Surface Sediment Sampling at Outfalls in the Lower Duwamish Waterway Seattle, WA

Data Report

Prepared for

Toxics Cleanup Program
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October 2011

Table of Contents

Tables

Figures

List of Appendices

List of Acronyms

2LAET	second lowest apparent effects threshold
AET	apparent effects threshold
ARI	Analytical Resources, Inc.
Axys	Axys Analytical Services, Ltd.
BEHP	bis(2-ethylhexyl)phthalate
Boeing	The Boeing Company
cPAH	carcinogenic polycyclic aromatic hydrocarbon
CSL	Cleanup Screening Level
CSO	combined sewer overflow
DGPS	Differential Global Positioning System
DW	dry weight
Ecology	Washington State Department of Ecology
EPA	United States Environmental Protection Agency
GIS	Geographic Information Systems
GPS	Global Positioning System
HPAH	high molecular weight polycyclic aromatic hydrocarbons
HpCDD	heptachlorodibenzo-*p*-dioxin
HpCDF	heptachlorodibenzofuran
HxCDD	hexachlorodibenzo-*p*-dioxin
HxCDF	hexachlorodibenzofuran
ID	identification
LAET	lowest apparent effects threshold
LCS/LCSD	laboratory control sample/ laboratory control sample duplicate
LDW	Lower Duwamish Waterway
LDWG	Lower Duwamish Waterway Group
LPAH	low molecular weight polycyclic aromatic hydrocarbons
MLLW	mean lower low water
MS/MSD	matrix spike/ matrix spike duplicate
MTCA	Model Toxics Control Act
OC	organic carbon
OCDD	octachlorodibenzo-*p*-dioxin
OCDF	octachlorodibenzofuran
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PeCDD	pentachlorodibenzo-*p*-dioxin
PeCDF	pentachlorodibenzofuran
PEF	potency equivalency factor
Port	the Port of Seattle
PSEP	Puget Sound Estuary Program
QA/QC	quality assurance/quality control
RI	Remedial Investigation
RI/FS	Remedial Investigation/Feasibility Study
RL	reporting limit
SAIC	Science Applications International Corporation

SAP/QAPP	Sampling and Analysis Plan/Quality Assurance Project Plan
SIM	selected ion monitoring
SMS	Washington State Sediment Management Standards
SQS	Sediment Quality Standard
SVOC	semi-volatile organic compounds
TCDD	tetrachlorodibenzo-*p*-dioxin
TCDF	tetrachlorodibenzofuran
TEF	toxic equivalency factor
TEQ	toxic equivalency
TOC	total organic carbon
WAC	Washington Administrative Code
WSDOT	Washington State Department of Transportation
WW	wet weight

1.0 Introduction

The Lower Duwamish Waterway (LDW) is located south of Elliott Bay in Seattle, Washington (Figure 1). The LDW site consists of 5.5 miles of the Duwamish Waterway as measured from the southern tip of Harbor Island to just south of the Norfolk Combined Sewer Overflow (CSO). The LDW has been identified as a Superfund site by the U.S. Environmental Protection Agency (EPA) and a Model Toxics Control Act (MTCA) site by the Washington State Department of Ecology (Ecology).

The key parties involved in the LDW site are EPA, Ecology, and the Lower Duwamish Waterway Group (LDWG), which is composed of representatives of the City of Seattle, King County, the Port of Seattle (the Port), and The Boeing Company (Boeing). In December 2000, EPA and Ecology signed an agreement with the LDWG to conduct a Remedial Investigation/ Feasibility Study (RI/FS) for the LDW site. As part of the RI/FS, the LDWG conducted extensive surface and subsurface sediment characterization sampling throughout the LDW (Windward 2010).

These and other previous sediment quality investigations have documented contaminants in surface and subsurface sediments at concentrations above the Washington State Sediment Management Standards (SMS) (Ecology 1995; Chapter 173-204, Washington Administrative Code [WAC]). Stormwater outfalls and CSOs have been identified as a potential source of contaminants to LDW sediments.

Ecology is the lead agency for source control for the LDW site. Source control is the process of finding and eliminating or reducing releases of contaminants to LDW sediments to the extent practicable. The goal of source control is preventing or minimizing the recontamination of sediments after cleanup has been completed.

As part of its source control responsibilities, Ecology tasked Science Applications International Corporation (SAIC) with updating an outfall inventory and conducting a sediment sampling study to provide a better understanding of the relationship between stormwater and combined sewer outfalls and surface sediment contamination in the LDW.

This data report describes the collection of surface sediment samples at 162 locations near 84 outfalls during March and April 2011 and presents the analytical sample results. In addition, this report includes a summary of deviations from the original Sampling and Analysis Plan/Quality Assurance Project Plan (SAP/QAPP) (SAIC 2011) and difficulties encountered during sample collection.

1.1 Study Objectives

The purpose of this study was to collect data to characterize the quality of LDW surface sediment near stormwater outfalls and CSOs in locations where data had not previously been collected.

As part of this study, SAIC compiled information about outfalls that discharge to the LDW, starting with the 243 outfalls listed in Appendix H of the LDW Remedial Investigation (RI) Report (Windward 2010). Appendix H of the RI Report includes limited information about the outfall

locations, ownership, associated National Pollutant Discharge Elimination System permits, outfall size, and material of construction, but it does not include chemical data. SAIC has updated this outfall inventory, and expanded it to include available data from sampling of stormwater/CSOs and storm drain solids in the drainage systems associated with each outfall. SAIC also included available LDW surface sediment sampling data in close proximity (within 50 to 100 feet) to each outfall. This updated and expanded outfall inventory, including recommendations for future sampling, will be submitted to Ecology as part of a separate Technical Memorandum.

Based on preliminary updates to the outfall inventory, it became clear that no surface sediment data had been collected near many of these outfalls. Ecology determined that additional sampling was warranted in order to fill these data gaps and provide information needed to better understand the relationship between storm drain outfalls and sediment contamination. The objective of this sampling effort was to fill these data gaps. The chemical results of this sampling effort are presented in Section 3.0.

2.0 Field Sampling

This section summarizes the field sampling performed during this investigation. The methods for sample collection, processing, identification, and documentation are described in full detail in the *Surface Sediment Sampling at Outfalls in the Lower Duwamish Waterway, Seattle, WA; Sampling and Analysis Plan/Quality Assurance Project Plan* (SAIC 2011). Ecology, with assistance from SAIC, prepared a fact sheet and information letter that was mailed to local property owners and facility operators, describing the planned sampling objectives and activities. In addition, Ecology established or attempted to establish access agreements with property owners adjacent to the LDW, where required.

2.1 Surface Sediment Sampling

Field activities commenced with a reconnaissance of the LDW during a nighttime extreme low tide on January 31, 2011. The reconnaissance was used to identify areas of potential sampling difficulty. Surface sediment sample collection was conducted between February 28, 2011 and April 20, 2011. The *R/V Growler*, a research boat owned and operated by SAIC, was used to gain access to the planned sample collection areas within 50 feet of outfalls of 24-inch diameter or less, or within 100 feet of outfalls of greater than 24-inch diameter. Surface sediment (0 to 10 centimeters) samples were collected using either a 0.1 m^2 modified Young's grab sampler or a Petite Ponar grab sampler. Where sampling locations were not accessible by boat, near-shore surface sediment samples were collected by personnel on foot using a stainless steel spoon during low tide. Sampling procedures followed Puget Sound Estuary Program (PSEP) protocols (PSEP 1997a,b,c).

The coordinates of grab sample locations were measured with a global positioning system (GPS), differential global positioning system (DGPS), or using photographs and geographic information system (GIS) software. Sampling conditions were documented at the time of sample collection. Sample dates, times, sediment sample depths, water depths above or below mean lower low water (MLLW), and coordinates for all sampling locations are presented in Table 2–1. Sample collection locations are presented in Figure 2, and surface sediment sample collection log forms are provided in Appendix D.

Table 2–1. Surface Sediment Sampling Locations

Outfall ID	Location ID	Date	Time	X [a]	Y [a]	Sample Depth (cm)	Depth Above or Below (-) MLLW (ft)
2008	LDW-SS2008-A	03/08/11	14:28	1268272.99	205261.66	0 - 6	-12.9
2009	LDW-SS2009-A	03/08/11	13:34	1268347.65	204996.30	0 - 6	-10.0
	LDW-SS2009-U	03/08/11	13:50	1268367.32	204970.37	0 - 3	-8.0
2010	LDW-SS2010-A	03/21/11	13:35	1268509.95	204515.81	0 - 8.5	-8.6
	LDW-SS2010-D	03/21/11	13:24	1268509.35	204564.32	0 - 8.5	-8.4
	LDW-SS2010-U	03/21/11	13:53	1268522.79	204485.16	0 - 9.5	-8.1
2011	LDW-SS2011-A	03/21/11	14:21	1268594.19	204315.26	0 - 4	-1.2
	LDW-SS2011-D	03/21/11	14:10	1268577.28	204332.79	0 - 5	-3.1

Table 2–1. Surface Sediment Sampling Locations (continued)

Outfall ID	Location ID	Date	Time	X [a]	Y [a]	Sample Depth (cm)	Depth Above or Below (-) MLLW (ft)
2013	LDW-SS2013-A	04/08/11	13:43	1268682.80	204170.57	0 - 9	0.9
	LDW-SS2013-D	04/08/11	13:32	1268660.86	204204.58	0 - 9	1.8
	LDW-SS2013-U	04/08/11	13:57	1268718.23	204148.16	0 - 9	0.7
2015	LDW-SS2015-D	03/08/11	11:04	1268869.02	203428.25	0 - 5	-9.1
2018	LDW-SS2018-U	03/08/11	10:49	1269036.23	202968.33	0 - 4.5	-9.0
2019	LDW-SS2019-A	04/15/11	09:49	1269581.63	203349.03	0 - 7.5	-2.9
2021	LDW-SS2021-A	03/24/11	14:33	1269356.08	202733.76	0 - 9	1.2
	LDW-SS2021-D	03/24/11	14:48	1269341.81	202713.09	0 - 9	1.2
	LDW-SS2021-U	03/24/11	14:32	1269364.45	202750.99	0 - 9	1.2
2022	LDW-SS2022-A [b]	03/24/11	12:11	1269302.10	202034.67	0 - 7.5	-13.7
	LDW-SS2022-D	03/24/11	11:58	1269292.33	202053.23	0 - 8.5	-13.4
2025	LDW-SS2025-A [b]	04/15/11	08:40	1270812.00	201446.58	0 - 9	-7.2
2027	LDW-SS2027-A	03/24/11	09:51	1271278.06	200320.18	0 - 6.5	-3.0
2029	LDW-SS2029-A	04/15/11	10:43	1271090.44	200376.66	0 - 10	-4.6
	LDW-SS2029-D	04/15/11	10:31	1271059.11	200381.48	0 - 9.5	-4.7
2030	LDW-SS2030-A	04/15/11	10:53	1271125.57	200371.75	0 - 9	-4.7
	LDW-SS2030-U	04/15/11	11:06	1271189.73	200377.93	0 - 10	-4.1
2032	LDW-SS2032-A	04/15/11	11:23	1271135.74	200384.33	0 - 8	-3.8
2034	LDW-SS2034-D	03/24/11	10:20	1271354.47	199962.35	0 - 7.5	-9.0
	LDW-SS2034-U [b]	03/24/11	10:36	1271398.41	199930.02	0 - 9	-8.8
2035	LDW-SS2035-A	03/07/11	12:18	1271474.02	199752.87	0 - 10	-11.9
	LDW-SS2035-D	03/07/11	12:06	1271471.17	199775.42	0 - 10	-10.9
	LDW-SS2035-U	03/07/11	12:35	1271507.19	199743.11	0 - 8.5	-10.2
2036	LDW-SS2036-A	03/07/11	11:51	1271742.47	199475.86	0 - 10	-7.1
	LDW-SS2036-D	03/07/11	11:40	1271722.97	199510.90	0 - 9	-7.0
2037	LDW-SS2037-A	03/07/11	13:22	1271754.61	199464.68	0 - 9	-6.5
	LDW-SS2037-D	03/07/11	12:54	1271754.85	199477.44	0 - 8	-6.0
	LDW-SS2037-U	03/07/11	13:40	1271793.57	199456.53	0 - 6.5	-2.6
2038	LDW-SS2038-A	03/03/11	12:04	1271840.15	199395.53	0 - 6	-1.5
	LDW-SS2038-D	03/03/11	12:20	1271829.22	199405.47	0 - 6	-1.5
2039	LDW-SS2039-A	03/03/11	11:05	1271827.42	199376.31	0 - 9.5	-3.0
	LDW-SS2039-D	03/03/11	10:35	1271832.88	199402.96	0 - 10	-4.8
2040	LDW-SS2040-A	03/04/11	14:37	1272018.15	199210.27	0 - 5	2.6
	LDW-SS2040-D	03/04/11	14:21	1271994.89	199221.05	0 - 5	3.2
	LDW-SS2040-U	03/04/11	14:57	1272043.44	199176.94	0 - 3.5	2.6
2078	LDW-SS2078-A	03/21/11	16:57	1277325.44	192986.34	0 - 7	-2.1
	LDW-SS2078-D	03/21/11	17:09	1277281.94	192968.32	0 - 9	0.7
	LDW-SS2078-U	03/21/11	16:46	1277346.63	192994.77	0 - 10	-0.1
2080	LDW-SS2080-A	03/21/11	16:31	1277430.65	193028.48	0 - 8	-2.0
2082	LDW-SS2082-U [c]	03/17/11	09:22	1277071.60	192633.99	0 - 10	-4.1
2083	LDW-SS2083-A [c]	03/17/11	09:47	1277027.46	192615.55	0 - 10	-3.6
2085	LDW-SS2085-A [c]	03/17/11	10:53	1276949.58	191329.81	0 - 8	1.8

Table 2–1. Surface Sediment Sampling Locations (continued)

Outfall ID	Location ID	Date	Time	X [a]	Y [a]	Sample Depth (cm)	Depth Above or Below (-) MLLW (ft)
2089	LDW-SS2089-A [c]	03/17/11	10:38	1276917.48	191869.74	0 - 10	-0.9
	LDW-SS2089-D [c]	03/17/11	10:19	1276901.34	191905.67	0 - 10	-0.9
2090	LDW-SS2090-A [c]	03/17/11	11:26	1277137.02	190855.16	0 - 8	1.2
	LDW-SS2090-D [c]	03/17/11	11:11	1277119.18	190882.69	0 - 7	2.7
2091	LDW-SS2091-U [c]	03/17/11	14:49	1277930.13	190472.54	0 - 5	-8.6
2092	LDW-SS2092-A [c]	03/18/11	08:47	1278207.65	190418.81	0 - 7	-0.6
2093	LDW-SS2093-D [c]	03/18/11	10:36	1278489.58	190251.19	0 - 6	0.0
2094	LDW-SS2094-D [c]	03/18/11	09:35	1278286.85	190362.31	0 - 8	-7.2
2096	LDW-SS2096-A [c]	03/18/11	12:02	1278420.78	190310.37	0 - 9	6.1
	LDW-SS2096-U [c]	03/18/11	12:02	1278450.50	190287.39	0 - 9.3	6.1
2097	LDW-SS2097-A [c]	03/18/11	09:18	1278249.02	190392.85	0 - 5.5	-2.1
	LDW-SS2097-D [c]	03/18/11	09:03	1278231.00	190402.39	0 - 7.5	-1.8
2098	LDW-SS2098-A	03/04/11	10:14	1276617.51	191090.51	0 - 10	-8.5
	LDW-SS2098-D	03/04/11	09:50	1276594.98	191118.30	0 - 9	-6.4
	LDW-SS2098-U	03/04/11	10:29	1276621.96	191043.00	0 – 10	-8.8
2099	LDW-SS2099-A	03/03/11	16:08	1276578.65	191255.43	0 - 10	-7.3
	LDW-SS2099-D	03/03/11	15:48	1276547.56	191288.25	0 - 9	1.2
	LDW-SS2099-U	03/03/11	16:26	1276589.86	191260.08	0 - 10	-6.7
2103 (SP 4) [d]	LDW-SS2103-A	03/04/11	11:40	1275746.04	194902.07	0 - 3	0.9
	LDW-SS2103-D	03/04/11	11:27	1275753.11	194927.47	0 - 3.5	-0.2
	LDW-SS2103-U	03/04/11	12:25	1275751.89	194863.65	0 - 9	4.4
2106	LDW-SS2106-A	03/04/11	13:25	1272585.58	198168.01	0 - 10	-5.1
	LDW-SS2106-D	03/04/11	13:02	1272554.37	198260.95	0 - 10	-8.8
	LDW-SS2106-U	03/07/11	09:48	1272579.78	198166.30	0 - 9.5	-2.0
2108	LDW-SS2108-A	03/07/11	10:03	1272572.79	198167.05	0 - 7	-1.9
	LDW-SS2108-U	03/07/11	10:13	1272594.95	198141.69	0 - 10	-1.7
2112	LDW-SS2112-A	04/08/11	12:14	1271964.73	198604.28	0 - 9.5	0.4
2113	LDW-SS2113-A [b]	03/07/11	08:58	1271745.52	198911.52	0 - 6.5	-1.1
	LDW-SS2113-U	03/07/11	09:28	1271754.87	198883.98	0 - 3	-1.0
2115	LDW-SS2115-A	04/15/11	12:41	1270771.59	199889.66	0 - 3.5	-0.2
	LDW-SS2115-D	04/15/11	12:22	1270764.30	199907.63	0 - 4	-0.7
	LDW-SS2115-U	04/15/11	12:54	1270793.71	199870.27	0 - 4	-0.7
2122	LDW-SS2122-A	03/08/11	08:48	1269089.09	201796.79	0 - 6.5	-13.5
	LDW-SS2122-D	03/08/11	09:24	1269048.65	201813.39	0 - 8	-6.2
	LDW-SS2122-U	03/08/11	09:39	1269071.54	201762.47	0 - 8.5	-6.7
2139	LDW-SS2139-A	04/08/11	10:46	1266715.37	206215.57	0 - 6	-5.2
2144	LDW-SS2144-A	03/14/11	16:27	1266193.39	209836.00	0 - 9.5	-5.7
2146	LDW-SS2146-A	03/14/11	16:08	1266198.85	209877.23	0 - 7	-3.0
2147	LDW-SS2147-D	03/14/11	15:41	1266175.40	209924.59	0 - 6	-4.4
2148	LDW-SS2148-A [b]	04/20/11	08:45	1265444.23	210880.09	0 - 9	8.0
2149	LDW-SS2149-A	04/20/11	08:15	1265167.34	210891.91	0 - 9	9.1
2150	LDW-SS2150-A	04/20/11	09:03	1265702.93	210848.09	0 - 9	7.2

Table 2–1. Surface Sediment Sampling Locations (continued)

Outfall ID	Location ID	Date	Time	X [a]	Y [a]	Sample Depth (cm)	Depth Above or Below (-) MLLW (ft)
2157	LDW-SS2157-A	03/24/11	17:04	1266368.36	209505.61	0 - 7	-37.8
2200	LDW-SS2200-A	03/18/11	12:58	1276619.66	190686.14	0 - 8.5	3.9
	LDW-SS2200-D	03/18/11	12:47	1276583.80	190762.76	0 - 6	0.3
2201	LDW-SS2201-A	03/18/11	13:22	1276642.31	190534.88	0 - 8.5	3.5
	LDW-SS2201-D	03/18/11	13:11	1276576.36	190583.50	0 - 7	4.7
	LDW-SS2201-U	03/18/11	13:33	1276661.87	190463.83	0 - 6.5	2.7
2214	LDW-SS2214-A	03/07/11	10:45	1275093.19	195842.49	0 - 10	-3.5
	LDW-SS2214-D	03/07/11	10:57	1275080.13	195848.82	0 - 10	-1.6
	LDW-SS2214-U	03/07/11	11:08	1275133.51	195819.22	0 - 8	-3.1
2223	LDW-SS2223-A	03/21/11	12:55	1268117.96	205958.88	0 - 4	-5.5
2232	LDW-SS2232-A	04/20/11	10:28	1265985.49	210263.86	0 - 9	5.6
	LDW-SS2232-D	04/20/11	10:06	1265966.82	210284.37	0 - 9	6.7
	LDW-SS2232-U	04/20/11	10:54	1265985.17	210241.36	0 - 9	4.3
2233	LDW-SS2233-D	04/20/11	09:50	1266001.28	210675.52	0 - 9	5.7
	LDW-SS2233-U	04/20/11	09:16	1265951.41	210554.84	0 - 9	7.4
2244	LDW-SS2244-A	03/21/11	12:29	1268037.31	206018.12	0 - 5.5	-18.8
	LDW-SS2244-D	03/21/11	12:13	1268012.27	206045.60	0 - 6.5	-14.8
2246	LDW-SS2246-A	03/21/11	10:39	1267667.05	206971.00	0 - 4.5	-16.2
	LDW-SS2246-U [b]	03/21/11	11:09	1267682.77	206953.62	0 - 5	-16.1
2247	LDW-SS2247-A	03/21/11	11:38	1267740.93	206845.18	0 - 8.5	-26.5
	LDW-SS2247-U	03/21/11	11:52	1267763.92	206832.94	0 - 6.5	-27.9
2503	LDW-SS2503-A	03/24/11	11:48	1269641.64	201823.92	0 - 10	6.5
2505	LDW-SS2505-A	03/07/11	14:14	1269552.83	201106.63	0 - 9	3.6
2506	LDW-SS2506-A	03/07/11	15:18	1269556.96	201171.69	0 - 6	-2.8
	LDW-SS2506-D	03/07/11	15:06	1269533.67	201223.22	0 - 7	-5.1
2512	LDW-SS2512-A	03/07/11	14:29	1269595.16	201037.65	0 - 9	4.5
	LDW-SS2512-U	03/07/11	14:36	1269612.87	200990.84	0 - 9	4.7
3037	LDW-SS3037-A	03/03/11	13:54	1274034.63	196883.18	0 - 5	-0.8
	LDW-SS3037-D [b]	03/03/11	13:25	1274000.66	196894.17	0 - 8.5	-0.6
	LDW-SS3037-U	03/03/11	14:18	1274062.71	196866.22	0 - 6	-1.3
5000	LDW-SS5000-A	04/08/11	14:24	1268126.61	206823.75	0 - 8.5	-26.4
	LDW-SS5000-D	04/08/11	14:10	1268093.77	206808.88	0 - 8.5	-26.3
	LDW-SS5000-U	04/08/11	14:36	1268164.91	206813.40	0 - 8.5	-27.0
5002	LDW-SS5002-A	03/24/11	15:48	1267891.98	205186.43	0 - 5	-31.6
	LDW-SS5002-D	03/24/11	16:04	1267831.56	205245.35	0 - 5	-27.4
5003	LDW-SS5003-A	03/24/11	16:40	1267891.04	205185.98	0 - 5	-29.8
5005	LDW-SS5005-A	03/24/11	16:17	1267859.56	205139.55	0 - 5	-22.6
6146	LDW-SS6146-A	03/21/11	14:44	1268494.16	203166.52	0 - 8.5	-25.6
	LDW-SS6146-D	03/08/11	10:01	1268477.85	203214.57	0 - 10	-27.0
	LDW-SS6146-U	03/21/11	14:57	1268483.74	203136.27	0 - 9.5	-24.2

