF and XAD-2 were analyzed at the KCEL. The results of the testing are presented in **Table 1** below.

Table 1: Evaluation of Selected Phthalates in Media Used for Air Deposition Sampling by EPA Method TO-13A

	PUF Media Conc., ng/g	XAD-2 Media Conc., ng/g	Sorbent Tube Mass, ng (A)	Estimated Media Blank Conc., ng/m ³ (B)
Diethyl Phthalate	9.51	6.20	114	0.4
Bis(2-Ethylhexyl)phthalate	2.26	4.70	59	0.2

Notes:

(A) - SKC, Inc. Product No. 226-129 - approx. 5.5g PUF & 10g XAD-2.

(B) - Assumes 300 m³ of air sampled over a 24-hr period. Note: Does not include blank contributions from quartz fiber particulate filter.

The results from this testing indicated that bis(2-ethylhexyl)phthalate and diethyl phthalate blank concentrations in a TO-13A air sample can range from 0.2 to 0.4 ng/m³ of the sampled air. This concentration range is approximately one-tenth (1/10) of the approximately 3 ng/m³ air concentration recorded in the Georgia Basin study (Belzer, 2004). Although the 1/10th blank level is still a cause for concern, these data indicate that use of TO-13A is feasible for the analysis of phthalates. However, it is important to note that quartz fiber filters (which are also media used in the TO-13A method) were not analyzed for the presence of phthalates. With the inclusion of a quartz fiber filter, it is possible that the 0.2 to 0.4 ng/m³ blank concentration could be slightly higher, but it is not expected to represent a significant contribution.

The use of XAD-2 was originally planned for use as an adsorbent material for collection of wet deposition (i.e., rainfall). A configuration similar to that used in the EPA/Environment Canada IADN study was originally envisioned. Given the blank levels of phthalates measured in the XAD-2, and with the significant method development needed for this type of sampler, it was decided that a simple passive deposition sampler would be used for this initial phase of testing.

FIELD TESTING OF PASSIVE DEPOSITION SAMPLER PROTOTYPE

Three prototypes of a passive deposition sampler apparatus were tested at the KCEL from 11/23/04 to 12/07/04. Each sampler consisted of a 1.14-ft diameter stainless steel mixing bowl (w/drilled hole & welded 3/8" stainless steel union) attached to a 5-gallon glass carboy.

The components were cleaned at the KCEL prior to assembly. Each glass carboy was wrapped in aluminum foil to minimize the photodegradation of chemicals of concern. Two of the samplers were run as duplicates, with one of the samplers receiving a preservative (10mL 1:1 H₂SO₄) and the other not receiving any preservative. In addition, a five microgram (5 µg) field spike of a PAH/phthalate mix was added to one of the samplers at the start of the test. The results of the test are presented in **Table 2** below.

Table 2: 11/23/04 to 12/07/04 Field Test of Passive Deposition Sampler Prototypes

	Method Blank (µg/L)	KCEL-01- 112304- 120704 (µg/L)	KCEL-02- 112304- 120704 (µg/L)	KCEL-FS- 112304- 120704 (µg/L)
Naphthalene	-	0.03	0.03	-
Dimethyl Phthalate	-	0.02	0.02	-
Fluorene	-	0.01	0.01	-
Diethyl Phthalate	0.01	0.11	0.10	1.17 (82%R)
Phenanthrene	-	0.03	0.03	0.68 (50%R)
Di-n-butylphthalate	0.03	0.32	0.14	1.54 (94%R)
Fluoranthene	-	0.03	0.02	0.75 (56%R)
Pyrene	-	0.02	0.02	-
Benzyl Butyl Phthalate	0.02	0.06	0.04	1.07 (78%R)
Benzo(a)anthracene	0.01	0.01	0.01	-
Chrysene	0.01	0.02	0.01	0.71 (54%R)
bis(2-Ethylhexyl)phthalate	0.07	0.33	0.26	1.27 (73%R)
Di-n-octylphthalate	0.01	-	-	1.35 (105%R)
Benzo(b)fluoranthene	-	0.01	0.01	0.89 (68%R)
Benzo(k)fluoranthene	-	0.01	-	-
Benzo(a)pyrene	-	0.01	-	-
d14-Terphenyl (surrogate spike %R)	70%	85%	57%	73%
Total Sample Volume, L	2.00	3.70	3.78	3.87
Volume Extracted, L	2.00	1.72	1.80	1.88
Field Spike	None	None	None	5 µg PAH/Phthalate Mix
Preservation	None	10 ml 1:1 H ₂ SO ₄	None	10 ml 1:1 H ₂ SO ₄

Notes:

Sampling Location - Roof of King County Environmental Laboratory - 322 W. Ewing Street; Seattle
 Sample Extraction Media - JT Baker C18 Solid Phase Extraction Cartridges

The levels of bis(2-ethylhexyl)phthalate from this testing event (approximately 0.2 to 0.3 µg/L) compares reasonably well with the 0.4 µg/L wet deposition value from the study of the Georgia Basin airshed (Belzer, 2004). In addition, the lack of preservation for one of the samples did not appear to significantly impact results.