Table 2–1. Surface Sediment Sampling Locations (continued)

Outfall ID	Location ID	Date	Time	X [a]	Y [a]	Sample Depth (cm)	Depth Above or Below (-) MLLW (ft)
BDC-2	LDW-SSBDC2-A [b,c]	03/17/11	12:33	1277437.40	190557.39	0 - 7	-1.1
	LDW-SSBDC2-D [c]	03/17/11	12:16	1277416.70	190574.47	0 - 6	0.3
	LDW-SSBDC2-U [c]	03/17/11	12:51	1277473.44	190546.10	0 - 5	0.0
BDC-3	LDW-SSBDC3-D [c]	03/17/11	13:14	1277539.09	190536.94	0 - 6	1.9
	LDW-SSBDC3-U [c]	03/17/11	13:43	1277621.44	190515.64	0 - 6	0.3
BDC-4	LDW-SSBDC4-A [c]	03/17/11	14:18	1277653.02	190518.83	0 - 7	-1.0
S Brighton St SD	LDW-SSBRSTSD-A	03/04/11	15:46	1270298.65	201074.53	0 - 9	-13.6
	LDW-SSBRSTSD-D	03/04/11	15:30	1270277.68	201096.83	0 - 10	-13.9
	LDW-SSBRSTSD-U	03/04/11	16:03	1270315.24	201059.62	0 - 9.5	-13.7
Port - SF	LDW-SSPSF-A	03/07/11	15:57	1269181.69	201689.78	0 - 4	-14.4
	LDW-SSPSF-D	03/07/11	15:46	1269164.75	201707.75	0 - 6.5	-14.8
	LDW-SSPSF-U [b]	03/07/11	16:46	1269190.73	201667.72	0 - 6.5	-13.2
S River Street SD	LDW-SSRVSTSD-A	03/04/11	16:40	1269787.67	201600.64	0 - 4.5	-9.5
	LDW-SSRVSTSD-D	03/04/11	16:23	1269764.94	201603.21	0 - 6.5	-9.7
EE7	LDW-SSRWSD-A [b]	03/18/11	11:32	1279921.32	188902.59	0 - 10	-6.7
Ryan Way SD	LDW-SSRWSD-Ab	04/08/11	11:46	1279680.36	189425.11	0 - 6	-6.0
SP 1	LDW-SSSP1-A	03/24/11	13:48	1275891.39	194090.20	0 - 10	0.4
	LDW-SSSP1-D	03/24/11	13:47	1275884.92	194131.95	0 - 9	0.4
	LDW-SSSP1-U	03/24/11	13:57	1275890.22	194056.68	0 - 9	0.6
SP 2	LDW-SSSP2-A	03/24/11	13:22	1275845.09	194282.17	0 - 9	1.3
	LDW-SSSP2-D	03/24/11	13:21	1275841.57	194308.64	0 - 9	1.3
	LDW-SSSP2-U	03/24/11	13:32	1275855.68	194254.54	0 - 9	1.1
SP 3	LDW-SSSP3-A	03/24/11	12:53	1275807.12	194504.90	0 - 9	1.8
	LDW-SSSP3-D	03/24/11	12:52	1275803.00	194533.71	0 - 9	1.8
	LDW-SSSP3-U	03/24/11	13:06	1275811.82	194481.37	0 - 9	1.3
SP 5	LDW-SSSP5-A	03/03/11	14:50	1275664.38	195154.15	0 - 3.5	0.9
Siphon-West CSO	LDW-SSSWCSO-A	04/08/11	09:35	1266476.86	209115.22	0 - 5	-35.2
	LDW-SSSWCSO-U	04/08/11	10:15	1266401.55	209073.53	0 - 5	-14.1
Boyer - Unknown	LDW-SSUNK-A	04/15/11	12:01	1270751.99	199927.61	0 - 6.5	-0.8
	LDW-SSUNK-D	04/15/11	11:47	1270730.48	199950.00	0 - 9.5	1.1

ID = identification; MLLW = mean lower low water

a. coordinates are reported in North American Datum 1983 (NAD83) horizontal datum, Washington, State Plane North (feet).
b. A field duplicate sample was collected at this location.
c. Split samples were collected at this location and delivered by SAIC to Analytical Resources, Inc. on behalf of Boeing/Calibre. These samples are identified with a suffix "-BS" to indicate "Boeing Split."
d. Outfall 2103 is the same outfall also identified as SP 4.

2.2 Sample Identification

Sediment samples were identified by the project area "LDW-," "SS" to indicate surface sediment, the nearby outfall number or abbreviated name, and additional suffix ("-A" for adjacent, "-U" for upstream, "-D" for downstream, and/or "-2" for field duplicate samples), as applicable. The outfall attributed to any given sample ID was assigned based on the outfall closest to the target sampling location.

For example:

LDW-SS2223-U is the surface sediment sample collected upstream from outfall number 2223 in the LDW.

LDW-SSHRE1-A-2 is the field duplicate surface sediment sample collected adjacent to the outfall named "HRE1"in the LDW.

2.3 Field Deviations to the Sampling and Analysis Plan

As described in the project SAP/QAPP (SAIC 2011), 246 surface sediment grab samples were planned for collection near 114 outfalls. However, modifications to the sampling design were anticipated during field operations depending on actual site conditions observed during sampling or because of other restrictions (e.g., lack of accessibility). Surface sediment samples were successfully collected at 162 sampling locations near 84 outfalls (Figure 2).

Ninety surface sediment samples planned for collection near 51 outfalls were not collected because actual site conditions or other restrictions prevented successful sample collection, or because sampling locations were consolidated due to overlap. Six additional surface sediment samples that were not planned for collection in the SAP/QAPP were collected near outfalls identified during field sampling activities or because nearby planned samples could not be collected because of obstructions. The actual number of outfalls represented by sample collection may vary because of overlapping proximity goals.

Samples that were not collected as planned in the project SAP/QAPP are listed in Table 2–2, with recommendations for future sampling, if applicable. The most common reasons for these field sampling deviations are summarized and further defined as follows:

Riprap/rocky substrate: Representative surface sediment samples could not be effectively collected with standard sampling equipment because gravel or cobbles would not allow the grab samplers to fully close. Consequently, any sediment that was collected was disturbed and/or lost completely as the sampler was retrieved. Several attempts were made to successfully collect samples at planned locations, as documented in the field sampling logs and notes presented in Appendix D.

Obstructions: Surface sediment samples could not be collected due to structural hindrances that prevented access to the target sample collection area, such as docks, bulkheads, barges docked in front of the outfall, pilings, cables, or catwalks.

Property access not permitted: Surface sediment samples could not be collected where property access was not permitted due to legal requirements.

A field decision was made to consolidate sampling locations because of proximity to other sampling locations: Several surface sediment sampling areas were anticipated to overlap in spatial coverage between outfalls. It was determined in the field that additional sampling location consolidation was reasonable to simplify field activities and minimize overlap.

Table 2–2. Summary of Planned Sediment Samples that were Not Collected and Recommendations for Future Sediment Sampling

Outfall ID	Sampling Position Planned for Collection [a]	Reason Samples Were Not Collected	Recommendations for Future Sediment Sampling
2003	A, D, U	riprap/rocky substrate	Possible sampling on foot during daytime low-low tide.
2004	A, D, U	obstructions (dock)	None. This outfall is not accessible due to its location under the dock and behind pilings.
2005	A, D, U	riprap/rocky substrate	None. Riprap near the outfall hinders sediment sampling. The upstream sample was also intended to provide overlapping coverage for the downstream position at outfall 2246.
2006	A, D, U	riprap/rocky substrate	None. Riprap near the outfall hinders sediment sampling.
2007	D	riprap/rocky substrate	Possible sampling on foot during daytime low-low tide.
2008	D, U	riprap/rocky substrate	None. Riprap near the outfall hinders sediment sampling.
2009	D	riprap/rocky substrate	Possible sampling on foot during daytime low-low tide.
2011	U	riprap/rocky substrate	Possible sampling on foot during daytime low-low tide.
2014	A, D, U	riprap/rocky substrate	None. Riprap near the outfall hinders sediment sampling.
2015	A	riprap/rocky substrate	None. Riprap near the outfall hinders sediment sampling.
2017	A, D, U	riprap/rocky substrate	None. Riprap near the outfall hinders sediment sampling.
2018	D	riprap/rocky substrate	None. Riprap near the outfall hinders sediment sampling.
2022	U	obstructions (tugs/barges and cables)	None. Outfall is located on a steep shore, behind pilings, with constant tug/barge traffic adjacent to the shore.
2030	D	location overlaps with LDW-SS2029-A	None.
2039	U	location overlaps with LDW-SS2038-A	None.
2083	D	obstructions (bulkhead)	None. *Note*: these are hydraulic pressure relief pipes that drain infiltrated tidal waters from behind the bulkhead. They are therefore part of the original bulkhead design rather than "outfalls."
2094	A	riprap/rocky substrate	Possible sampling on foot during daytime low-low tide. Since the waterway is more shallow this far upstream, a boat may not be able to access it. This would likely require upland access permitted by Boeing.
2109	A, D, U	obstructions (barges continuously docked in front of outfall)	Possible sampling on foot during daytime low-low tide, via upland access permitted by the adjacent property owner.
2110	A	obstructions (outfall located behind dock, crane, and catwalk)	Possible sampling on foot during daytime low-low tide, via upland access permitted by the adjacent property owner.

Table 2–2. Summary of Planned Sediment Samples that were Not Collected and Recommendations for Future Sediment Sampling (continued)

Outfall ID	Sampling Position Planned for Collection [a]	Reason Samples Were Not Collected	Recommendations for Future Sediment Sampling
2111	A, D	obstructions (outfall located behind dock, crane, and catwalk)	Possible sampling on foot during daytime low-low tide, via upland access permitted by the adjacent property owner.
2113	D	obstructions (a dock and catwalk on either side)	Possible sampling on foot during daytime low-low tide, via upland access permitted by the adjacent property.
2114	A, D	obstructions (barges continuously docked in front of outfall)	Possible sampling on foot during daytime low-low tide, via upland access permitted by the Boyer Towing property owner.
2116	A, D, U	riprap/rocky substrate	Possible sampling on foot during daytime low-low tide, via upland access permitted by the Boyer Towing property owner.
2136	A, U	locations eliminated because outfall is no longer in operation	None. This outfall was confirmed by Ecology to be decommissioned.
2137	A	location overlaps with LDW-SS5005-A	None.
2138	A, D, U	obstructions (barges continuously docked in front of outfall with cables blocking access)	Possible sample collection from research vessel only while barges/tugs are not docked in front of outfall.
2140	A	property access was unavailable	Possible sample collection if access can be obtained from Seattle City Parks Department.
2141	A	property access was unavailable	Possible sample collection if access can be obtained from Seattle City Parks Department.
2142	A	property access was unavailable	Possible sample collection if access can be obtained from Seattle City Parks Department.
2143	A	property access was unavailable	Possible sample collection if access can be obtained from Seattle City Parks Department.
2144	U	riprap/rocky substrate	Possible sample collection on foot closer to the outfall during daytime low-low tide. This sample was also intended to provide overlapping coverage for the upstream position at outfall 2145.
2145	A	location overlaps with LDW-SS2144-A	None.
2146	D	location overlaps with LDW-SS2147-D	None.
2151	A	riprap/rocky substrate	None. Riprap near the outfall hinders sediment sampling.
2154	A, D, U	riprap/rocky substrate	None. Riprap near the outfall hinders sediment sampling.
2156	A, D, U	riprap/rocky substrate	None. Riprap near the outfall hinders sediment sampling.
2157	D, U	obstructions (dock extending over and beyond the outfall)	None. The sample collected adjacent to this outfall is considered to be the most representative sample that can feasibly be collected.

Table 2–2. Summary of Planned Sediment Samples that were Not Collected and Recommendations for Future Sediment Sampling (continued)

Outfall ID	Sampling Position Planned for Collection [a]	Reason Samples Were Not Collected	Recommendations for Future Sediment Sampling
2220	A, D, U	obstructions (bulkhead) for –D and –A locations; riprap/rocky substrate for the –U location.	None. Riprap near the outfall hinders sediment sampling.
2223	D, U	riprap/rocky substrate for the –D location; obstructions (pilings, rocks) for –U location	Possible sampling on foot during daytime low-low tide.
2226	A, U	property access was unavailable	Possible sample collection if access can be obtained from Seattle City Parks Department.
2501	U [b]	proximity to a cable crossing the waterway	None. Collection of representative samples near this outfall is not considered feasible.
2502	D [b]	proximity to a cable crossing the waterway	None. Collection of representative samples near this outfall is not considered feasible.
5004	D, U [b]	downstream location overlaps with LDW-SS5003-A; upstream location overlaps with LDW-SS5005-A	None.
2100 (B)	A	property access was unavailable	Possible sample collection with access permitted by adjacent property owner.
BDC-4	D, U	downstream location overlaps with LDW-SSBDC3-U; riprap/rocky substrate at upstream location	None. The samples collected are considered the most feasible representative samples and no more sampling is considered necessary.
HRE 1	A, D, U	riprap/rocky substrate	None. Riprap near the outfall hinders sediment sampling.
SP 5	D, U	riprap/rocky substrate	Possible sampling on foot during daytime low-low tide.
SP 4 (2103)	A, D, U	outfall identified as both SP 4 and 2103	None. See samples LDW-SS2103-A, LDW-SS2103-D, and LDW-SS2103-U.
Nevada SD	A, D, U	riprap/rocky substrate	None. Riprap near the outfall hinders sediment sampling.
S River Street SD	U	riprap/rocky substrate	None. Riprap near the outfall hinders sediment sampling.

A = adjacent to outfall; D = downstream from outfall; ID = identification; U = upstream from outfall

a. Samples planned for collection within 50 feet of the outfall unless otherwise noted.

b. Sample planned for collection within 100 feet of the outfall.

Several surface sediment samples could not be collected within the established location criteria (within 50 feet of outfalls 24-inches in diameter or less, or within 100 feet of outfalls greater than 24 inches in diameter) because of riprap/rocky substrate, accessibility, or physical obstructions. When such difficulties were encountered, sampling locations were moved to the nearest possible location that did not significantly exceed the proximity goals to the related outfall, as identified in Table 2–3.

Table 2–3. Samples Collected Outside of Outfall Proximity Goals

Outfall No.	Sampling Position	Distance from Outfall (ft)	Proximity Goal (ft)	Reason	Recommendations for Future Sediment Sampling
2010	D	60	50	riprap/rocky substrate	None.
2011	D	62	50	riprap/rocky substrate	Possible sample collection on foot closer to the outfall during daytime low-low tide.
2013	A	55	50	riprap/rocky substrate	None. Samples collected were collected on foot as close to the outfall as possible.
	D	68	50		
2022	D	57	50	obstructions (tugs/barges, cables)	None. Outfall is located on a steep shore, behind pilings, with constant tug/barge traffic adjacent to the shore.
2030	U	64	50	riprap/rocky substrate	None.
2032	A	60	50	riprap/rocky substrate, outfall located upland	None. This outfall is located upland.
2037	D	56	50	GPS inaccuracy	None.
2038	A	55	50	GPS inaccuracy	None.
2040	U	56	50	GPS inaccuracy	None.
2091	U	105	100	obstructions (pilings)	None.
2092	U	53	50	difficulty positioning boat	None.
2099	U	53	50	GPS inaccuracy	None.
2106	A	75 *(upstream)*	50	GPS inaccuracy and difficulty positioning the boat	Possible sample collection on foot closer to the outfall during daytime low-low tide.
	D	77	50		
2115	A	61	50	riprap/rocky substrate and property accessibility	Possible sample collection on foot during daytime low-low tide, via upland access permitted by the Boyer Towing property.
	D	70	50		
	U	68	50		
2122	A	55	50	obstruction (catwalk)	None.
2137	A, as overlapping sample LDW-SS5005-A	98	50	riprap/rocky substrate	None.
2038	A	55	50	GPS inaccuracy	None.
2144	D	71	50	riprap/rocky substrate	Possible sample collection on foot closer to the outfall during daytime low-low tide.
	A	67	50		

Table 2–3. Samples Collected Outside of Outfall Proximity Goals (continued)

Outfall No.	Sampling Position	Distance from Outfall (ft)	Proximity Goal (ft)	Reason	Recommendations for Future Sediment Sampling
2146	A	72	50	riprap/rocky substrate	Possible sample collection on foot closer to the outfall during daytime low-low tide. This sample also provides overlapping coverage for the downstream position at outfall 2144 (71 feet).
2157	A	93	50	obstructions (dock extending over and beyond the outfall)	None.
2201	D	102	100	property access not permitted	Possible sample collection from research vessel/on foot closer to the outfall with access permitted by the Muckleshoot Tribe.
	A	115	100		
	U	128	100		
2223	A	63	50	riprap/rocky substrate	Possible sample collection on foot closer to the outfall during daytime low-low tide.
3037	D	73	50	riprap/rocky substrate and the inaccuracy of GPS	Possible sample collection on foot closer to the outfall during daytime low-low tide.
	A	64 *(downstream)*	50		
	U	65 *(downstream)*	50		
Port - SF	D	56	50	obstructions (bulkhead)	None.
S Brighton Street SD	D	57	50	obstructions (overhead dock extending beyond the outfall)	None.
	A	52	50		
	U	56	50		
SP 5	A	57 *(downstream)*	50	riprap/rocky substrate and GPS inaccuracy	Possible sample collection on foot closer to the outfall during daytime low-low tide.
2103 (SP-4)	D	59	50	GPS inaccuracy	None.
	U	60	50	GPS inaccuracy	None.
2503	A	135	100	outfall located at head of 100-foot drainage ditch	None. The sample was collected at point of discharge into waterway.
2505	U	78	50	lack of DGPS while collecting on foot	None.
	D	83	50	lack of DGPS while collecting on foot	None.

A = adjacent to outfall; D = downstream from outfall; GPS = global positioning system; U = upstream from outfall

Some additional surface sediment samples were collected and/or analyzed for additional chemicals that were not planned in the project SAP/QAPP. The added samples and the rationale for their sampling and analysis are listed in Table 2–4. All field decisions represented in this table were made in consultation with Ecology.

Table 2–4. Additional Sediment Samples Collected and/or Analyzed

Outfall No.	Sample ID	SAP/QAPP Deviation and Reason for Deviation
2083	LDW-SS2083-A	This sample was collected and analyzed for SMS chemicals instead of the downstream location of 2083, which could not be collected due to obstructions (bulkhead).
2103 (SP-4)	LDW-SS2103-U	This sample was collected and analyzed for SMS chemicals. During field sampling, it was determined that SP-4 and 2103 were the same outfall. Samples adjacent to, downstream, and upstream of this outfall were identified as LDW-SS2103-A, LDW-SS2103-D, and LDW-SS2103-U, respectively.
5003	LDW-SS5003-A	This sample was collected and analyzed for SMS chemicals in place of the sample adjacent to outfall 5004, which could not be collected due to rocky substrate.
SP 3	LDW-SSSP3-D	The downstream sample was tested for dioxins/furans to obtain better coverage of the area, in place of other dioxin/furan samples not collected for various reasons.
Boyer - New	LDW-SSUNK-A, LDW-SSUNK-D	This outfall was discovered during field activities. A decision was made to collect downstream and adjacent samples; the upstream position was not sampled because it overlaps with sample LDW-SS2115-D. Sample LDW-SSUNK-D was analyzed for dioxins/furans.
EE7	LDW-SSRWSD-A	Unknown pipes at river mile 5.3 east were misidentified as the Ryan Way outfall during field sampling. Additional outfalls were observed nearby, one of which (at river mile 5.2 east) was later identified as the actual Ryan Way WSDOT outfall. A sample was collected at the correctly identified outfall as listed below.
Ryan Way SD	LDW-SSRWSD-Ab	See above.