The associated blank level for bis(2-ethylhexyl)phthalate is still a concern, but efforts are ongoing at KCEL to evaluate the ability of the analytical method to accommodate the extraction of larger volumes of water. It is hoped that this will raise the mass of analyte detected to such a level that blank concerns are minimized. However, given the ubiquitous nature of phthalate

contamination in all environmental laboratories, background concentrations of phthalates will undoubtedly continue to be an important factor in the sampling, analysis, and data interpretation aspects of this project.

FUTURE WORK

The current phase of air deposition sampling (Phase I) will focus on collecting aqueous samples from passive deposition samplers. This phase of testing is expected to last from January 2005 through April 2005. A sampling and analysis plan for this phase of testing is provided in **Attachment A**.

Upon completion of this phase of testing, the results will be compiled and an assessment made on the level of effort required for further characterization of air deposition as a source of contamination to the LDW.

REFERENCES/RESOURCES

Belzer, Wayne. 2004. "Atmospheric Concentrations and Depositions in the Georgia Basin Airshed." *In* T.W. Droscher and D.A. Fraser (eds). Proceedings of the 2003 Georgia Basin/Puget Sound Research Conference. CD-ROM or Online. Available: http://www.psat.wa.gov/Publications/03_proceedings/start.htm [February 2004]

Puget Sound Clean Air Agency (<http://www.pscleanair.org/>)

U.S. Environmental Protection Agency/Environment Canada – Integrated Atmospheric Deposition Network (IADN) – Great Lakes (http://www.msc-smc.ec.gc.ca/iadn/Overview/index_e.html)

U.S. Environmental Protection Agency/Air Toxics – Method TO-13A (<http://www.epa.gov/ttn/amtic/files/ambient/airtox/to-13arr.pdf>)

Washington State Department of Ecology/Air Quality Program (<https://fortress.wa.gov/ecy/aqp/Toxics/AirToxicsHome.shtml>)

ATTACHMENT A

Lower Duwamish Source Control – Sampling and Analysis Plan Passive Air Deposition Sampling – Phase I

Lower Duwamish Source Control – Sampling and Analysis Plan

Passive Air Deposition Sampling – Phase I

Introduction

This sampling and analysis plan (SAP) covers the initial phase of air deposition sampling for the Lower Duwamish Source Control project. The focus of this sampling is to evaluate the degree to which air deposition contributes to contamination of the Lower Duwamish Waterway.

Air deposition of chemicals of concern can occur through either “dry” or “wet” deposition. Dry deposition is an atmospheric process where gaseous or particulate phase contaminants deposit directly on a surface via gravity. Wet deposition is an atmospheric process where gaseous or particulate phase contaminants become dissolved or interspersed in an aqueous suspension that then deposits on a surface via gravity (e.g., rainfall).

Dry deposition is generally evaluated by use of high-volume (i.e., “Hi-Vol”) samplers. Wet deposition is generally evaluated by use of a sampler that only collects precipitation when rainfall is occurring. It is common to find both types of samplers in an air deposition sampling station. Because of the complexity and expense of developing a full sampling station, passive air deposition sampling was selected for this initial phase of the project.

Passive air deposition sampling, for the purpose of this testing, consists of a large diameter stainless steel bowl attached to a glass container through welded fittings. Unlike dry deposition sampling, no vacuum is applied to draw air into the sampler. This sampler is designed to collect rainfall (i.e., wet deposition) although some dry particulate also will be collected.

Sampling

Stations

The stations for this phase of testing are identified in **Table 1** below.

Table 1 – Sampling Stations

Station ID	Locator	Owner	Location
AZ	D2005AZ	PSCAA	Olive Way & Boren Ave., 1624 Boren Ave., Seattle
BW	D2005BW	WDOE	Beacon Hill, 15th S & Charlestown, Seattle
CE	D2005CE	PSCAA	Duwamish, 4752 E. Marginal Way S., Seattle
DZ	D2005DZ	WDOE	Georgetown, 6431 Corson Avenue S., Seattle

Notes: WDOE - Washington State Department of Ecology
PSCAA
-Puget Sound Clean Air Agency

A total of four (4) stations will be used for testing. The Puget Sound Clean Air Agency (PSCAA) owns two of the stations and the Washington State Department of Ecology (WDOE) owns another two stations.