SAP/QAPP = Sampling and Analysis Plan/Quality Assurance Project Plan; SMS = Washington State Sediment Management Standards; WSDOT = Washington State Department of Transportation

The SAP/QAPP specified the use of DGPS for determining the coordinates of sampling locations. Technical problems arose during field activities that compromised the functionality of DGPS. Additionally, the DGPS was not effective in select areas of the LDW because of obstructions to satellite reception at the location caused by nearby bridges or barges. Consequently, a non-differential GPS was used where DGPS was unavailable. Additionally, the coordinates of a few locations were estimated relative to a location fixed from the boat, the outfall, and/or photos taken at the time of sampling using GIS. The method used to determine sampling coordinates for each sampling location is recorded in the project database.

The SAP/QAPP notes that a rinse blank sample will be collected during every week of sample collection. A total of five rinse blank samples were collected during the investigation. Only dedicated, decontaminated equipment was used on the last day of sampling, April 20, 2011. Since there was no potential for cross contamination between samples, another rinse blank sample to cover this week was not collected.

3.0 Chemical Analysis

This section summarizes the test methods and analytical results for surface sediment samples collected in the LDW. The complete set of analytical results is presented in data tables in Appendix A, and original laboratory reports are provided in Appendix C. The data validation is summarized in Section 4.0 and the full validation report is presented in Appendix B.

3.1 Analytical Methods

All surface sediment samples were analyzed by Analytical Resources, Inc. (ARI) for metals, polychlorinated biphenyls (PCBs), semi-volatile organic compounds (SVOCs) including polycyclic aromatic hydrocarbons (PAHs) and phthalates, selected SVOCs by selected ion monitoring (SIM), total organic carbon (TOC), total solids, and grain size. A subset of samples was analyzed by Axys Analytical Services, Ltd. (Axys) for dioxin/furan congeners. The analytical methods are listed in Table 3–1. Additional details regarding analytical quality assurance/quality control (QA/QC) requirements are presented in the project SAP/QAPP (SAIC 2011). Sample analyses conformed to standard, EPA and PSEP (1997a,b,c) guidance and the project SAP/QAPP (SAIC 2011).

Table 3–1. Analytical Methods and Laboratory Name

Analyte Group	Analytical Method	Laboratory Name
Dioxins/Furans	EPA 1613B	Axys
PCB Aroclors	EPA 8082	ARI
SVOCs (including phthalates and PAHs)	EPA 8270D	ARI
Selected SVOCs by SIM	EPA 8270D-SIM	ARI
Mercury	EPA 6010B/200.8	ARI
Other metals	EPA 7471A	ARI
TOC	Plumb (1981)	ARI
Total solids	EPA 160.3	ARI
Grain Size	PSEP (1986)	ARI

ARI = Analytical Resources, Inc.; Axys = Axys Analytical Services, Ltd.; EPA = U.S. Environmental Protection Agency; PAHs = polycyclic aromatic hydrocarbons; PCBs = polychlorinated biphenyls; PSEP = Puget Sound Estuary Program; SIM = selected ion monitoring; SVOCs = semi-volatile organic compounds; TOC = total organic carbon

3.2 Results

This section summarizes results of the chemical analysis of surface sediment samples collected from 162 sampling locations. The results presented in this section and on associated figures represent original samples only; the results of field duplicate samples are presented in the data tables in Appendix A and are discussed in the data validation report in Appendix B.

Results were compared to SMS criteria for all chemicals with SMS criteria, and to natural background concentrations for the four LDW risk driver chemicals (arsenic, carcinogenic polycyclic aromatic hydrocarbons [cPAHs], total PCBs, and dioxins/furans), as applicable. Figure 3 presents all detected chemicals with concentrations that exceed SMS criteria. Sample concentrations for cPAHs and dioxins/furans, which do not have associated SMS criteria, are also presented in Figure 3. Where SMS criteria are expressed on an organic carbon (OC)-normalized basis, sediment results are also presented in OC-normalized units (mg/kg OC). Sediment samples with TOC concentrations <0.5 or >4.0% were not OC-normalized; instead, their dry weight results were compared to the dry weight apparent effects thresholds (AET) (Barrick et al. 1988) criteria. The lowest apparent effects threshold (LAET) and second lowest apparent effects threshold (2LAET) criteria are analogous to SMS sediment quality standards (SQS) and cleanup screening levels (CSL), respectively.

Chemical concentrations for the following four LDW RI risk driver chemicals are also discussed relative to the 95% upper confidence limit on the mean of natural background concentrations (AECOM 2010): arsenic (7 mg/kg DW), cPAHs (9 µg toxic equivalency [TEQ]/kg DW), total PCBs (2 µg/kg DW), and dioxins/furans (2 ng TEQ/kg DW). Individual sample results compared to natural background concentrations are presented in Appendix A, Table A–5.

3.2.1 Metals

Table 3–2 summarizes the metals results for the surface sediment samples, including the number and percentage of detections for each metal, the range and mean of detected concentrations, and the range of reporting limits (RLs) for nondetect results. SMS criteria are presented in Table 3–2 for comparison purposes. Samples from all 162 sampling locations were analyzed for metals, and each metal was detected in at least one sample. Chromium, copper, lead, and zinc were detected in all samples (100%). Arsenic, cadmium, and mercury were detected in the majority of samples analyzed (65% or greater), and silver was detected in only six samples (4%). The highest concentrations of chromium, copper, silver, and zinc were detected in sample LDW-SSSP3-A. The highest concentrations of arsenic and lead were detected in sample LDW-SS5002-A, and the highest concentrations of cadmium and mercury were detected in sample LDW-SS2027-A. Individual sample results are presented in Appendix Table A–1.

Table 3–2. Summary of Metals Results (mg/kg DW)

Chemical	Detection Frequency		Detected Concentrations			Range of RLs of Nondetects
	Ratio	%	Minimum	Maximum	Mean	
Arsenic	152 / 162	94%	6	86	17	6 – 30
Cadmium	105 / 162	65%	0.3	4.0	0.56	0.2 – 0.5
Chromium	162 / 162	100%	10.9 J	160	28	na
Copper	162 / 162	100%	10.6	334 J	50	na
Lead	162 / 162	100%	3 J	166	27	na
Mercury	139 / 162	86%	0.03	6.5	0.16	0.02 – 0.03
Silver	6 / 162	4%	0.4	0.8	0.72	0.3 – 2
Zinc	162 / 162	100%	31	1440 J	130	na

DW = dry weight; J = estimated concentration; na = not applicable; RL = reporting limit

Table 3–3 presents a summary of sediment metals results compared to SMS criteria, including a count of both detected and nondetected results that are less than the SQS, greater than SQS but less than the CSL, and greater than the CSL. Arsenic was detected in four samples at concentrations greater than the SQS but less than the CSL. Mercury was detected in one sample at a concentration greater than the CSL, and one sample at a concentration greater than the SQS but less than the CSL. Zinc was detected in two samples at concentrations greater than the CSL, and in three samples at concentrations greater than the SQS but less than the CSL. All RLs for nondetect results were below SQS. Figure 3 presents all detected metals with concentrations that exceed SMS criteria.

Table 3–3. Counts of Sediment Sample Results Compared to SMS Criteria for Metals

	SQS	CSL	Count of Detected Concentrations			Count of Nondetect Results		
Chemical	mg/kg DW		≤SQS	>SQS, ≤CSL	>CSL	≤SQS	>SQS, ≤CSL	>CSL
Arsenic	57	93	148	4		10		
Cadmium	5.1	6.7	105			57		
Chromium	260	270	162			0		
Copper	390	390	162			0		
Lead	450	530	162			0		
Mercury	0.41	0.59	137	1	1	23		
Silver	6.1	6.1	6			156		
Zinc	410	960	157	3	2	0		

CSL = Cleanup Screening Level; DW = dry weight; SMS = Washington State Sediment Management Standards; SQS = Sediment Quality Standard

Arsenic was detected at 152 of 162 sampling locations, and 143 of these detected concentrations exceeded the natural background concentration of arsenic in sediment, 7 mg/kg DW (AECOM 2010). Three RLs for nondetect arsenic results exceeded the natural background concentration, ranging from 8 to 30 mg/kg DW. Individual sample results compared to the natural background concentration for arsenic in sediment are presented in Appendix A, Table A–5.

3.2.2 SVOCs

Table 3–4 summarizes SVOC sediment results in samples collected from 162 locations, including the number and percentage of detections for each chemical, the range and mean of detected concentrations, and the range of RLs for nondetect results. Results in Table 3–4 are presented in dry weight units as reported by ARI.

Carcinogenic PAH values were calculated using potency equivalency factor (PEF) values (Cal/EPA 1994) based on an individual compound's relative toxicity to benzo(a)pyrene. Final cPAH concentrations are equivalent to the sum of the concentrations of the seven individual cPAH compounds multiplied by their associated PEF. Nondetected values were assessed as half of the reporting limit.

All individual PAH compounds were detected in at least one sediment sample. Fifteen individual PAHs were detected in more than half of the samples (51% or greater), including acenaphthene, anthracene, benzo(a)anthracene, total benzofluoranthenes, benzo(g,h,i)perylene, benzo(a)pyrene, chrysene, dibenzo(a,h)anthracene, dibenzofuran, fluoranthene, fluorene, indeno(1,2,3-cd)pyrene,

naphthalene, phenanthrene, and pyrene. Three PAH compounds, acenapthylene, 1-methylnaphthalene, and 2-methylnaphthalene, were detected in 39 or more locations (24 percent or greater).

All of the six individual phthalate compounds were detected. Butyl benzyl phthalate and bis(2-ethylhexyl)phthalate (BEHP) were the most commonly detected phthalate compounds, detected in samples collected from 150 and 112 locations (93 and 69%), respectively.

Phenol and 4-methylphenol were the most commonly detected phenol compounds, detected in samples collected from 130 and 111 locations (80 and 69%), respectively. Benzyl alcohol, benzoic acid, and carbazole were detected in samples collected from 146, 127, and 104 locations (90, 78%, and 64%), respectively.

Table 3–4. Summary of SVOC Results (µg/kg DW)

Chemical	Detection Frequency		Detected Concentrations			Range of RLs of Nondetects
	Ratio	%	Minimum	Maximum	Mean	
PAHs						
Acenaphthene	83 / 162	51%	5.8 J	1,200	69	16 – 20
Acenaphthylene	39 / 162	24%	4.8 J	390	35	16 – 20
Anthracene	119 / 162	73%	5.7 J	4,800	120	16 – 20
Benzo(a)anthracene	144 / 162	89%	12 J	4,800	200	16 – 20
Benzofluoranthene	153 / 162	94%	7.7 J	4,200	320	16 – 19
Benzo(g,h,i)perylene	142 / 162	88%	9.9 J	3,100	110	16 – 20
Benzo(a)pyrene	146 / 162	90%	9.9 J	1,400	140	16 – 19
Chrysene	154 / 162	95%	5.7 J	5,800	270	16 – 19
Dibenzo(a,h)anthracene	134 / 162	83%	3.3 J	560	36	3.9 – 5
Dibenzofuran	83 / 162	51%	4.7 J	590	48	16 – 20
Fluoranthene	157 / 162	97%	7.7 J	18,000	520	16 – 19
Fluorene	96 / 162	59%	6.6 J	2,700	84	16 – 20
Indeno(1,2,3-cd)pyrene	140 / 162	86%	8.7 J	2,100	92	16 – 20
1-Methylnaphthalene	60 / 162	37%	5.6 J	100	20	16 – 20
2-Methylnaphthalene	78 / 162	48%	4.7 J	210	25	16 – 20
Naphthalene	100 / 162	62%	4.8 J	89	26	16 – 20
Phenanthrene	150 / 162	93%	7.7 J	11,000	310	16 – 20
Pyrene	157 / 162	97%	7.7 J	14,000	450	16 – 19
Total cPAHs	155 / 162	96%	11 J	2,500	200	11 – 13
Total HPAHs	158 / 162	98%	9.6 J	49,000	2,000	16 – 19
Total LPAHs	150 / 162	93%	7.7 J	20,000	530	16 – 20
Phthalates						
Butyl benzyl phthalate	150 / 162	93%	2.7 J	1,600	32	4.5 – 4.9
Dibutyl phthalate	39 / 162	24%	4.8 J	260	32	16 – 20
Di-n-octyl phthalate	13 / 162	8%	7.8 J	740	89	16 – 20
Diethyl phthalate	26 / 162	16%	4.8 J	81	18	16 – 51

Table 3–4. Summary of SVOC Results (µg/kg DW) (continued)

Chemical	Detection Frequency		Detected Concentrations			Range of RLs of Nondetects
	Ratio	%	Minimum	Maximum	Mean	
Dimethyl phthalate	56 / 162	35%	2.5 J	970	47	3.9 – 5
Bis(2-ethylhexyl)phthalate	112 / 162	69%	9.3 J	37,000	570	10 – 300
Phenols						
2,4,5-Trichlorophenol	0 / 162	0%	na	na	na	77 – 100
2,4,6-Trichlorophenol	1 / 162	1%	17 J	17 J	17	77 – 100
2,4-Dichlorophenol	1 / 162	1%	13 J	13 J	13	77 – 100
2,4-Dimethylphenol	43 / 161	27%	2.4 J	37 J	5.8	3.9 – 5
2,4-Dinitrophenol	0 / 139	0%	na	na	na	160 – 210
2-Chlorophenol	0 / 162	0%	na	na	na	16 – 20
2-Nitrophenol	0 / 162	0%	na	na	na	77 – 100
4,6-Dinitro-2-Methylphenol	0 / 160	0%	na	na	na	160 – 200
4-Chloro-3-Methylphenol	0 / 162	0%	na	na	na	77 – 100
2-Methylphenol	30 / 162	19%	2.8 J	20	5.9	3.9 – 5
4-Methylphenol	111 / 162	69%	4.6 J	4,900	140	16 – 20
4-Nitrophenol	0 / 162	0%	na	na	na	77 – 100
Pentachlorophenol	29 / 162	18%	5.3 J	94 J	22	19 – 25
Phenol	130 / 162	80%	6.7 J	480	52	16 – 20
Other SVOCs (µg/kg DW)						
Benzoic Acid	127 / 162	78%	29 J	1,200	260	160 – 200
Benzyl Alcohol	146 / 162	90%	2.5 J	650	160	4 – 18
4-Bromophenyl phenyl ether	1 / 162	1%	13 J	13 J	13	16 – 20
Carbazole	104 / 162	64%	5.6 J	950	53	16 – 20
Bis(2-chloro-1-methylethyl) ether	0 / 162	0%	na	na	na	16 – 20
4-Chloroaniline	0 / 155	0%	na	na	na	77 – 100
2-Chloronaphthalene	1 / 162	1%	20	20	20	16 – 20
bis(2-Chloroethoxy)Methane	0 / 162	0%	na	na	na	16 – 20
bis(2-Chloroethyl)Ether	1 / 162	1%	30	30	30	16 – 20
4-Chlorophenyl-phenylether	1 / 162	1%	18 J	18 J	18	16 – 20
1,2-Dichlorobenzene	3 / 162	2%	3.8 J	29	13	3.9 – 5
1,3-Dichlorobenzene	1 / 162	1%	240	240	240	16 – 20
1,4-Dichlorobenzene	12 / 162	7%	2.5 J	150	23	3.9 – 5
3,3'-Dichlorobenzidine	0 / 152	0%	na	na	na	77 – 100
2,4-Dinitrotoluene	0 / 162	0%	na	na	na	77 – 100
2,6-Dinitrotoluene	0 / 162	0%	na	na	na	77 – 100
Hexachlorobenzene	5 / 162	3%	1.0 J	29	15	3.9 – 5
Hexachlorobutadiene	1 / 162	1%	3.2 J	3.2 J	3.2	3.9 – 5
Hexachlorocyclopentadiene	0 / 153	0%	na	na	na	77 – 100
Hexachloroethane	0 / 162	0%	na	na	na	16 – 20
Isophorone	0 / 162	0%	na	na	na	16 – 20

Table 3–4. Summary of SVOC Results (µg/kg DW) (continued)

Chemical	Detection Frequency		Detected Concentrations			Range of RLs of Nondetects
	Ratio	%	Minimum	Maximum	Mean	
2-Nitroaniline	0 / 162	0%	na	na	na	77 – 100
3-Nitroaniline	1 / 158	1%	540	540	540	77 – 100
4-Nitroaniline	0 / 159	0%	na	na	na	77 – 100
Nitrobenzene	0 / 162	0%	na	na	na	16 – 20
N-Nitrosodiphenylamine	12 / 162	7%	2.6 J	19	8.5	3.9 – 5
N-Nitrosodi-n-propylamine	2 / 162	1%	29 J	57	43	3.9 – 5
1,2,4-Trichlorobenzene	3 / 162	2%	6.1	15 J	9.4	3.9 – 5
Aniline	2 / 152	1%	15 J	23 J	19	100 – 130
N-Nitrosodimethylamine	2 / 162	1%	3.1 J	5.6 J	4.4	19 – 25

cPAHs = carcinogenic polycyclic aromatic hydrocarbons; DW = dry weight; HPAHs = high molecular weight polycyclic aromatic hydrocarbons; J = estimated concentration; LPAHs = low molecular weight polycyclic aromatic hydrocarbons; na = not applicable; PAHs = polycyclic aromatic hydrocarbons; RL = reporting limit; SVOCs = semi-volatile organic compounds

Table 3–5 summarizes OC-normalized SVOC results for 147 samples with TOC concentrations ≥0.5 and ≤ 4.0%. Only chemicals with OC-normalized SMS criteria are presented in Table 3–5. Each of these chemicals was detected in at least one sediment sample.

Table 3–5. Summary of SVOC Results for Chemicals with OC-normalized SMS criteria (mg/kg OC)

Chemical	Detection Frequency		Detected Concentrations			RL or Range of RLs of Nondetects
	Ratio	%	Minimum	Maximum	Mean	
PAHs						
Acenaphthene	78 / 147	53%	0.19 J	58	3.3	0.50 – 3.7
Acenaphthylene	35 / 147	24%	0.30 J	5.8	1.2	0.50 – 3.7
Anthracene	112 / 147	76%	0.31 J	230	5.8	0.57 – 3.7
Benzo(a)anthracene	134 / 147	91%	0.56 J	230	9.9	0.74 – 3.4
Benzofluoranthene	142 / 147	97%	0.41 J	200	16	1.5 – 2.9
Benzo(g,h,i)perylene	133 / 147	90%	0.47 J	22	4.2	1.0 – 3.7
Benzo(a)pyrene	136 / 147	93%	0.47 J	67	6.5	1.0 – 2.9
Chrysene	142 / 147	97%	0.31 J	280	14	1.5 – 2.9
Dibenzo(a,h)anthracene	125 / 147	85%	0.14 J	9.6	1.6	0.19 – 0.94
Dibenzofuran	77 / 147	52%	0.14 J	25	2.2	0.57 – 3.7
Fluoranthene	146 / 147	99%	0.52 J	870	26	2.9
Fluorene	89 / 147	61%	0.19 J	130	4.1	0.57 – 3.7
Indeno(1,2,3-cd)pyrene	131 / 147	89%	0.43 J	22	3.8	0.91 – 3.7
2-Methylnaphthalene	74 / 147	50%	0.14 J	7.1	1.2	0.50 – 3.7
Naphthalene	94 / 147	64%	0.19 J	7.4	1.3	0.57 – 3.7
Phenanthrene	138 / 147	94%	0.41 J	530	15	1.2 – 2.9

Table 3–5. Summary of SVOC Results for Chemicals with OC-normalized SMS criteria (mg/kg OC) (continued)

Chemical	Detection Frequency		Detected Concentrations			RL or Range of RLs of Nondetects
	Ratio	%	Minimum	Maximum	Mean	
Pyrene	146 / 147	99%	0.52 J	670	22	2.9
Total HPAHs	146 / 147	99%	1.8 J	2,400	100	2.9
Total LPAHs	138 / 147	94%	0.41 J	960	26	1.2 – 2.9
Phthalates						
Butyl benzyl phthalate	140 / 147	95%	0.12 J	53	1.4	0.22 – 0.72
Dibutyl phthalate	34 / 147	23%	0.16 J	8.7	1.7	0.50 – 3.7
Di-n-octyl phthalate	11 / 147	7%	0.31 J	25	4.1	0.50 – 3.7
Diethyl phthalate	21 / 147	14%	0.26 J	6.5	1.1	0.50 – 3.7
Dimethyl phthalate	49 / 147	33%	0.076 J	24	1.2	0.13 – 0.94
Bis(2-ethylhexyl)phthalate	101 / 147	69%	1.0	1,200	25	0.79 – 21
Other SVOCs						
1,2-Dichlorobenzene	3 / 147	2%	0.15 J	0.97	0.55	0.13 – 0.94
1,4-Dichlorobenzene	12 / 147	8%	0.082 J	6.6	1.1	0.13 – 0.94
Hexachlorobenzene	3 / 147	2%	0.32	1.2	0.68	0.13 – 0.94
Hexachlorobutadiene	1 / 147	1%	0.13 J	0.13 J	0.13	0.13 – 0.94
N-Nitrosodiphenylamine	9 / 147	6%	0.15 J	1.3 J	0.46	0.13 – 0.94
1,2,4-Trichlorobenzene	2 / 147	1%	0.31	0.60 J	0.46	0.13 – 0.94

HPAHs = high molecular weight polycyclic aromatic hydrocarbons; J = estimated concentration; LPAHs = low molecular weight polycyclic aromatic hydrocarbons; PAHs = polycyclic aromatic hydrocarbons; RL = reporting limit; SVOCs = semi-volatile organic compounds

Table 3–6 presents a summary of the number of sediment results for SVOC compounds compared to SMS criteria, including a count of detected and nondetected results that are less than the SQS/LAET, greater than SQS/LAET but less than the CSL/2LAET, and greater than the CSL/2LAET. Thirteen SVOCs were detected at concentrations greater than the CSL/2LAET including the following: benzyl alcohol (94 samples); benzoic acid (5 samples); BEHP (3 samples); and acenaphthene, benzo(g,h,i)perylene, dibenzo(a,h)anthracene, fluorene, indeno(1,2,3-cd)pyrene, phenanthrene, total low molecular weight polycyclic aromatic hydrocarbons (LPAHs), 2,4-dimethylphenol, 4-methylphenol, and dimethyl phthalate (1 sample each).

Fifteen SVOCs were detected at concentrations greater than the SQS/LAET but less than the CSL/2LAET including the following: benzyl alcohol (7 samples); butyl benzyl phthalate (6 samples); hexachlorobenzene, dibenzofuran, and BEHP (3 samples each); 1,4-dichlorobenzene, acenaphthene, fluoranthene, phenanthrene, and total high molecular weight polycyclic aromatic hydrocarbons (HPAHs) (2 samples each); and anthracene, benzo(a)anthracene, chrysene, fluorene, and phenol (1 sample each). All RLs for nondetect results were below SQS, except for hexachlorobenzene in 23 samples and 1,2,4-trichlorobenzene in 2 samples. Figure 3 presents all detected SVOCs with concentrations that exceed SMS criteria.

Table 3–6. Counts of Sediment Sample Results Compared to SMS Criteria for SVOCs

Chemical	SQS	CSL	LAET	2LAET	Count of Detected Concentrations			Count of Nondetected Results		
	mg/kg OC		µg/kg DW		≤SQS/ LAET	>SQS/LAET, ≤CSL/2LAET	>CSL/ 2LAET	≤SQS/ LAET	>SQS/LAET, ≤CSL/2LAET	>CSL/ 2LAET
PAHs										
Acenaphthene	16	57	500	730	80	2	1	79		
Acenaphthylene	66	66	1,300	1,300	39			123		
Anthracene	220	1,200	960	4,400	118	1		43		
Benzo(a)anthracene	110	270	1,300	1,600	143	1		18		
Benzofluoranthene	230	450	3,200	3,600	153			9		
Benzo(g,h,i)perylene	31	78	670	720	141		1	20		
Benzo(a)pyrene	99	210	1,600	3,000	146			16		
Chrysene	110	460	1,400	2,800	153	1		8		
Dibenzo(a,h)anthracene	12	33	230	540	133		1	28		
Dibenzofuran	15	58	540	700	80	3		79		
Fluoranthene	160	1,200	1,700	2,500	155	2		5		
Fluorene	23	79	540	1,000	94	1	1	66		
Indeno(1,2,3-cd)pyrene	34	88	600	690	139		1	22		
2-Methylnaphthalene	38	64	670	1,400	78			84		
Naphthalene	99	170	2,100	2,400	100			62		
Phenanthrene	100	480	1,500	5,400	147	2	1	12		
Pyrene	1,000	1,400	2,600	3,300	157			5		
Total HPAHs	960	5,300	12,000	17,000	156	2		4		
Total LPAHs	370	780	5,200	13,000	149		1	12		
Phenols										
2,4-Dimethylphenol	29 [a]	29 [a]	na	na	42		1	118		
2-Methylphenol	63 [a]	63 [a]	na	na	30			132		
4-Methylphenol	670 [a]	670 [a]	na	na	110		1	51		
Pentachlorophenol	360 [a]	690 [a]	na	na	29			133		
Phenol	420 [a]	1,200 [a]	na	na	129	1		32		

Table 3–6. Counts of Sediment Sample Results Compared to SMS Criteria for SVOCs (continued)

Chemical	SQS	CSL	LAET	2LAET	Count of Detected Concentrations			Count of Nondetected Results		
	mg/kg OC		µg/kg DW		≤SQS/ LAET	>SQS/LAET, ≤CSL/2LAET	>CSL/ 2LAET	≤SQS/ LAET	>SQS/LAET, ≤CSL/2LAET	>CSL/ 2LAET
Phthalates										
Butyl benzyl phthalate	4.9	64	63	900	144	6		12		
Dibutyl phthalate	220	1,700	1,400	5,100	39			123		
Di-n-octyl phthalate	58	4,500	6,200	-	13			149		
Diethyl phthalate	61	110	200	1,200	26			136		
Dimethyl phthalate	53	53	71	160	55		1	106		
Bis(2-ethylhexyl)phthalate	47	78	1,300	1,900	106	3	3	50		
Other SVOCs										
Benzoic Acid	650 [a]	650 [a]	na	na	122		5	35		
Benzyl Alcohol	57 [a]	73 [a]	na	na	45	7	94	16		
1,2-Dichlorobenzene	2.3	2.3	35	50	3			159		
1,4-Dichlorobenzene	3.1	9	110	120	10	2		150		
Hexachlorobenzene	0.38	2.3	22	70	2	3		134	23	
Hexachlorobutadiene	3.9	6.2	11	120	1			161		
N-Nitrosodiphenylamine	11	11	28	40	12			150		
1,2,4-Trichlorobenzene	0.81	1.8	31	51	3			157	2	

[a] These criteria are in units of µg/kg DW (not mg/kg OC).
2LAET = second lowest apparent effects threshold; CSL = cleanup screening level; DW = dry weight; HPAHs = high molecular weight polycyclic aromatic hydrocarbons; LAET = lowest apparent effects threshold; LPAHs = low molecular weight polycyclic aromatic hydrocarbons; na = not applicable; OC = organic carbon normalized; PAHs = polycyclic aromatic hydrocarbons; SVOCs = semi-volatile organic compounds; SMS = sediment management standards; SQS = sediment quality standards

Carcinogenic PAHs were detected in samples collected at 155 of the 162 sampling locations. All detected results exceeded the natural background concentration of cPAHs in sediment, 9 µg TEQ/kg DW (AECOM 2010). All seven RLs for nondetect cPAH results exceeded the natural background concentration, ranging from 11 to 13 µg TEQ/kg DW. Individual sample results compared to the natural background concentration for cPAHs in sediment are presented in Appendix A, Table A–5. Sample results for cPAHs are also presented in Figure 3.

3.2.3 PCBs

Total PCBs were detected in all samples. Aroclor 1242, Aroclor 1248, Aroclor 1254, and Aroclor 1260 were detected in one or more sample. Results for the individual Aroclors and total PCBs are summarized in Table 3–7.

Table 3–7. Summary of PCB Aroclor Results (µg/kg DW)

Chemical	Detection Frequency		Detected Concentrations			Range of RLs of Nondetects
	Ratio	%	Minimum	Maximum	Mean	
Aroclor 1016	0 / 162	0%	na	na	na	3.7 - 79
Aroclor 1221	0 / 162	0%	na	na	na	3.7 - 79
Aroclor 1232	0 / 162	0%	na	na	na	3.7 - 79
Aroclor 1242	2 / 162	1%	10 J	15	13	3.7 - 79
Aroclor 1248	99 / 162	61%	3.7 J	330	33	3.8 - 130
Aroclor 1254	147 / 162	91%	4.0	370	42	3.7 - 200
Aroclor 1260	138 / 162	85%	3 J	1200	45	3.7 - 14
Total PCBs	154 / 162	95%	4.4	1200	100	3.9 - 7.8
Total PCBs (mg/kg OC)	142 / 147	97%	0.24	78	5.6	0.12 - 0.47

DW = dry weight; na = not applicable; OC = organic carbon normalized; PCB = polychlorinated biphenyl; RLs = reporting limits

Table 3–8 presents a summary of the number of total PCBs results for sediment samples compared to SMS criteria, including a count of detected and nondetected results that are less than the SQS/LAET, greater than SQS/LAET but less than the CSL/2LAET, and greater than the CSL/2LAET. Total PCBs were detected in one sample at a concentration exceeding the CSL, sample LDW-SS5003-A. Ten samples had detected concentrations of total PCBs greater than the SQS/LAET but less than the CSL/2LAET. All RLs for nondetect results were below SQS. Figure 3 presents the locations with detected concentrations of total PCBs that exceed SMS criteria.

Table 3–8. Counts of Sediment Sample Results Compared to SMS Criteria for Total PCBs

Chemical	SQS	CSL	LAET	2LAET	Count of Detected Concentrations			Count of Nondetected Results		
	mg/kg OC		µg/kg DW		≤SQS/ LAET	>SQS/LAET, ≤CSL/2LAET	>CSL/2 LAET	≤SQS/ LAET	>SQS/LAET, ≤CSL/2LAET	>CSL/ 2LAET
Total PCBs	12	65	130	1,000	143	10	1	8		

2LAET = second lowest apparent effects threshold; CSL = cleanup screening level; DW = dry weight; LAET = lowest apparent effects threshold; OC = organic carbon normalized; PCB = polychlorinated biphenyl; SMS = sediment management standards; SQS = sediment quality standards

Total PCBs were detected in samples collected at 154 of the 162 sampling locations. All detected results exceeded the natural background concentration of total PCBs in sediment, 2 µg/kg DW (AECOM 2010). The eight RLs for nondetect total PCB results also exceeded the natural background concentration, ranging from 3.9 to 7.8 µg/kg DW. Individual sample results compared to the natural background concentration for total PCBs in sediment are presented in Appendix A, Table A–5.

3.2.4 Dioxins/Furans

Sediment samples collected from 30 sampling locations were analyzed for dioxins/furans. The TEQ concentration of the dioxin/furan congeners were normalized to the toxicity of 2,3,7,8-tetrachlorodibenzo-*p*-dioxin (TCDD) using toxicity equivalency factors (TEFs) updated by the World Health Organization in 2005 (Van den Berg et al. 2006) and incorporated into the MTCA (Ecology 2007, WAC 173-340). The TEQ is equivalent to the sum of the concentrations of individual congeners multiplied by their TEF (toxicity relative to 2,3,7,8-TCDD). Nondetected values were assessed as half the sample specific detection limit for nondetected congeners.

Dioxin/furan results are summarized in Table 3–9. All of the individual 17 dioxin/furan congeners were detected in one or more sediment samples. Dioxin/furan TEQs ranged from 0.294 to 23.4 ng TEQ/kg DW, with an average of 4.66 ng TEQ/kg DW. Sample LDW-SS5000-A had the highest dioxin/furan TEQ concentration (23.4 ng TEQ/kg DW) and sample LDW-SS2013-A had the second highest dioxin/furan TEQ concentration (9.01 ng TEQ/kg DW).

Dioxins/furans were analyzed in samples collected from 30 sampling locations. All of these samples had detected concentrations of at least one dioxin/furan congener. Nineteen results exceeded the natural background concentration of dioxins/furans in sediment, 2 ng TEQ/kg DW (AECOM 2010). Individual sample results compared to the natural background concentration for cPAHs in sediment are presented in Appendix A, Table A–5. Dioxin/furan TEQ sample concentrations are presented in Figure 3.

Table 3–9. Summary of Dioxin/Furan Results (ng TEQ/kg DW)

Chemical	Detection Frequency		Detected Concentrations			RL or Range of RLs of Nondetects
	Ratio	%	Minimum	Maximum	Mean	
2,3,7,8-TCDD	11 / 30	37%	0.0860 J	0.440 J	0.345	0.058 – 0.449
1,2,3,7,8-PeCDD	27 / 30	90%	0.0680 J	1.87 J	0.730	0.085 – 1.01
1,2,3,4,7,8-HxCDD	27 / 30	90%	0.178 J	4.04 J	1.38	0.118 – 0.556
1,2,3,6,7,8-HxCDD	30 / 30	100%	0.396 J	20.8	5.06	na
1,2,3,7,8,9-HxCDD	29 / 30	97%	0.357 J	10.4 J	3.81	0.329
1,2,3,4,6,7,8-HpCDD	30 / 30	100%	7.68	578	126	na
OCDD	30 / 30	100%	59.6	5580	1150	na
2,3,7,8-TCDF	23 / 30	77%	0.144 J	1.18	0.527	0.0489 – 0.372
1,2,3,7,8-PeCDF	18 / 30	60%	0.110 J	1.76 J	0.483	0.0461 – 0.543
2,3,4,7,8-PeCDF	28 / 30	93%	0.102 J	4.94	0.841	0.066 – 0.097
1,2,3,4,7,8-HxCDF	30 / 30	100%	0.136 J	55.6	4.02	na
1,2,3,6,7,8-HxCDF	28 / 30	93%	0.102 J	9.36	1.18	0.065 – 0.107
1,2,3,7,8,9-HxCDF	9 / 30	30%	0.0820 J	0.689 J	0.177	0.0461 – 0.132
2,3,4,6,7,8-HxCDF	28 / 30	93%	0.0820 J	4.60 J	0.842	0.08 – 0.607
1,2,3,4,6,7,8-HpCDF	29 / 30	97%	1.32 J	210	25.3	4.66
1,2,3,4,7,8,9-HpCDF	28 / 30	93%	0.126 J	28.4	2.43	0.132 – 2.15
OCDF	29 / 30	97%	2.69 J	689	80.2	11.5
Dioxin/Furan TEQ	30 / 30	100%	0.294 J	23.4 J	4.66	na

Table 3–9. Summary of Dioxin/Furan Results (ng TEQ/kg DW) (continued)

Chemical	Detection Frequency		Detected Concentrations			RL or Range of RLs of Nondetects
	Ratio	%	Minimum	Maximum	Mean	
Total TCDD	30 / 30	100%	0.054	7.00	3.01	na
Total TCDF	30 / 30	100%	0.646	24.2	10.9	na
Total PeCDD	30 / 30	100%	0.282	11.6	5.43	na
Total PeCDF	30 / 30	100%	0.908	62.6	13.2	na
Total HxCDD	30 / 30	100%	2.51	111	42.1	na
Total HxCDF	30 / 30	100%	1.87	369	38.8	na
Total HpCDD	30 / 30	100%	16.7	1260	357	na
Total HpCDF	30 / 30	100%	3.45	891	89.5	na

DW = dry weight; HpCDD = heptachlorodibenzo-*p*-dioxin; HpCDF = heptachlorodibenzofuran; HxCDD = hexachlorodibenzo-*p*-dioxin; HxCDF = hexachlorodibenzofuran; na = not applicable; RL = reporting limit; OCDD = octachlorodibenzo-*p*-dioxin; OCDF = octachlorodibenzofuran; PeCDD = pentachlorodibenzo-*p*-dioxin; PeCDF = pentachlorodibenzofuran; TCDD = tetrachlorodibenzo-*p*-dioxin; TCDF = tetrachlorodibenzofuran; TEQ = toxic equivalency

3.2.5 Grain Size and Conventionals

Grains size, TOC, and total solids results are summarized in Table 3–10. Total fines ranged from 0.1 to 94.5 percent. TOC concentrations ranged from 0.156 to 11.7 percent with an average of 2.11 percent. Totals solids ranged from 34.4 to 85.8 percent with an average of 56.0 percent.

There was insufficient sample volume to perform the hydrometer portion of the grain size analysis for samples collected from the following locations: LDW-SS2040-A, LDW-SS2040-D, LDW-SS2040-U, LDW-SS2150-A, LDW-SS2232-D, LDW-SS2233-D, LDW-SS2233-U, LDW-SS2505-A, LDW-SS2512-A, LDW-SSRWSD-A, LDW-SSRWSD-Ab, LDW-SSSP1-D, LDW-SSSP2-A, LDW-SSSP3-A, and LDW-SSUNK-D. Consequently, all fractions with phi scale greater than 4 were reported as nondetect by the laboratory, and total fines (silt/clay) was reported as detected concentration with a value represented by 100 percent minus the sand and gravel fractions.

Table 3–10. Summary of Grain Size, TOC, and Total Solids Results

Chemical	Detection Frequency		Detected Concentrations			RL or Range of RLs of Nondetects
	Ratio	%	Minimum	Maximum	Mean	
Grain size (% DW)						
Phi Scale <-1	136 / 162	84%	0.1	77.6	9.90	0.1
Phi Scale -1 to 0	162 / 162	100%	0.2	12.7	3.20	na
Phi Scale 0 to 1	162 / 162	100%	0.8	64.5	7.31	na
Phi Scale 1 to 2	162 / 162	100%	0.4	70.9	13.7	na
Phi Scale 2 to 3	162 / 162	100%	0.6	31.5	8.75	na
Phi Scale 3 to 4	161 / 162	99%	0.4	30.2	9.89	0.1
Phi Scale 4 to 5	147 / 162	91%	0.1	28.2	10.2	0.1 - 5.7
Phi Scale 5 to 6	147 / 162	91%	0.9	29.2	12.2	0.1 - 5.7

Table 3–10. Summary of Grain Size, TOC, and Total Solids Results (continued)

Chemical	Detection Frequency		Detected Concentrations			RL or Range of RLs of Nondetects
	Ratio	%	Minimum	Maximum	Mean	
Phi Scale 6 to 7	147 / 162	91%	0.7	28.1	11.4	0.1 - 5.7
Phi Scale 7 to 8	147 / 162	91%	0.4	17.7	7.59	0.1 - 5.7
Phi Scale 8 to 9	147 / 162	91%	0.3	11.4	4.43	0.1 - 5.7
Phi Scale 9 to 10	147 / 162	91%	0.1	7.7	2.8	0.1 - 5.7
Phi Scale >10	147 / 162	91%	0.4	13.4	4.98	0.1 - 5.7
Total Clay (<0.004 mm - 0.004 mm)	147 / 162	91%	1.0	31.3	12.2	0.1 - 5.7
Total Silt (0.06 mm - 0.004 mm)	147 / 162	91%	3.1	76.3	41.4	0.1 - 5.7
Total Fines (Silt/Clay)	162 / 162	100%	0.1	94.5	48.9	na
Total Sand (<2.0 mm - 0.06 mm)	162 / 162	100%	5.3	98.3	42.8	na
Total Gravel (>2.0 mm)	136 / 162	84%	0.1	77.6	9.90	0.1
Conventionals						
TOC (% DW)	162 / 162	100%	0.156	11.7	2.11	na
Total Solids (% WW)	162 / 162	100%	34.4	85.8	56.0	na

TOC = total organic carbon; na = not applicable; DW = dry weight; RL = reporting limit; WW = wet weight

3.3 Quality Assurance/Quality Control

Analyses were conducted following the QA/QC requirements specified in the project SAP/QAPP (SAIC 2011). The QA/QC procedures ensure that the results of the investigation are defensible and usable for their intended purpose.

3.3.1 Field Duplicate Samples

Field duplicate samples were collected at a rate of one per 20 normal samples collected for analysis. Field duplicate samples were collected at the same time and analyzed for the same chemicals as the original sample. Field duplicate sample results are used to assess the precision of the sample collection process and to help determine the representativeness of the sample. The results of the field duplicate samples are discussed in the data validation report in Appendix B.

3.3.2 Rinse Blanks

One rinse blank sample was collected during each week of sample collection to measure the effectiveness of the decontamination procedures of the sampling equipment. The rinse blank samples consist of reagent grade water provided by ARI rinsed across sample collection and processing equipment. Rinse blank samples were analyzed for SVOCs, PCBs, and metals. If chemicals were detected in the rinse blank samples, the detected concentrations were compared to the associated sample results to evaluate the potential for cross contamination. The rinse blank results are discussed in the data validation report, presented in Appendix B.

3.3.3 Data Validation

All chemical results gathered during this investigation were independently validated by EcoChem, Inc. of Seattle, WA. A summary-level, EPA Stage 2B data validation was performed on all standard SMS sediment chemistry results; a full-level, EPA Stage 4 data validation was performed on the dioxin/furan results. A compliance-level screening, including a comparison of detected results to sample concentrations, was performed on the rinse blank samples. Data validation was performed following EPA guidance (EPA 1994, 2008, 2009, 2010). The results of the data validation are summarized below. Additional details, including a list of all qualified results, are presented in Appendix B.

Seventy-one results for nine SVOCs were rejected during data validation because of extremely low laboratory control sample/laboratory control sample duplicate (LCS/LCSD) and/or matrix spike/matrix spike duplicate (MS/MSD) percent recoveries (less than 10 percent). Rejected results include 25 results for 2,4-dinitrophenol; 10 results each for aniline and 3,3'-dichlorobenzidine; nine results for hexachlorocyclopentadiene; seven results for 4-chloroaniline; four results for 3-nitroaniline; two results for 4,6-dinitro-2-methylphenol; and one result for 2,4-dimethylphenol. Rejected results should not be used for any purpose. All other results were considered acceptable, as qualified. Issues resulting in data qualification are summarized below.