The field contacts are as follows:

- PSCAA: Brad Donaldson (T:206-689-4003)
- WDOE: Jim Frost (T: 425-649-7108 – C: 206-550-1426)
- WDOE-Beacon Hill Station (T: 206-764-4296)

Sample Identification

Samples will be identified according to the following convention:

##-##-#####-#####

(Station ID) – (Sample Type) – (Start Date) – (End Date)

- Station ID: 2 letter identifier as presented in **Table 1**
- Sample Type: 2 digit/letter identifier
 - 01 – Original sample (Most common – used for single samples)
 - 02 – Duplicate sample
 - BK – Equipment blank
 - FS – Field spike (before sampling)
- Start Date: 6 digit identifier of sampling start date (MMDDYY)
- End Date: 6 digit identifier of sampling end date (MMDDYY)

Example: CE-01-012005-020805 (Duwamish Station – Original Sample – Start: Jan. 20, 2005 – End: Feb. 8, 2005)

Sampler Preparation

The passive deposition sampler consists of the following components:

- 1.14-ft diameter stainless steel mixing bowl w/drilled hole & welded 3/8” stainless steel union.
- 6”(L) x 3/8”(Dia.) stainless steel tubing w/3/8” stainless steel nut and ferrule.
- 2 metal washers.
- 2.5-gallon glass carboy w/metal lid (w/hole cut to allow passage of stainless steel fittings).

The components will be cleaned at the King County Environmental Laboratory (KCEL) prior to assembly. The glass carboy then will be wrapped in aluminum foil to minimize the photodegradation of chemicals of concern. Prior to placement in the field, a KCEL chemist will add any required spikes to the sampler.

The sampler is now ready to collect precipitation.

Note: No preservative will be added to the samplers. Initial testing of the passive deposition samplers indicated that biodegradation is not significant. However, spikes will be added to each sampler to assess the loss of target analytes during the course of sample collection and analysis.

Sampling Frequency

Samples will be collected from January 2005 to April 2005. Sampling intervals can vary between 2-weeks to 4-weeks, depending on rainfall. The goal is to collect between 4 to 8 liters of precipitation. The IW Staff Engineer will monitor the precipitation of SeaTac International Airport and determine when it is time to retrieve the samplers from the stations.

When removing a given sampler from a station, a new sampler must be installed in its place. Samplers can be supported by placement of concrete blocks around the glass carboy portion of the sampler. Under no circumstances should plastic products be used near the rain sampler.

Field Quality Assurance

Equipment Rinse Blanks

Equipment rinse blanks will be collected for each individual sampler. A chemist at KCEL will conduct this. The equipment rinse blanks will be collected by pouring one (1) liter of purified laboratory water through the sampling apparatus to be used for a given sampling station. The equipment rinse blank will then reflect the station it is to be used on as well as the date the rinse blank was collected.

Example: Equipment rinse blank conducted on January 19, 2005 for a sample to be collected at the Beacon Hill station (Equipment Rinse Blank ID: BW-BK-011905-011905). This same sampler is then used at the Beacon Hill station for a sample collected between January 20, 2005 and February 8, 2005 (Sample ID: BW-01-012005-020805)

Deuterated Spikes

Prior to placement in the field, each sampler will be spiked with a mixture containing deuterated analogs of selected PAH and phthalates. This spike mixture will be added to each of the samplers by a chemist at KCEL. The spike will consist of a 500 nanogram (ng) mixture of the following deuterated PAH/phthalate compounds:

- Acenaphthylene-d8
- Anthracene-d10
- Benzo(a)pyrene-d12
- Dimethylphthalate-d6
- Fluorene-d10
- Pyrene-d10

Field Duplicates

There are currently no plans to collect field duplicate samples. However, based on review of sample results, the IW Engineer may determine to collect these at a later date.

Field Spikes

There are currently no plans to collect field spike samples. However, based on review of sample results, the IW Engineer may determine to collect these at a later date.

When a field spike sample is collected, the field spike mixture will be added to one of the samplers by a chemist at KCEL. The field spike will consist of a 500 nanogram (ng) mixture of PAH/phthalates.

As an example, if the Duwamish Station (CE) receives a field spike sample in addition to the regular sample that is collected there, the following two (2) sample IDs would apply:

- CE-01-#####-##### (Original sample)
- CE-FS-#####-##### (Field spike)

Field Notes

A separate “Rite in the Rain” field notebook will be maintained for each station. Each notebook will contain the following information:

- Layout diagram of station with location of sampler(s) identified. (Note: No scale required for layout diagram.)
- Sample collection – start date/time
- Sample collection – stop date/time
- Sample identification
- Observations

Sample Analysis

Samples removed from the station will be delivered to KCEL within the same day they are collected. King County Industrial Waste Program chain-of-custody procedures will apply.