Results for 52 various chemicals were J- or UJ-qualified as estimated because calibration, calibration verification, MS/MSD, LCS/LCSD, standard reference material, internal standard, and/or surrogate recoveries or duplicate relative percent differences were outside of control limits. Lock mass interferences resulted in J-qualification of two dioxin/furan results, and eight results for four SVOC compounds were J-qualified because of low spectral match. A full list of qualified results including the reason for data qualification is presented in the data validation report.

Thirty-nine results for five chemicals were re-qualified as nondetect at elevated RLs because of method blank contamination, including the following results: 25 results for BEHP ranging from 18 to 300 µg/kg DW, 10 results for benzyl alcohol ranging from 5.8 to 14 µg/kg DW, 2 results for diethyl phthalate ranging from 50 to 51 µg/kg DW, and one result each for OCDF and 1,2,3,4,6,7,8-HPCDF at 11.5 and 4.66 ng/kg DW, respectively. Twenty-five additional BEHP results ranging from 19 to 160 µg/kg DW were re-qualified as nondetect because of rinse blank contamination.

Forty-six results for four individual PCB Aroclors were Y-qualified by ARI as nondetect at elevated RLs because chromatographic interferences prevented adequate resolution of the compound at the standard RL.

Sixty-four results for 11 dioxin/furan congeners were K-qualified by Axys as being estimated maximum possible concentrations because not all method required compound identification parameters were met. These results were requalified as nondetect (U-qualified) at the reported concentrations.

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4.0 References

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Figures

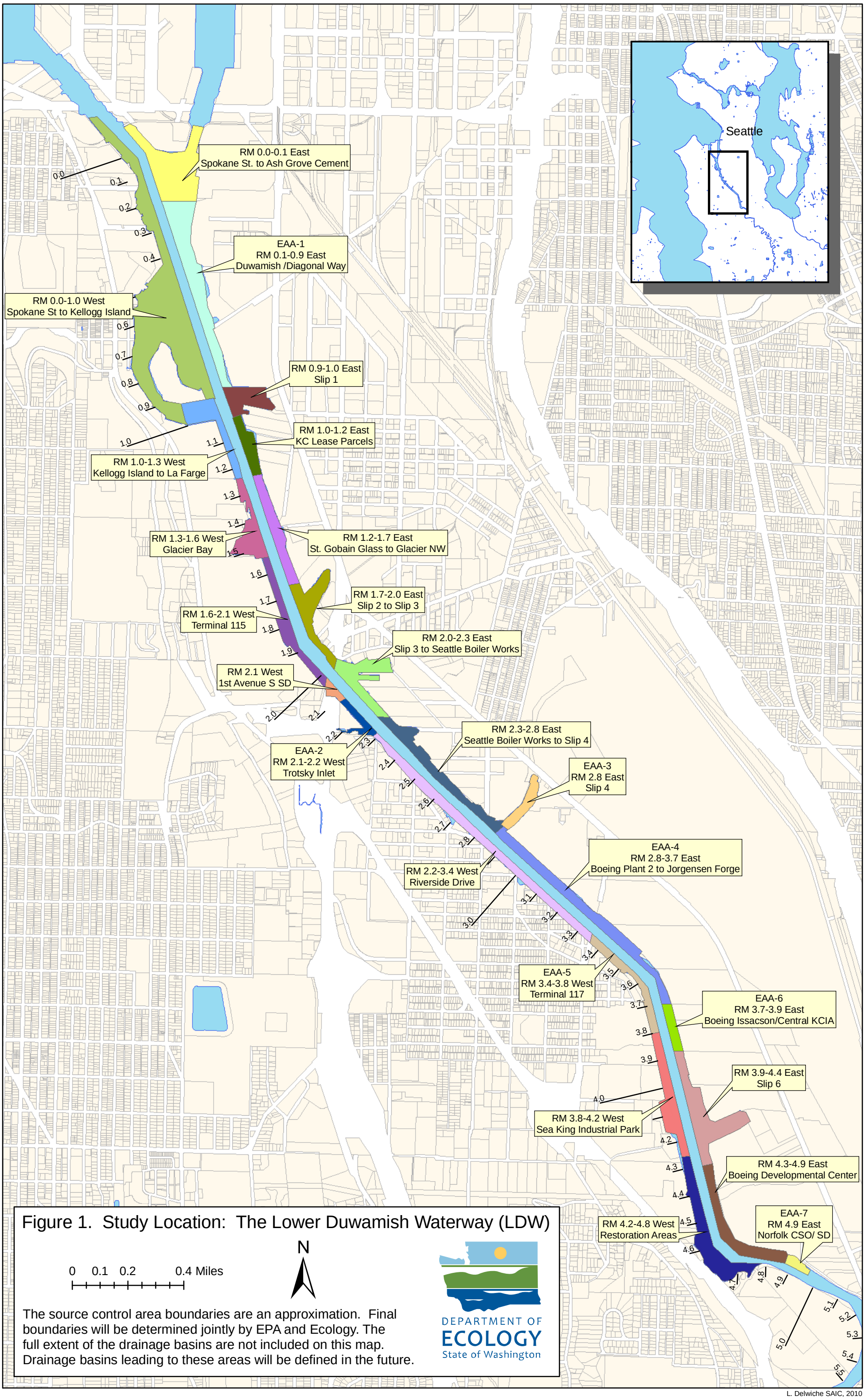

Figure 1. Study Location: The Lower Duwamish Waterway (LDW)

The source control area boundaries are an approximation. Final boundaries will be determined jointly by EPA and Ecology. The full extent of the drainage basins are not included on this map. Drainage basins leading to these areas will be defined in the future.

L. Delwiche SAIC, 2010

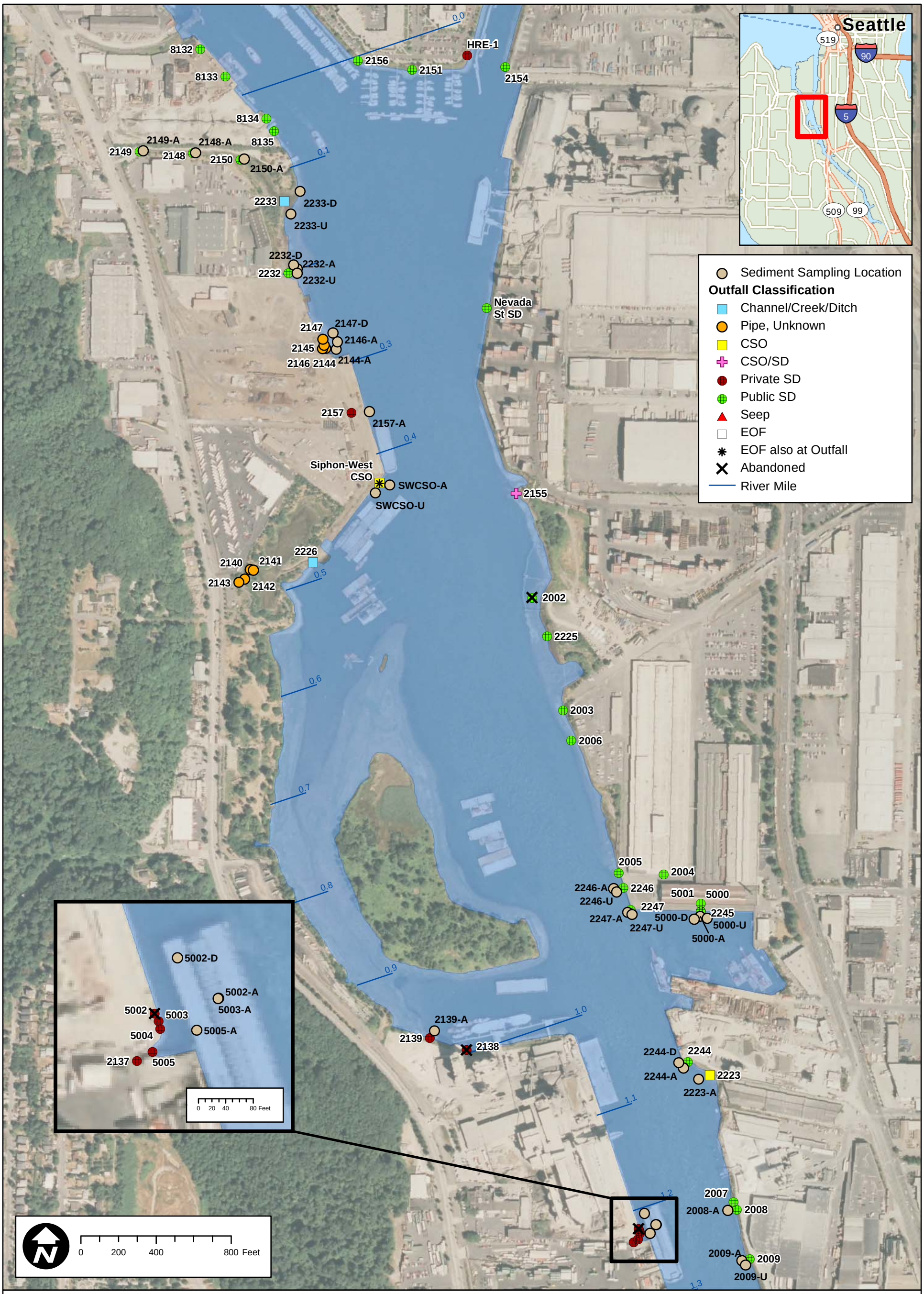

Figure 2a. LDW Outfalls and Surface Sediment Sampling Locations, River Mile 0.0 to 1.3

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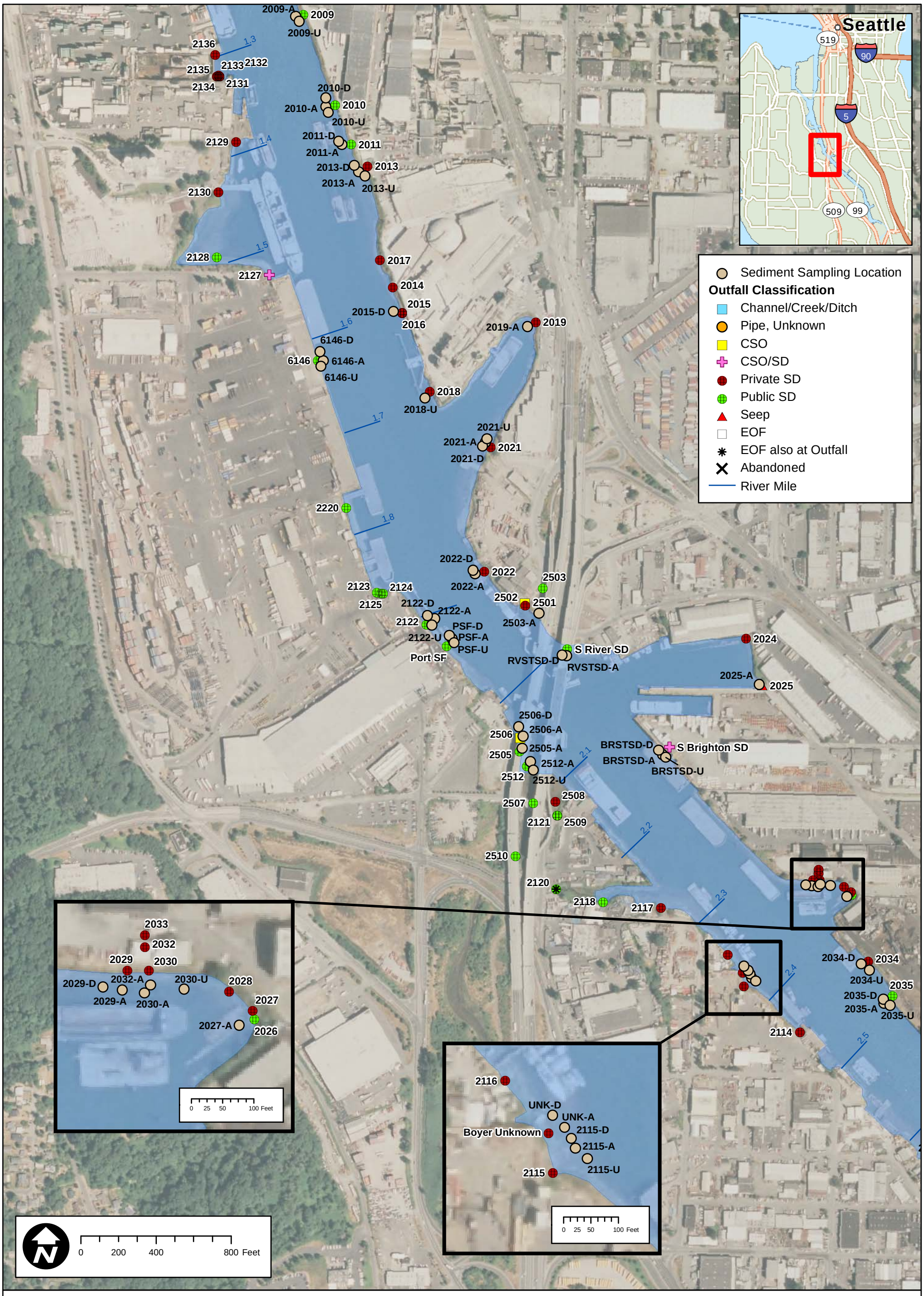

Figure 2b. LDW Outfalls and Surface Sediment Sampling Locations, River Mile 1.3 to 2.5

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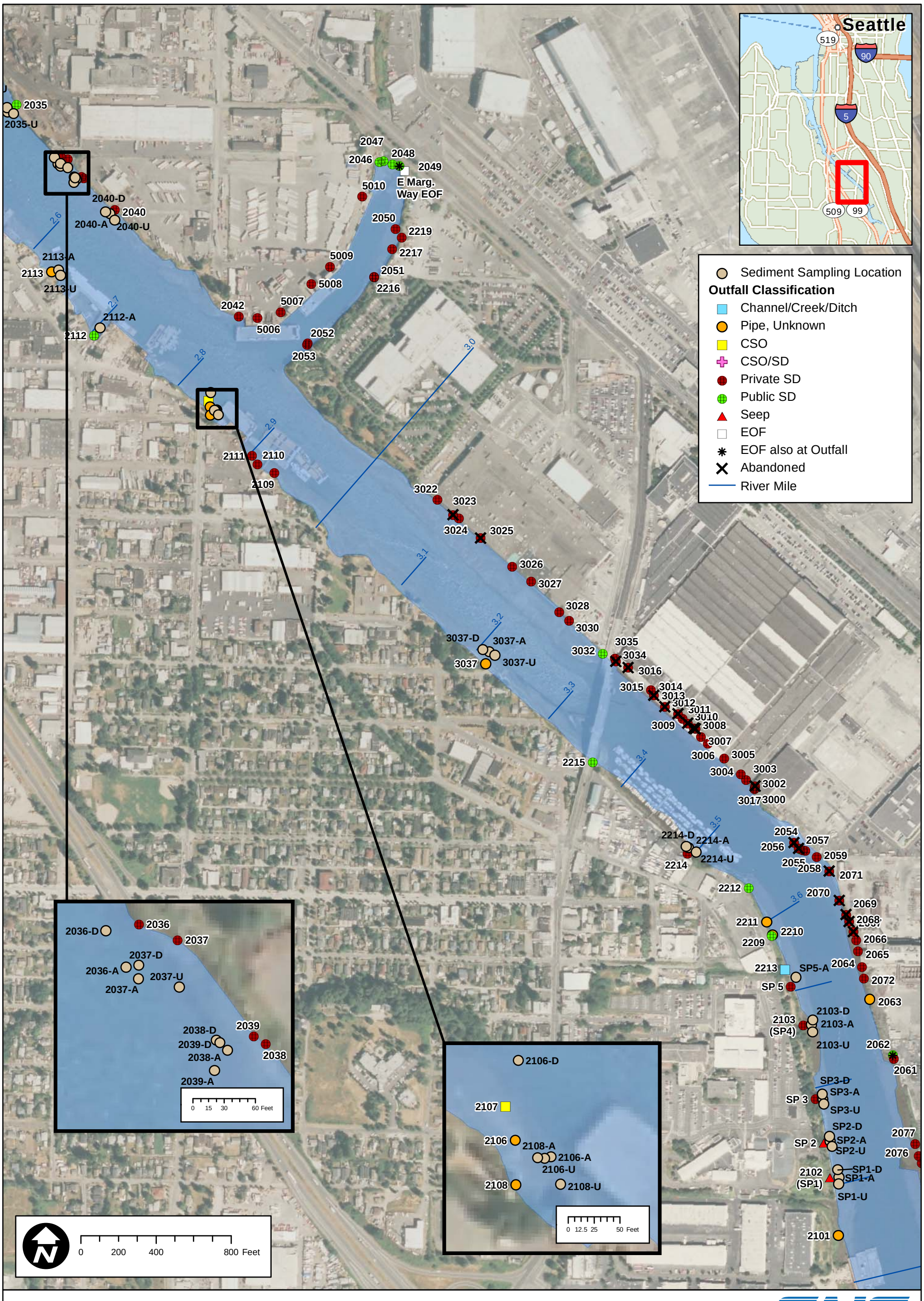

Figure 2c. LDW Outfalls and Surface Sediment Sampling Locations, River Mile 2.5 to 3.9

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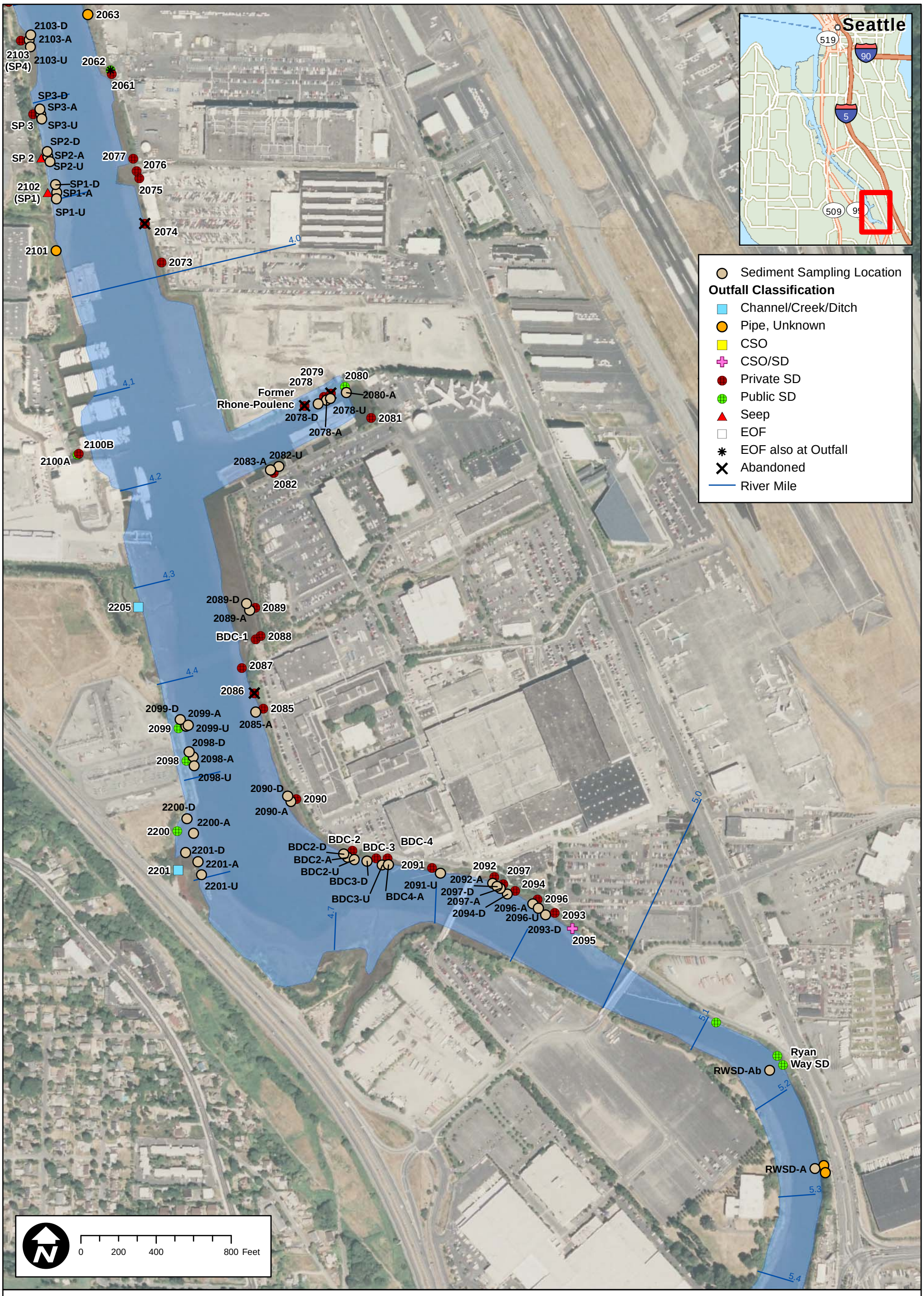

Figure 2d. LDW Outfalls and Surface Sediment Sampling Locations, River Mile 3.8 to 5.4

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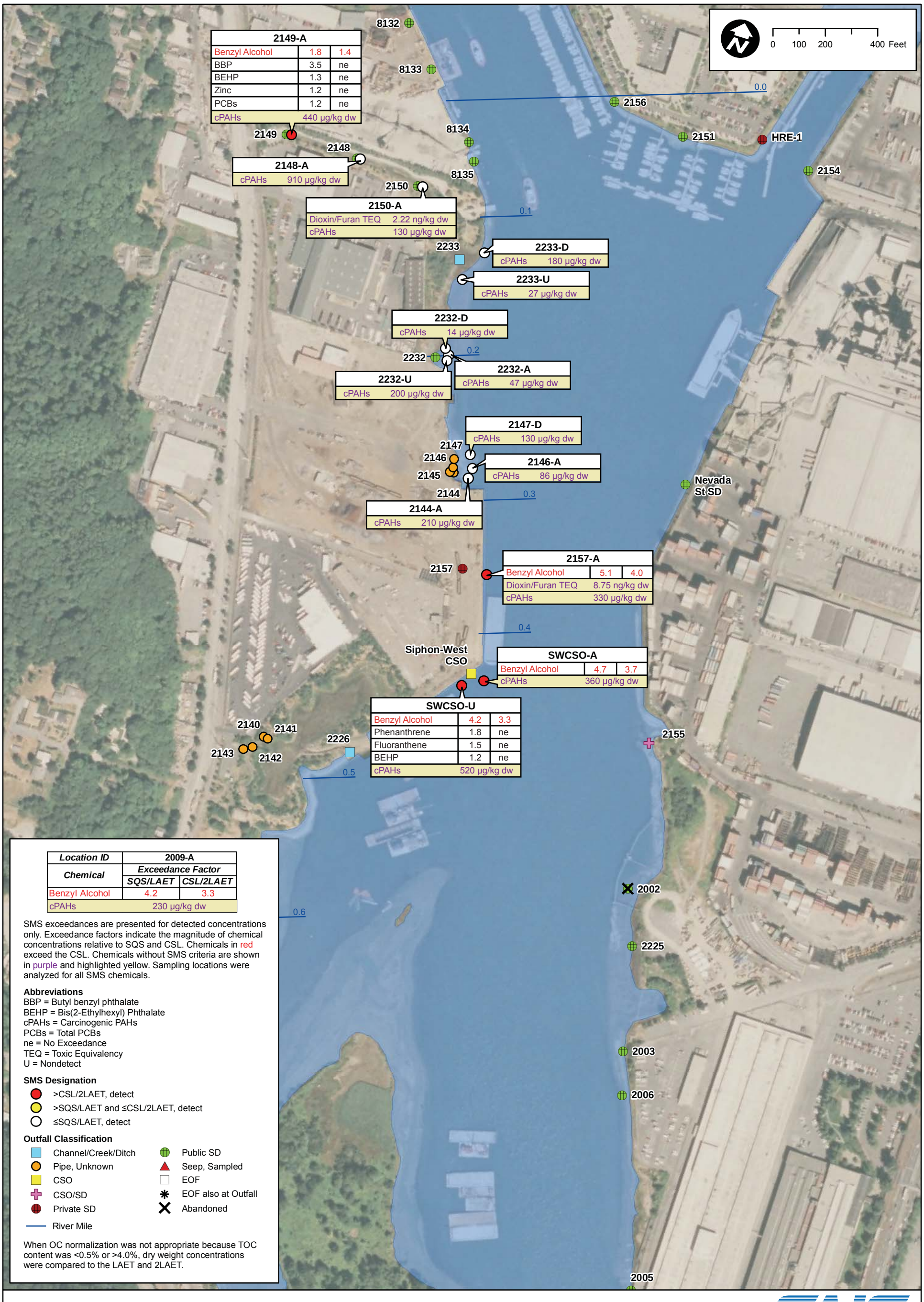

Location ID	2009-A	
Chemical	Exceedance Factor	
	SQS/LAET	CSL/2LAET
Benzyl Alcohol	4.2	3.3
cPAHs	230 µg/kg dw	

SMS exceedances are presented for detected concentrations only. Exceedance factors indicate the magnitude of chemical concentrations relative to SQS and CSL. Chemicals in red exceed the CSL. Chemicals without SMS criteria are shown in purple and highlighted yellow. Sampling locations were analyzed for all SMS chemicals.

Abbreviations
BBP = Butyl benzyl phthalate
BEHP = Bis(2-Ethylhexyl) Phthalate
cPAHs = Carcinogenic PAHs
PCBs = Total PCBs
ne = No Exceedance
TEQ = Toxic Equivalency
U = Nondetect

SMS Designation
- >CSL/2LAET, detect
- >SQS/LAET and ≤CSL/2LAET, detect
- ≤SQS/LAET, detect

Outfall Classification
- Channel/Creek/Ditch
- Pipe, Unknown
- CSO
- CSO/SD
- Private SD
- Public SD
- Seep, Sampled
- EOF
- EOF also at Outfall
- Abandoned
- River Mile

When OC normalization was not appropriate because TOC content was <0.5% or >4.0%, dry weight concentrations were compared to the LAET and 2LAET.

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Figure 3a. Surface sediment results, River Mile 0.0 to 0.9

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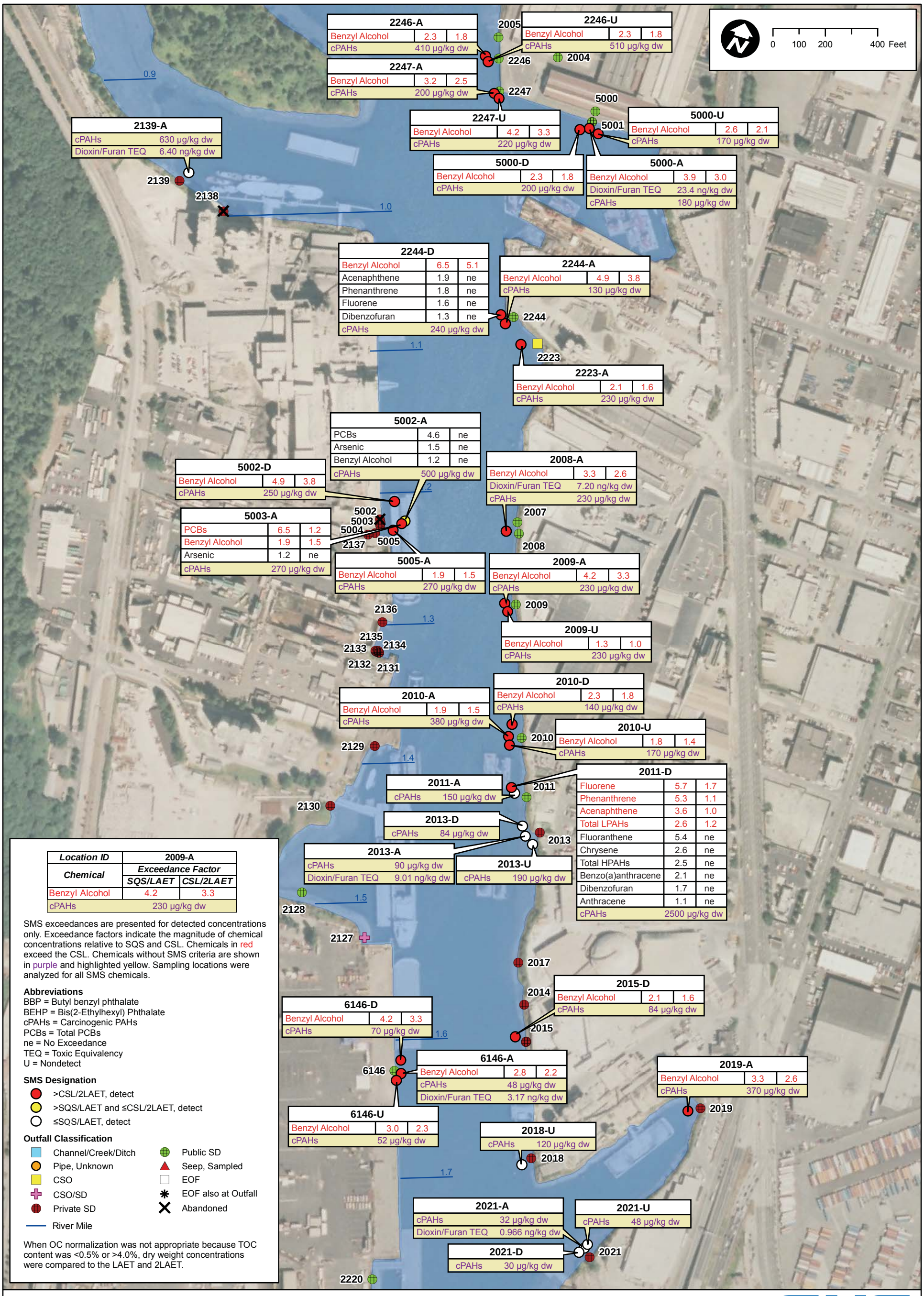

Location ID	2009-A	
Chemical	Exceedance Factor	
	SQS/LAET	CSL/2LAET
Benzyl Alcohol	4.2	3.3
cPAHs	230 µg/kg dw	

SMS exceedances are presented for detected concentrations only. Exceedance factors indicate the magnitude of chemical concentrations relative to SQS and CSL. Chemicals in red exceed the CSL. Chemicals without SMS criteria are shown in purple and highlighted yellow. Sampling locations were analyzed for all SMS chemicals.

Abbreviations
BBP = Butyl benzyl phthalate
BEHP = Bis(2-Ethylhexyl) Phthalate
cPAHs = Carcinogenic PAHs
PCBs = Total PCBs
ne = No Exceedance
TEQ = Toxic Equivalency
U = Nondetect

SMS Designation
- >CSL/2LAET, detect
- >SQS/LAET and ≤CSL/2LAET, detect
- ≤SQS/LAET, detect

Outfall Classification
- Channel/Creek/Ditch
- Pipe, Unknown
- CSO
- CSO/SD
- Private SD
- Public SD
- Seep, Sampled
- EOF
- EOF also at Outfall
- Abandoned
- River Mile

When OC normalization was not appropriate because TOC content was <0.5% or >4.0%, dry weight concentrations were compared to the LAET and 2LAET.

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Figure 3b. Surface sediment results, River Mile 0.9 to 1.8

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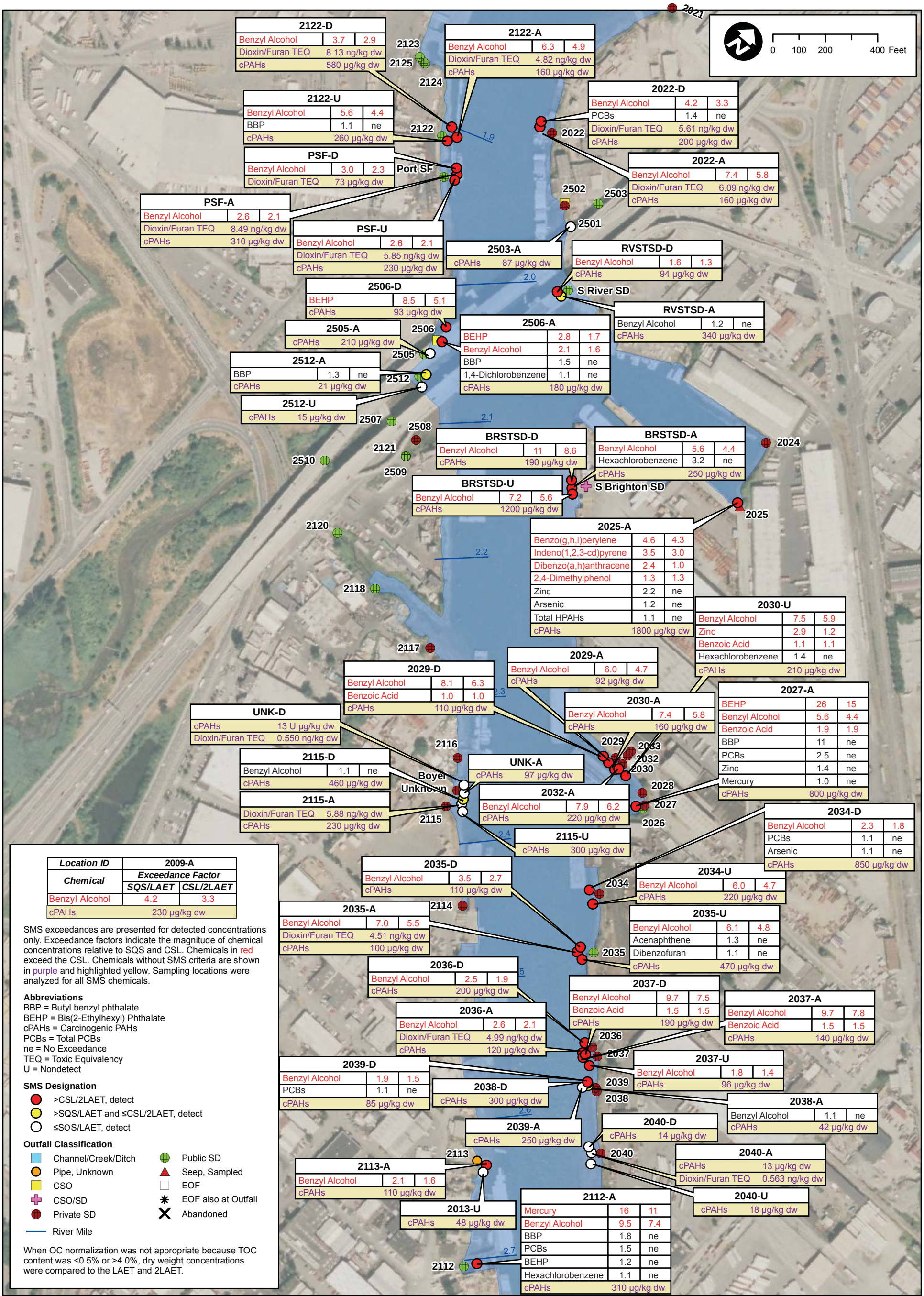

Location ID	2009-A	
Chemical	Exceedance Factor	
	SQS/LAET	CSL/2LAET
Benzyl Alcohol	4.2	3.3
cPAHs	230 µg/kg dw	

SMS exceedances are presented for detected concentrations only. Exceedance factors indicate the magnitude of chemical concentrations relative to SQS and CSL. Chemicals in red exceed the CSL. Chemicals without SMS criteria are shown in purple and highlighted yellow. Sampling locations were analyzed for all SMS chemicals.

Abbreviations
BBP = Butyl benzyl phthalate
BEHP = Bis(2-Ethylhexyl) Phthalate
cPAHs = Carcinogenic PAHs
PCBs = Total PCBs
ne = No Exceedance
TEQ = Toxic Equivalency
U = Nondetect

SMS Designation
- >CSL/2LAET, detect
- >SQS/LAET and ≤CSL/2LAET, detect
- ≤SQS/LAET, detect

Outfall Classification
- Channel/Creek/Ditch
- Pipe, Unknown
- CSO
- CSO/SD
- Private SD
- Public SD
- Seep, Sampled
- EOF
- EOF also at Outfall
- Abandoned
- River Mile

When OC normalization was not appropriate because TOC content was <0.5% or >4.0%, dry weight concentrations were compared to the LAET and 2LAET.

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Figure 3c. Surface sediment results, River Mile 1.8 to 2.7

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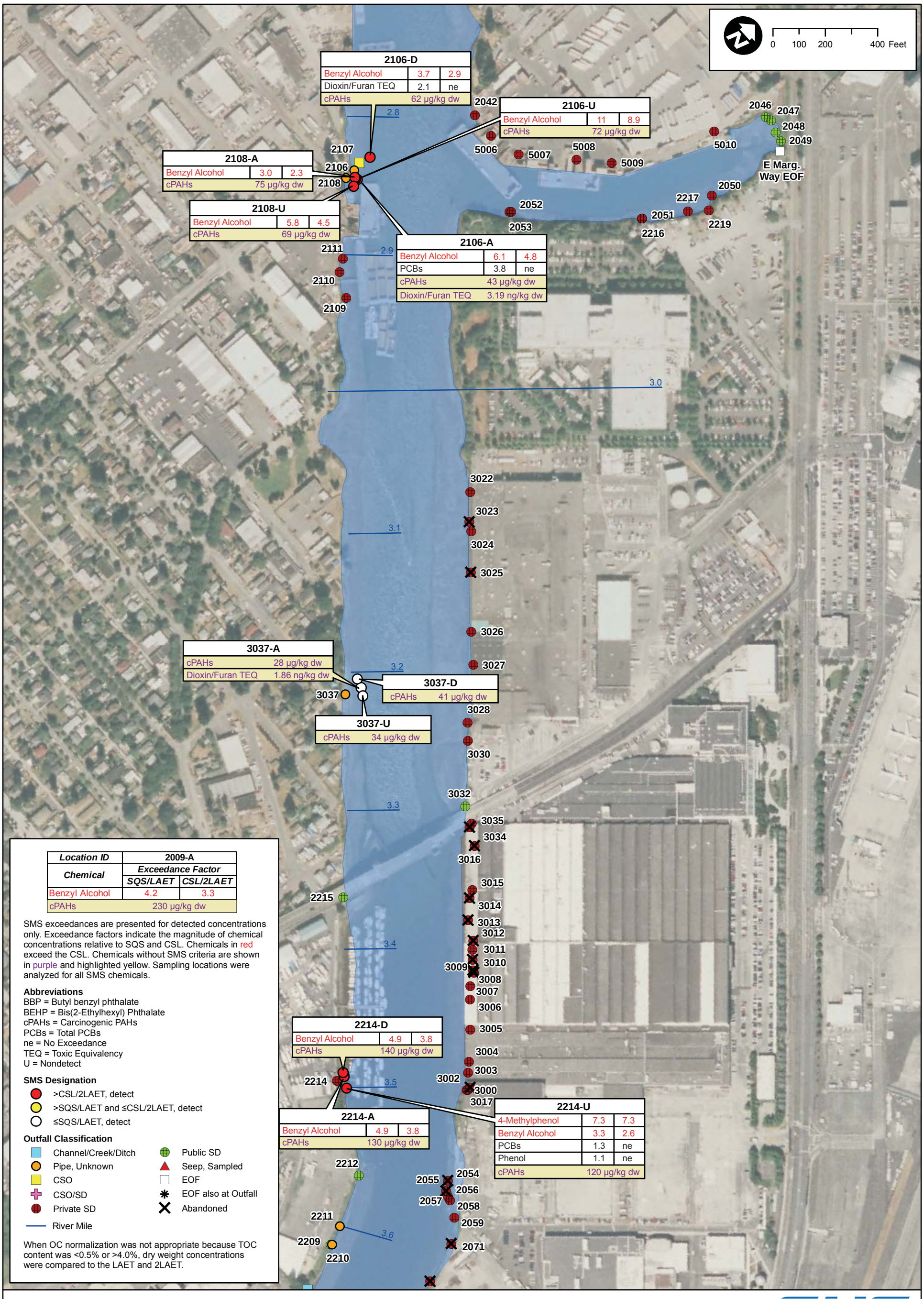

Location ID	2009-A	
Chemical	Exceedance Factor	
	SQS/LAET	CSL/2LAET
Benzyl Alcohol	4.2	3.3
cPAHs	230 µg/kg dw	

SMS exceedances are presented for detected concentrations only. Exceedance factors indicate the magnitude of chemical concentrations relative to SQS and CSL. Chemicals in red exceed the CSL. Chemicals without SMS criteria are shown in purple and highlighted yellow. Sampling locations were analyzed for all SMS chemicals.

Abbreviations
BBP = Butyl benzyl phthalate
BEHP = Bis(2-Ethylhexyl) Phthalate
cPAHs = Carcinogenic PAHs
PCBs = Total PCBs
ne = No Exceedance
TEQ = Toxic Equivalency
U = Nondetect

SMS Designation
- >CSL/2LAET, detect
- >SQS/LAET and ≤CSL/2LAET, detect
- ≤SQS/LAET, detect

Outfall Classification
- Channel/Creek/Ditch
- Pipe, Unknown
- CSO
- CSO/SD
- Private SD
- Public SD
- Seep, Sampled
- EOF
- EOF also at Outfall
- Abandoned
- River Mile

When OC normalization was not appropriate because TOC content was <0.5% or >4.0%, dry weight concentrations were compared to the LAET and 2LAET.