Once received at KCEL, the water level of each sample carboy will be marked for recording of sample volume. The samples then will be extracted by use of JT Baker C18 solid phase extraction cartridges and analyzed for PAH and phthalates according to EPA Method 8270 or 8270-SIM (selected ion monitoring).

The following compounds will be analyzed:

PAHs

2-Methylnaphthalene
Acenaphthene
Acenaphthylene

Phthalates

Benzyl Butyl Phthalate
Bis(2-Ethylhexyl)Phthalate
Di-*n*-Butyl Phthalate

Anthracene
Benzo(*a*)anthracene
Benzo(*a*)pyrene
Benzo(*b*)fluoranthene
Benzo(*g,h,i*)perylene
Benzo(*k*)fluoranthene
Chrysene
Dibenzo(*a,h*)anthracene
Fluoranthene
Fluorene
Indeno(1,2,3-*cd*)Pyrene
Naphthalene
Phenanthrene
Pyrene

Di-*n*-Octyl Phthalate
Diethyl Phthalate
Dimethyl Phthalate

Data Reporting

Sample results will be reported to the IW Staff Engineer for review.

APPENDIX D

East Waterway Inspections

EAST WATERWAY BUSINESS INSPECTIONS

In 2004, King County and SPU began source control activities in the areas discharging to the East Waterway to support the sediment cleanup operations that are currently being conducted by the Port of Seattle. The East Waterway is located outside the boundaries of the Lower Duwamish Waterway Superfund site (just downstream of the LDW on the east side of Harbor Island), but is part of the Harbor Island site, which was listed as a federal Superfund site in 1983. Sediment at the bottom of the waterway contains elevated levels of metals, polynuclear aromatic hydrocarbons (PAH), phthalates, PCBs, pesticides, and chlorobenzenes. The initial phase of the cleanup involves dredging approximately 260,000 cubic yards of contaminated sediment from a 19.5-acre area adjacent to the Hanford and Lander CSO outfalls and the Port of Seattle's Terminals 25 and 30. The Port of Seattle is conducting this phase of the cleanup, which is scheduled to be completed in March 2005. Additional cleanup will occur in the future as directed by the U.S. Environmental Protection Agency.

As shown in Figure D-1, the combined sewer service area in the East Waterway basin covers about 4,840 acres and the storm drain basin covers about 820 acres. Two King County, 7 SPU, and several Port outfalls discharge into the East Waterway (Table D-1). The combined sewer service area discharging to the East Waterway largely coincides with the combined sewer service area in the Diagonal/Duwamish early action area. Overflows from the Bayview 1, Bayview 2, and Hanford service areas in the King County sewer system can be discharged to the Diagonal/Duwamish area via the Diagonal Ave S CSO/SD or to the East Waterway via the Hanford or Lander outfalls. A cross connection has been constructed to enable shared use of the storage capacity in either system to reduce overflows. In addition, other private drains from waterfront properties also likely discharge to the waterway, but information on private outfalls has not been compiled.

Business Inspections

Inspections focused on the storm drain basin and the portion of the combined sewer service area in the East Waterway that is outside the areas already inspected for the Diagonal/Duwamish early action area. Inspectors began working in the East Waterway area in December 2004. A total of 32 businesses were inspected. Of these, 8 (25 percent) were screening visits and 24 (75 percent) were full site inspections. Inspection locations are shown in Figure D-2. A list of all sites inspected is provided in Appendix B, Table B-1. Forty-two percent of the sites where full inspections were conducted required some type of corrective action (see Table B-2 in Appendix B for details). Because all of the site inspections in this basin occurred in December 2004, there has not been time to conduct follow-up inspections. Consequently all sites are currently listed as being out of compliance in the summary report.

Table D-1. Outfalls in the East Waterway.

Seattle Public Utilities	King County	Port of Seattle
SW Florida St SD	S Lander St SD	SW Lander St SD (formerly owned by SPU)
SW Spokane EOF/SD (163)	Hanford CSO (W031)	SW Hanford SD (formerly owned by SPU)
SW Spokane St SD		Multiple small storm drains from T18
SW Hanford CSO/SD (162)		
S Massachusetts St SD		
S Hinds St SD		
S Spokane St SD		

FIGURES

Figure D-1. Areas Discharging to the East Waterway

Figure D-2. Businesses Inspected in the East Waterway