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Figure 3d. Surface sediment results, River Mile 2.7 to 3.6

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Coordinate System:
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Prepared By: mlf
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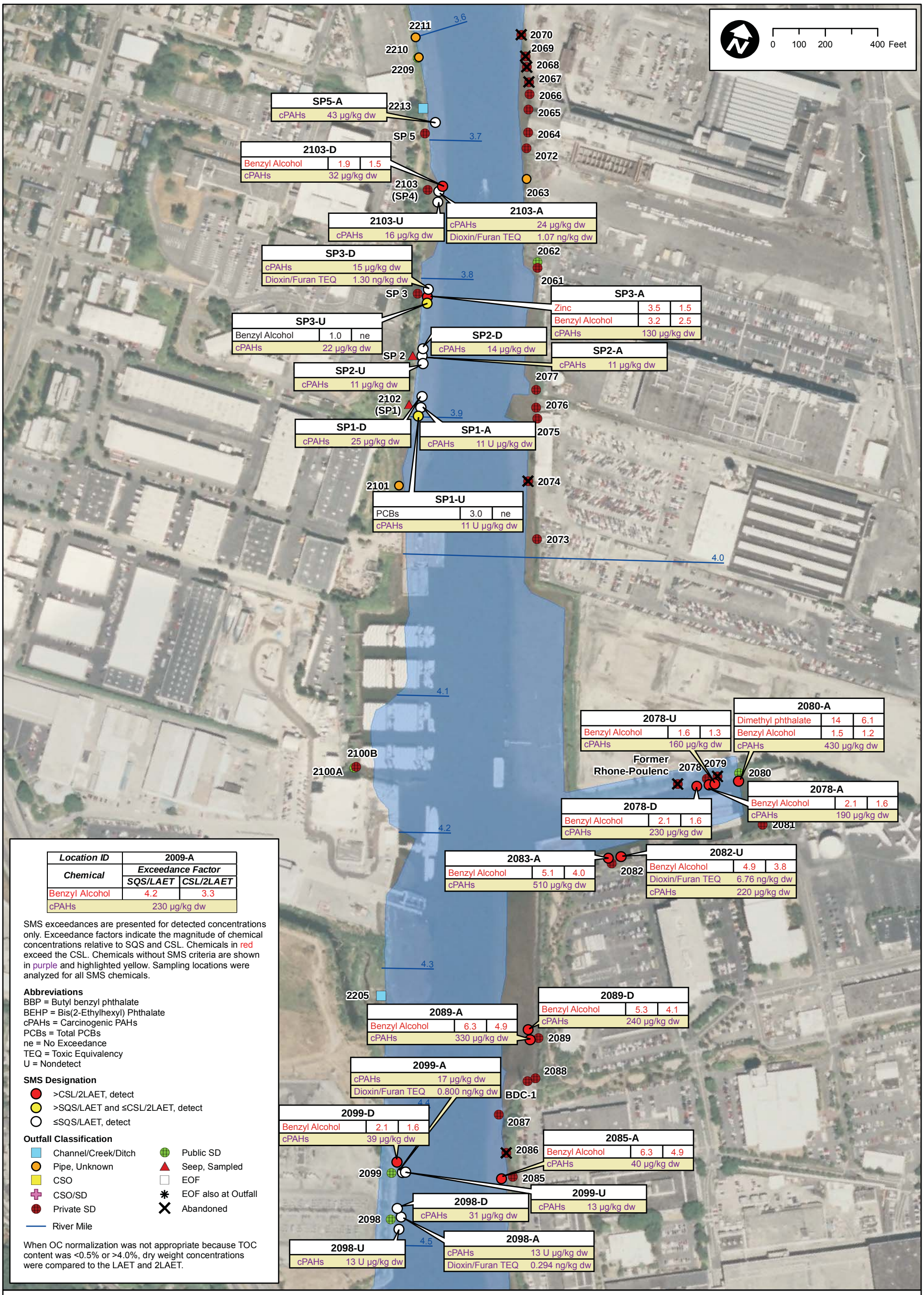

Location ID	2009-A	
Chemical	Exceedance Factor	
	SQS/LAET	CSL/2LAET
Benzyl Alcohol	4.2	3.3
cPAHs	230 µg/kg dw	

SMS exceedances are presented for detected concentrations only. Exceedance factors indicate the magnitude of chemical concentrations relative to SQS and CSL. Chemicals in red exceed the CSL. Chemicals without SMS criteria are shown in purple and highlighted yellow. Sampling locations were analyzed for all SMS chemicals.

Abbreviations
BBP = Butyl benzyl phthalate
BEHP = Bis(2-Ethylhexyl) Phthalate
cPAHs = Carcinogenic PAHs
PCBs = Total PCBs
ne = No Exceedance
TEQ = Toxic Equivalency
U = Nondetect

SMS Designation
- >CSL/2LAET, detect
- >SQS/LAET and ≤CSL/2LAET, detect
- ≤SQS/LAET, detect

Outfall Classification
- Channel/Creek/Ditch
- Pipe, Unknown
- CSO
- CSO/SD
- Private SD
- Public SD
- Seep, Sampled
- EOF
- EOF also at Outfall
- Abandoned
- River Mile

When OC normalization was not appropriate because TOC content was <0.5% or >4.0%, dry weight concentrations were compared to the LAET and 2LAET.

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Figure 3e. Surface sediment results, River Mile 3.6 to 4.5

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Coordinate System:
NAD 1983 StatePlane Washington North FIPS 4601 Feet
Prepared By: mlf
File: Fig_3_AllChem_BalloonMapSeries.mxd
Illustrative purposes only.

Location ID	2009-A	
Chemical	Exceedance Factor	
	SQS/LAET	CSL/2LAET
Benzyl Alcohol	4.2	3.3
cPAHs	230 µg/kg dw	

SMS exceedances are presented for detected concentrations only. Exceedance factors indicate the magnitude of chemical concentrations relative to SQS and CSL. Chemicals in red exceed the CSL. Chemicals without SMS criteria are shown in purple and highlighted yellow. Sampling locations were analyzed for all SMS chemicals.

Abbreviations
BBP = Butyl benzyl phthalate
BEHP = Bis(2-Ethylhexyl) Phthalate
cPAHs = Carcinogenic PAHs
PCBs = Total PCBs
ne = No Exceedance
TEQ = Toxic Equivalency
U = Nondetect

SMS Designation
- >CSL/2LAET, detect
- >SQS/LAET and ≤CSL/2LAET, detect
- ≤SQS/LAET, detect

Outfall Classification
- Channel/Creek/Ditch
- Pipe, Unknown
- CSO
- CSO/SD
- Private SD
- Public SD
- Seep, Sampled
- EOF
- EOF also at Outfall
- Abandoned
- River Mile

When OC normalization was not appropriate because TOC content was <0.5% or >4.0%, dry weight concentrations were compared to the LAET and 2LAET.

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State of Washington

Figure 3 f. Surface sediment results, River Mile 4.5 to 5.8

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Appendix A
Data Tables

Appendix A
Data Tables

Table of Contents:

Acronyms:

2LAET = second lowest apparent effects threshold
AET = apparent effects threshold
cPAHs = carcinogenic polycyclic aromatic hydrocarbons
CSL = Washington State Cleanup Screening Level
DW = dry weight
HPAHs = high molecular weight polycyclic aromatic hydrocarbons
LAET = lowest apparent effects threshold
LDW = Lower Duwamish Waterway
LPAHs = low molecular weight polycyclic aromatic hydrocarbons
na = not analyzed
nd = nondetect
OC = organic carbon normalized
PAHs = polycyclic aromatic hydrocarbons
PCBs = polychlorinated biphenyls
RI = Remedial Investigation
RL = reporting limit
SMS = Washington State Sediment Management Standards
SQS = Washington State Sediment Quality Standards
SVOCs = semi-volatile organic compounds
WW = wet weight

Data Qualifiers:

J = estimated value
JN = estimated value with tentative identification
R = rejected
U = not detected
UJ = not detected at estimated RL

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2008-A	LDW-SS2009-A	LDW-SS2009-U	LDW-SS2010-A	LDW-SS2010-D	LDW-SS2010-U	LDW-SS2011-A	LDW-SS2011-D	LDW-SS2013-A
Metals (mg/kg DW)									
Arsenic	20	20	30	14	10	15	13	16	21 J
Cadmium	0.5	0.6	0.7	0.6	0.5	0.5	0.3 U	0.4	0.3
Chromium	33	34	42	32.9	33	29.4	21.0	40.0	19.7
Copper	65.6	66.8	65.6	71.0	65.8	64.1	37.8	55.2	54.2 J
Lead	27	36	47	39	28	28	19	76	24 J
Mercury	0.21	0.18	0.23	0.17	0.16	0.15	0.12	0.12	0.04
Silver	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.5 U	0.5 U	0.4 U
Zinc	121	130	154	131	122	121	83	119	144 J
PAHs (µg/kg DW)									
Acenaphthene	21	18 J	18 J	27	7.9 J	9.6 J	7.7 J	1200	20 U
Acenaphthylene	13 J	9.7 J	13 J	14 J	20 U	10 J	18 J	120	20 U
Anthracene	68	61	54	50	28	37	32	4800	21
Benzo(a)anthracene	160	180	150	320	95	120	120	4800	72
Benzofluoranthene	360	330	350	570	220	280	240	4200	180
Benzo(g,h,i)perylene	110	98	100	130	63	69	68	400	49
Benzo(a)pyrene	150	150	150	250	92	110	100	1400	55
Chrysene	270	240	230	350	140	200	170	5800	140
Dibenzo(a,h)anthracene	30	34	35	61	26	25	24	200	12
Dibenzofuran	32	21	20	29	8.9 J	10 J	6.7 J	530	20 U
Fluoranthene	340	290	300	750	170	260	270	18000	410
Fluorene	38	29	24	38	11 J	14 J	11 J	2700	20 U
Indeno(1,2,3-cd)pyrene	94	88	90	120	55	64	57	460	37
1-Methylnaphthalene	12 J	13 J	22	14 J	6.9 J	6.7 J	7.7 J	28	20 U
2-Methylnaphthalene	18 J	16 J	18	20	9.9 J	8.6 J	8.6 J	140	20 U
Naphthalene	24	35	27	31	14 J	14 J	16 J	36	12 J
Phenanthrene	180	180	140	280	77	100	120	11000	94
Pyrene	310	280	290	770	200	280	330	14000	380
Total HPAHs	1800	1700	1700	3300	1100	1400	1400	49000	1300
Total LPAHs	340 J	330 J	280 J	440 J	140 J	180 J	200 J	20000	130 J
cPAHs	230	230	230	380	140	170	150	2500	90
Phthalates (µg/kg DW)									
Butyl benzyl phthalate	37	27	20	14 J	14 J	15 J	21 J	8.5 J	9.6
Dibutyl phthalate	14 J	19 U	12 J	8.7 J	8.9 J	45	4.8 J	36	20 U
Di-n-octyl phthalate	19 U	19 U	18 U	19 U	20 U	19 U	19 U	18 U	21
Diethyl phthalate	19 U	19 U	18 U	19 U	20 U	19 U	19 U	18 U	20 U
Dimethyl phthalate	3.1 J	2.7 J	4.6 U	44	42	19	36	28	4.9 U
Bis(2-ethylhexyl)phthalate	300 U	140 U	250 U	140	120	100	120	93 U	120

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2008-A	LDW-SS2009-A	LDW-SS2009-U	LDW-SS2010-A	LDW-SS2010-D	LDW-SS2010-U	LDW-SS2011-A	LDW-SS2011-D	LDW-SS2013-A
Phenols (µg/kg DW)									
2,4,5-Trichlorophenol	96 U	97 U	92 U	96 U	99 U	96 U	96 U	92 U	98 U
2,4,6-Trichlorophenol	96 U	97 U	92 U	96 U	99 U	96 U	96 U	92 U	98 U
2,4-Dichlorophenol	96 U	97 U	92 U	96 U	99 U	96 U	96 U	92 U	98 U
2,4-Dimethylphenol	5.0	4.5 J	3.5 J	2.7 J	4.9 UJ	4.8 UJ	4.8 UJ	4.6 UJ	4.9 U
2,4-Dinitrophenol	200 U	210 U	200 U	200 U	210 U	200 U	200 U	200 U	210 UJ
2-Chlorophenol	19 U	19 U	18 U	19 U	20 U	19 U	19 U	18 U	20 U
2-Nitrophenol	96 U	97 U	92 U	96 U	99 U	96 U	96 U	92 U	98 U
4,6-Dinitro-2-Methylphenol	190 U	190 U	180 U	190 U	200 U	190 U	190 U	180 U	200 U
4-Chloro-3-methylphenol	96 U	97 U	92 U	96 U	99 U	96 U	96 U	92 U	98 U
2-Methylphenol	5.2	5.0	3.1 J	4.8 U	4.9 U	4.8 U	4.8 U	4.6 U	4.9 U
4-Methylphenol	580	440	310	16 J	22	12 J	19 U	7.4 J	20 U
4-Nitrophenol	96 U	97 U	92 U	96 U	99 U	96 U	96 U	92 U	98 U
Pentachlorophenol	24 U	15 J	23 U	24 UJ	25 UJ	24 UJ	24 UJ	23 UJ	25 U
Phenol	160	100	80	17 J	18 J	17 J	6.7 J	11 J	11 J
Other SVOCs (µg/kg DW)									
Benzoic Acid	320	370	140 J	120 J	130 J	110 J	190 U	49 J	200 U
Benzyl Alcohol	190	240	74	110 J	130 J	100 J	25 J	37 J	4.5 J
4-Bromophenyl phenyl ether	19 U	19 U	18 U	19 U	20 U	19 U	19 U	18 U	20 UJ
Carbazole	20	23	18 J	38	14 J	20	13 J	950	17 J
Bis(2-chloro-1-methylethyl) ether	19 U	19 U	18 U	19 U	20 U	19 U	19 U	18 U	20 U
4-Chloroaniline	96 U	97 U	92 U	96 U	99 U	96 U	96 U	92 U	98 UJ
2-Chloronaphthalene	19 U	19 U	18 U	19 U	20 U	19 U	19 U	18 U	20 U
Bis(2-Chloroethoxy)Methane	19 U	19 U	18 U	19 U	20 U	19 U	19 U	18 U	20 U
Bis(2-Chloroethyl)Ether	19 U	19 U	18 U	19 U	20 U	19 U	19 U	18 U	20 U
4-Chlorophenyl-phenylether	19 U	19 U	18 U	19 U	20 U	19 U	19 U	18 U	20 UJ
1,2-Dichlorobenzene	4.8 U	4.8 U	4.6 U	4.8 U	4.9 U	4.8 U	4.8 U	4.6 U	4.9 U
1,3-Dichlorobenzene	19 U	19 U	18 U	19 U	20 U	19 U	19 U	18 U	20 U
1,4-Dichlorobenzene	2.8 J	4.8 U	4.6 U	4.8 U	4.9 U	4.8 U	4.8 U	4.6 U	4.9 U
3,3'-Dichlorobenzidine	96 U	97 U	92 U	96 U	99 U	96 U	96 U	92 U	R
2,4-Dinitrotoluene	96 U	97 U	92 U	96 U	99 U	96 U	96 U	92 U	98 U
2,6-Dinitrotoluene	96 U	97 U	92 U	96 U	99 U	96 U	96 U	92 U	98 U
Hexachlorobenzene	4.8 U	4.8 U	4.6 U	4.8 U	4.9 U	4.8 U	4.8 U	4.6 U	4.9 U
Hexachlorobutadiene	4.8 U	4.8 U	4.6 U	4.8 U	4.9 U	4.8 U	4.8 U	4.6 U	4.9 U
Hexachlorocyclopentadiene	96 U	97 U	92 U	96 UJ	99 UJ	96 UJ	96 UJ	92 UJ	R
Hexachloroethane	19 U	19 U	18 U	19 U	20 U	19 U	19 U	18 U	20 U
Isophorone	19 U	19 U	18 U	19 U	20 U	19 U	19 U	18 U	20 U
2-Nitroaniline	96 U	97 U	92 U	96 U	99 U	96 U	96 U	92 U	98 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2008-A	LDW-SS2009-A	LDW-SS2009-U	LDW-SS2010-A	LDW-SS2010-D	LDW-SS2010-U	LDW-SS2011-A	LDW-SS2011-D	LDW-SS2013-A
4-Nitroaniline	96 U	97 U	92 U	96 U	99 U	96 U	96 U	92 U	98 U
3-Nitroaniline	96 U	97 U	92 U	96 U	99 U	96 U	96 U	92 U	98 U
Nitrobenzene	19 U	19 U	18 U	19 U	20 U	19 U	19 U	18 U	20 U
N-Nitrosodiphenylamine	4.8 U	4.8 U	4.6 U	4.8 U	4.9 U	4.8 U	4.8 U	4.6 U	4.9 U
N-Nitrosodi-n-propylamine	4.8 U	4.8 U	4.6 U	4.8 U	4.9 U	4.8 U	4.8 U	4.6 U	4.9 U
1,2,4-Trichlorobenzene	4.8 U	4.8 U	4.6 U	4.8 U	4.9 U	4.8 U	4.8 U	4.6 U	4.9 U
Aniline	120 U	130 U	120 U	120 UJ	130 UJ	120 UJ	120 UJ	120 UJ	R
N-Nitrosodimethylamine	24 U	24 U	23 U	24 U	25 U	24 U	24 U	23 U	25 U
PCB Aroclors (µg/kg DW)									
Aroclor 1016	4.0 U	3.9 U	3.9 U	4.0 U	3.9 U	3.9 U	3.8 U	4.0 U	3.9 U
Aroclor 1221	4.0 U	3.9 U	3.9 U	4.0 U	3.9 U	3.9 U	3.8 U	4.0 U	3.9 U
Aroclor 1232	4.0 U	3.9 U	3.9 U	4.0 U	3.9 U	3.9 U	3.8 U	4.0 U	3.9 U
Aroclor 1242	4.0 U	3.9 U	3.9 U	4.0 U	3.9 U	3.9 U	3.8 U	4.0 U	3.9 U
Aroclor 1248	8.3	9.3	9.8	64	52	68	39	65	22
Aroclor 1254	10	9.7	11	88	80	99	53	78	57
Aroclor 1260	12	8.2	9.2	49	61	54	28	45	47
Total PCBs	30	27	30	200	190	220	120	190	130
Grain size (% DW)									
Phi Scale <-1	1.3	0.9	13.5	0.9	0.6	1.1	6.9	8.6	32.5
Phi Scale -1 to 0	2.0	3.2	3.6	1.2	1.1	1.3	5.8	4.6	7.0
Phi Scale 0 to 1	1.3	2.7	4.0	2.3	1.7	2.5	12.1	7.3	9.9
Phi Scale 1 to 2	1.9	6.0	5.5	9.2	5.0	10.4	25.0	19.6	21.8
Phi Scale 2 to 3	2.6	4.5	5.1	7.8	4.6	7.2	11.7	9.6	15.4
Phi Scale 3 to 4	7.0	9.4	7.7	9.0	6.4	8.3	8.2	7.2	5.4
Phi Scale 4 to 5	12.8	10.9	12.1	11.6	11.0	11.8	7.2	7.5	1.5
Phi Scale 5 to 6	15.9	14.9	10.0	14.8	16.8	13.2	5.8	7.8	1.3
Phi Scale 6 to 7	16.3	14.8	11.2	15.8	18.9	14.4	5.3	8.4	1.2
Phi Scale 7 to 8	13.4	11.2	9.8	10.3	12.7	10.3	4.3	6.9	1.2
Phi Scale 8 to 9	8.5	7.1	5.4	5.9	7.5	7.1	2.9	4.4	1.0
Phi Scale 9 to 10	5.9	4.7	4.2	4.0	4.7	4.7	2.1	3.2	0.8
Phi Scale >10	11.1	9.5	7.9	7.2	9.0	7.7	2.6	4.9	1.1
Total Clay (<0.004 mm - 0.004 mm)	25.5	21.3	17.5	17.1	21.2	19.5	7.6	12.5	2.9
Total Silt (0.06 mm - 0.004 mm)	58.4	51.8	43.1	52.5	59.4	49.7	22.6	30.6	5.2
Total Fines (Silt/Clay)	83.9	73.3	60.6	69.6	80.6	69.2	30.3	43.1	8.1
Total Sand (<2.0 mm - 0.06 mm)	14.8	25.8	25.9	29.5	18.8	29.7	62.8	48.3	59.5
Total Gravel (>2.0 mm)	1.3	0.9	13.5	0.9	0.6	1.1	6.9	8.6	32.5
Conventionals									
Total Organic Carbon (% DW)	1.42	2.98	2.37	2.33	2.91	2.00	1.44	2.08	1.75
Total Solids (% WW)	46.30	46.10	48.00	50.00	46.60	48.90	63.20	56.10	71.10

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2013-D	LDW-SS2013-U	LDW-SS2015-D	LDW-SS2018-U	LDW-SS2019-A	LDW-SS2021-A	LDW-SS2021-D	LDW-SS2021-U	LDW-SS2022-A
Metals (mg/kg DW)									
Arsenic	14 J	7 J	12	11	14	8	9	9	10 J
Cadmium	0.3	0.4	0.4	0.3 U	0.7	0.3 U	0.3	0.3 U	0.5
Chromium	21.4	14.1	24.2	19.4	23.9 J	18.9	23.0	25.3	29
Copper	60.1 J	29.0 J	41.4	41.2	73.7 J	26.5	31.5	29.5	52.6 J
Lead	37 J	15 J	15	16	32	9	13	22	20
Mercury	0.06	0.07	0.11	0.08	0.09	0.14	0.12	0.06	0.21
Silver	0.4 U	0.4 U	0.5 U	0.5 U	0.5 U	0.4 U	0.4 U	0.4 U	0.6 U
Zinc	104 J	56 J	82	78	157	51	68	70	105 J
PAHs (µg/kg DW)									
Acenaphthene	19 U	24	19 U	18 U	61	17 U	11 J	16 U	290
Acenaphthylene	16 J	20 U	19 U	18 U	25	17 U	9.5 J	16 U	19 U
Anthracene	21	49	20	29	150	15 J	18	18	80
Benzo(a)anthracene	46	140	58	93	350	32	30	41	190
Benzofluoranthene	140	290	140	220	620	38	37	65	270
Benzo(g,h,i)perylene	62	81	44	51	140	13 J	14 J	20	58 J
Benzo(a)pyrene	54	130	55	80	230	23	21	34	100
Chrysene	80	230	86	190	520	47	36	53	230
Dibenzo(a,h)anthracene	13	25	13 J	17	56	4.2 U	4.0 U	4.2	21 J
Dibenzofuran	19 U	20 U	19 U	11 J	45	12 J	18	11 J	240
Fluoranthene	110	400	120	270 J	1400 J	71	110	110	810
Fluorene	19 U	14 J	19 U	12 J	65	11 J	16	9.4 J	320
Indeno(1,2,3-cd)pyrene	49	68	36	48	130	10 J	8.7 J	16	58 J
1-Methylnaphthalene	19 U	20 U	19 U	18 U	12 J	17	21	9.4 J	100
2-Methylnaphthalene	19 U	20 U	19 U	10 J	20	19	25	12 J	46
Naphthalene	20	11 J	10 J	11 J	28	18	33	21	60
Phenanthrene	95	130	47	69 J	730 J	47	58	45	1100
Pyrene	140	470	130	270	1000 J	69	91	100	500
Total HPAHs	690	1800	680 J	1200 J	4400 J	300 J	350 J	440	2200 J
Total LPAHs	150 J	230 J	77 J	120 J	1100 J	91 J	150 J	93 J	1900
cPAHs	84	190	84 J	120	370	32 J	30 J	48	160 J
Phthalates (µg/kg DW)									
Butyl benzyl phthalate	11	13	13 J	8.6	53 J	6.5 J	14 J	19 J	29
Dibutyl phthalate	19 U	20 U	19 U	18 U	140	17 U	16 U	16 U	19 U
Di-n-octyl phthalate	19 U	20 U	19 U	140	19 U	17 U	16 U	16 U	19 U
Diethyl phthalate	19 U	10 J	19 U	18 U	19 U	17 U	16 U	16 U	19 U
Dimethyl phthalate	4.6 U	5.0 U	4.7 U	4.6 U	4.8 U	4.2 U	4.0 U	3.9 U	4.8 U
Bis(2-ethylhexyl)phthalate	52	130	130 U	120 U	710 J	14 J	18	38	160

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2013-D	LDW-SS2013-U	LDW-SS2015-D	LDW-SS2018-U	LDW-SS2019-A	LDW-SS2021-A	LDW-SS2021-D	LDW-SS2021-U	LDW-SS2022-A
Phenols (µg/kg DW)									
2,4,5-Trichlorophenol	93 U	100 U	93 U	92 U	97 U	83 U	79 U	78 U	96 U
2,4,6-Trichlorophenol	93 U	100 U	93 U	92 U	97 U	83 U	79 U	78 U	96 U
2,4-Dichlorophenol	93 U	100 U	93 U	92 U	97 U	83 U	79 U	78 U	96 U
2,4-Dimethylphenol	4.6 U	5.0 U	2.5 J	2.8 J	6.4 J	4.2 U	4.0 U	3.9 U	4.8
2,4-Dinitrophenol	200 UJ	210 UJ	200 U	200 U	R	180 UJ	170 UJ	170 UJ	200 U
2-Chlorophenol	19 U	20 U	19 U	18 U	19 U	17 U	16 U	16 U	19 U
2-Nitrophenol	93 U	100 U	93 U	92 U	97 U	83 U	79 U	78 U	96 U
4,6-Dinitro-2-Methylphenol	190 U	200 U	190 U	180 U	R	170 U	160 U	160 U	190 U
4-Chloro-3-methylphenol	93 U	100 U	93 U	92 U	97 U	83 U	79 U	78 U	96 U
2-Methylphenol	4.6 U	5.0 U	2.8 J	2.8 J	4.8 U	4.2 U	4.2	3.9 U	4.8 U
4-Methylphenol	19 U	20 U	200	29	350	27	33	13 J	58
4-Nitrophenol	93 U	100 U	93 U	92 U	97 U	83 U	79 U	78 U	96 U
Pentachlorophenol	23 U	25 U	23 U	19 J	24 UJ	11 J	20 U	20 U	24 U
Phenol	10 J	13 J	46	16 J	120	10 J	35	25	60
Other SVOCs (µg/kg DW)									
Benzoic Acid	190 U	200 U	180 J	97 J	240	170 U	33 J	29 J	460
Benzyl Alcohol	19	5.3	120	50	190	20	32	28	420
4-Bromophenyl phenyl ether	19 UJ	20 UJ	19 U	18 U	19 U	17 U	16 U	16 U	19 U
Carbazole	9.3 J	19 J	19 U	14 J	65	17 U	16 U	16 U	36
Bis(2-chloro-1-methylethyl) ether	19 U	20 U	19 U	18 U	19 U	17 U	16 U	16 U	19 U
4-Chloroaniline	93 UJ	100 UJ	93 U	92 UJ	R	83 U	79 U	78 U	96 U
2-Chloronaphthalene	19 U	20 U	19 U	18 U	19 U	17 U	16 U	16 U	19 U
Bis(2-Chloroethoxy)Methane	19 U	20 U	19 U	18 U	19 U	17 U	16 U	16 U	19 U
Bis(2-Chloroethyl)Ether	19 U	20 U	19 U	18 U	19 U	17 U	16 U	16 U	19 U
4-Chlorophenyl-phenylether	19 UJ	20 UJ	19 U	18 U	19 U	17 U	16 U	16 U	19 U
1,2-Dichlorobenzene	4.6 U	5.0 U	4.7 U	4.6 U	4.8 U	4.2 U	4.0 U	3.9 U	4.8 U
1,3-Dichlorobenzene	19 U	20 U	19 U	18 U	19 U	17 U	16 U	16 U	19 U
1,4-Dichlorobenzene	4.6 U	5.0 U	4.7 U	4.6 U	4.8 U	4.2 U	4.0 U	3.9 U	4.8 U
3,3'-Dichlorobenzidine	93 U	100 U	93 U	R	R	83 U	79 U	78 U	96 U
2,4-Dinitrotoluene	93 U	100 U	93 U	92 U	97 U	83 U	79 U	78 U	96 U
2,6-Dinitrotoluene	93 U	100 U	93 U	92 U	97 U	83 U	79 U	78 U	96 U
Hexachlorobenzene	4.6 U	5.0 U	4.7 U	4.6 U	4.8 U	4.2 U	4.0 U	3.9 U	4.8 U
Hexachlorobutadiene	4.6 U	5.0 U	4.7 U	4.6 U	4.8 U	4.2 U	4.0 U	3.9 U	4.8 U
Hexachlorocyclopentadiene	93 U	100 U	93 U	R	R	83 U	79 U	78 U	96 U
Hexachloroethane	19 U	20 U	19 U	18 U	19 U	17 U	16 U	16 U	19 U
Isophorone	19 U	20 U	19 U	18 U	19 U	17 U	16 U	16 U	19 U
2-Nitroaniline	93 U	100 U	93 U	92 U	97 U	83 U	79 U	78 U	96 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2013-D	LDW-SS2013-U	LDW-SS2015-D	LDW-SS2018-U	LDW-SS2019-A	LDW-SS2021-A	LDW-SS2021-D	LDW-SS2021-U	LDW-SS2022-A
4-Nitroaniline	93 U	100 U	93 U	92 U	R	83 UJ	79 UJ	78 UJ	96 U
3-Nitroaniline	93 U	100 U	93 U	92 U	R	83 UJ	79 UJ	78 UJ	96 U
Nitrobenzene	19 U	20 U	19 U	18 U	19 U	17 U	16 U	16 U	19 U
N-Nitrosodiphenylamine	4.6 U	5.0 U	4.7 U	4.6 U	17 J	4.2 U	4.0 U	3.9 U	8.1
N-Nitrosodi-n-propylamine	4.6 U	5.0 U	4.7 U	4.6 U	4.8 U	4.2 U	4.0 U	3.9 U	4.8 U
1,2,4-Trichlorobenzene	4.6 U	5.0 U	4.7 U	4.6 U	4.8 U	4.2 U	4.0 U	3.9 U	4.8 U
Aniline	120 U	130 U	120 U	R	R	110 U	100 U	100 U	120 U
N-Nitrosodimethylamine	23 U	25 U	23 U	23 U	24 U	21 U	20 U	20 U	24 U
PCB Aroclors (µg/kg DW)									
Aroclor 1016	4.0 U	3.9 U	3.9 U	4.0 U	3.8 U	3.9 U	3.9 U	4.0 U	3.9 U
Aroclor 1221	4.0 U	3.9 U	3.9 U	4.0 U	3.8 U	3.9 U	3.9 U	4.0 U	3.9 U
Aroclor 1232	4.0 U	3.9 U	3.9 U	4.0 U	3.8 U	3.9 U	3.9 U	4.0 U	3.9 U
Aroclor 1242	4.0 U	3.9 U	3.9 U	4.0 U	3.8 U	3.9 U	3.9 U	4.0 U	3.9 U
Aroclor 1248	5.4	18	4.8	3.7 J	33	7.2	8.2	8.0	41
Aroclor 1254	20	27	5.1	4.2	74	7.6	14	16	44
Aroclor 1260	23	16	5.7	3.7 J	49	3.9 U	6.4	12	43
Total PCBs	48	61	16	12 J	160	15	29	36	130
Grain size (% DW)									
Phi Scale <-1	62.9	56.4	1.9	23.3	6.8	1.4	10.3	0.7	0.6
Phi Scale -1 to 0	3.9	3.7	1.5	1.5	10.9	1.0	1.4	1.1	1.6
Phi Scale 0 to 1	7.7	6.6	3.3	4.6	18.2	4.4	3.8	6.5	2.8
Phi Scale 1 to 2	12.9	14.2	22.9	28.0	26.9	16.9	17.2	32.8	4.9
Phi Scale 2 to 3	5.8	8.8	13.5	12.2	8.4	6.6	9.3	15.3	7.0
Phi Scale 3 to 4	1.0	4.1	5.7	4.1	3.3	17.5	10.2	7.5	14.8
Phi Scale 4 to 5	0.1	0.5	7.1	1.8	0.8	24.1	18.6	12.5	13.5
Phi Scale 5 to 6	0.9	1.4	10.6	5.4	7.5	12.7	11.0	8.3	15.1
Phi Scale 6 to 7	1.0	1.2	10.6	5.6	7.4	5.5	6.1	5.4	13.3
Phi Scale 7 to 8	1.1	0.8	8.4	4.6	4.1	3.4	3.9	3.4	9.9
Phi Scale 8 to 9	1.0	1.0	4.7	2.6	2.1	2.4	3.1	2.6	5.6
Phi Scale 9 to 10	0.7	0.5	3.2	2.3	1.3	1.4	1.8	1.5	3.7
Phi Scale >10	0.9	0.8	6.7	3.9	2.3	2.6	3.4	2.5	7.1
Total Clay (<0.004 mm - 0.004 mm)	2.6	2.3	14.6	8.8	5.7	6.4	8.3	6.6	16.4
Total Silt (0.06 mm - 0.004 mm)	3.1	3.9	36.7	17.4	19.8	45.7	39.6	29.6	51.8
Total Fines (Silt/Clay)	5.7	6.2	51.2	26.3	25.5	52.2	47.8	36.1	68.3
Total Sand (<2.0 mm - 0.06 mm)	31.3	37.4	46.9	50.4	67.7	46.4	41.9	63.2	31.1
Total Gravel (>2.0 mm)	62.9	56.4	1.9	23.3	6.8	1.4	10.3	0.7	0.6
Conventionals									
Total Organic Carbon (% DW)	1.63	1.43	2.40	2.21	3.05	1.01	1.76	2.12	2.34
Total Solids (% WW)	74.50	66.60	57.70	62.50	50.40	70.10	66.60	67.90	47.80

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2022-A-2	LDW-SS2022-D	LDW-SS2025-A	LDW-SS2025-A-2	LDW-SS2027-A	LDW-SS2029-A	LDW-SS2029-D	LDW-SS2030-A	LDW-SS2030-U
Metals (mg/kg DW)									
Arsenic	20 J	10 J	70	100	20 J	15	10	17	30
Cadmium	0.5	0.5	1.0	1.0	4.0	0.5	0.6	0.7	0.8
Chromium	31	31	62 J	63 J	88	32.6 J	33 J	31.1 J	43 J
Copper	54.7 J	52.3 J	201 J	209 J	138 J	52.1 J	52.9 J	52.9 J	79.5 J
Lead	20	29	119	156	142	19	27	21	105
Mercury	0.13	0.14	0.04	0.09	0.42	0.12	0.19	0.13	0.23
Silver	0.6 U	0.6 U	1 U	1 U	0.8	0.6 U	0.6 U	0.6 U	0.8
Zinc	109 J	107 J	919	891	552 J	124	199	134	1180
PAHs (µg/kg DW)									
Acenaphthene	86	19	31	46	86	20 U	19 U	16 J	24
Acenaphthylene	19 U	19 U	390	410	51	20 U	19 U	19 U	28
Anthracene	96	190	840	930	240	41	28	40	61
Benzo(a)anthracene	300	200	530	560	830	71	90	120	190
Benzofluoranthene	540	330	2300	2500	1400	160	190	270	370
Benzo(g,h,i)perylene	100 J	80 J	3100	3200	280 J	37	43	62	76
Benzo(a)pyrene	190	130	1100	1200	490	59	66	100	130
Chrysene	440	300	940	1000	1400	110	120	180	320
Dibenzo(a,h)anthracene	38 J	26	560	580	110	14	16 J	21	28
Dibenzofuran	63	22	28	40	51	14 J	18 J	24	40
Fluoranthene	1300	680	900	980	2000	150	200	280	440
Fluorene	84	36	37	53	80	13 J	17 J	25	35
Indeno(1,2,3-cd)pyrene	99 J	73 J	2100	2200	260 J	34	38	58	72
1-Methylnaphthalene	31	19 U	12 J	15 J	66	20 U	12 J	12 J	21
2-Methylnaphthalene	38	17 J	22	28	99	20 U	15 J	16 J	36
Naphthalene	35	19	44	55	74	15 J	22	23	40
Phenanthrene	420	200	370	510	420	65	87	120	140
Pyrene	980	540	1100	1200	2100 J	140	180	290	360
Total HPAHs	4000 J	2400 J	13000	13000	8900 J	780	940 J	1400	2000
Total LPAHs	720	460	1700	2000	950	130 J	150 J	220 J	330
cPAHs	300 J	200 J	1800	2000	800 J	92	110 J	160	210
Phthalates (µg/kg DW)									
Butyl benzyl phthalate	22	18	57 J	120 J	1600	13 J	22 J	18 J	34 J
Dibutyl phthalate	19 U	40	36	140	260	20 U	19 U	19 U	23
Di-n-octyl phthalate	20	19 U	18 U	19 U	740	20 U	19 U	19 U	20 U
Diethyl phthalate	19 U	19 U	20	19 U	19 U	20 U	19 U	26	20 U
Dimethyl phthalate	4.8 U	4.8 U	18	23	730	4.9 U	5.6	4.8 U	9.8
Bis(2-ethylhexyl)phthalate	420	170	380	490	37000	82 U	140	140	200

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2022-A-2	LDW-SS2022-D	LDW-SS2025-A	LDW-SS2025-A-2	LDW-SS2027-A	LDW-SS2029-A	LDW-SS2029-D	LDW-SS2030-A	LDW-SS2030-U
Phenols (µg/kg DW)									
2,4,5-Trichlorophenol	96 U	96 U	93 U	95 U	95 U	98 U	96 U	96 U	99 U
2,4,6-Trichlorophenol	96 U	96 U	93 U	95 U	95 U	98 U	96 U	96 U	17 J
2,4-Dichlorophenol	96 U	96 U	93 U	95 U	95 U	98 U	96 U	96 U	13 J
2,4-Dimethylphenol	4.8 U	4.8 U	37 J	40 J	17	3.6 J	6.8 J	4.8 J	10 J
2,4-Dinitrophenol	200 U	210 U	R	R	200 U	R	R	R	R
2-Chlorophenol	19 U	19 U	18 U	19 U	19 U	20 U	19 U	19 U	20 U
2-Nitrophenol	96 U	96 U	93 U	95 U	95 U	98 U	96 U	96 U	99 U
4,6-Dinitro-2-Methylphenol	190 U	190 U	180 U	190 U	190 U	200 U	190 U	190 U	200 U
4-Chloro-3-methylphenol	96 U	96 U	93 U	95 U	95 U	98 U	96 U	96 U	99 U
2-Methylphenol	4.8 U	4.8 U	20	25	14	4.9 U	4.8 U	4.8 U	10
4-Methylphenol	48	36	82	78	140	26	40	32	38
4-Nitrophenol	96 U	96 U	93 U	95 U	95 U	98 U	96 U	96 U	99 U
Pentachlorophenol	5.8 J	7.3 J	94 J	92 J	86	25 UJ	24 UJ	24 UJ	28 J
Phenol	64	42	86	70	370	71	120	89	120
Other SVOCs (µg/kg DW)									
Benzoic Acid	560	290	270	230	1200	480	660	600	680
Benzyl Alcohol	390	240	20	15 J	320	340	460	420	430
4-Bromophenyl phenyl ether	19 U	19 U	18 U	19 U	19 U	20 U	19 U	19 U	13 J
Carbazole	58	58	530	540	110	17 J	15 J	19	26
Bis(2-chloro-1-methylethyl) ether	19 U	19 U	18 U	19 U	19 U	20 U	19 U	19 U	20 U
4-Chloroaniline	96 U	96 U	93 U	95 U	95 U	98 U	96 U	96 U	99 U
2-Chloronaphthalene	19 U	19 U	18 U	19 U	19 U	20 U	19 U	19 U	20
Bis(2-Chloroethoxy)Methane	19 U	19 U	18 U	19 U	19 U	20 U	19 U	19 U	20 U
Bis(2-Chloroethyl)Ether	19 U	19 U	18 U	19 U	19 U	20 U	19 U	19 U	20 U
4-Chlorophenyl-phenylether	19 U	19 U	18 U	19 U	19 U	20 U	19 U	19 U	18 J
1,2-Dichlorobenzene	4.8 U	4.8 U	4.6 U	4.8 U	29	4.9 U	4.8 U	4.8 U	3.8 J
1,3-Dichlorobenzene	19 U	19 U	18 U	19 U	19 U	20 U	19 U	19 U	20 U
1,4-Dichlorobenzene	4.8 U	4.8 U	4.6 U	4.8 U	12	4.9 U	4.8 U	4.8 U	7.1
3,3'-Dichlorobenzidine	96 U	96 U	93 U	95 U	95 U	98 U	96 U	96 U	99 U
2,4-Dinitrotoluene	96 U	96 U	93 U	95 U	95 U	98 U	96 U	96 U	99 U
2,6-Dinitrotoluene	96 U	96 U	93 U	95 U	95 U	98 U	96 U	96 U	99 U
Hexachlorobenzene	4.8 U	4.8 U	4.6 U	4.8 U	4.7 U	4.9 U	4.8 U	4.8 U	13 J
Hexachlorobutadiene	4.8 U	4.8 U	4.6 U	4.8 U	4.7 U	4.9 U	4.8 U	4.8 U	3.2 J
Hexachlorocyclopentadiene	96 U	96 U	93 U	95 U	95 U	98 U	96 U	96 U	99 U
Hexachloroethane	19 U	19 U	18 U	19 U	19 U	20 U	19 U	19 U	20 U
Isophorone	19 U	19 U	18 U	19 U	19 U	20 U	19 U	19 U	20 U
2-Nitroaniline	96 U	96 U	93 U	95 U	95 U	98 U	96 U	96 U	99 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2022-A-2	LDW-SS2022-D	LDW-SS2025-A	LDW-SS2025-A-2	LDW-SS2027-A	LDW-SS2029-A	LDW-SS2029-D	LDW-SS2030-A	LDW-SS2030-U
4-Nitroaniline	96 U	96 U	93 U	95 U	95 U	98 U	96 U	96 U	99 U
3-Nitroaniline	96 U	96 U	93 U	95 U	95 U	98 U	96 U	96 U	99 U
Nitrobenzene	19 U	19 U	18 U	19 U	19 U	20 U	19 U	19 U	20 U
N-Nitrosodiphenylamine	5.8	4.8 U	5.8	5.3	19	4.9 U	4.8 U	4.8 U	4.9 U
N-Nitrosodi-n-propylamine	4.8 U	4.8 U	4.6 U	4.8 U	4.7 U	4.9 U	4.8 U	4.8 U	4.9 U
1,2,4-Trichlorobenzene	4.8 U	4.8 U	4.6 U	4.8 U	4.7 U	4.9 U	4.8 U	4.8 U	15 J
Aniline	120 U	120 U	120 U	120 U	120 U	130 U	120 U	120 U	130 U
N-Nitrosodimethylamine	24 U	24 U	23 U	24 U	24 U	25 U	24 U	24 U	25 U
PCB Aroclors (µg/kg DW)									
Aroclor 1016	4.0 U	20 U	3.9 U	19 U	20 U	3.8 U	3.8 U	3.9 U	3.8 U
Aroclor 1221	4.0 U	20 U	3.9 U	19 U	20 U	3.8 U	3.8 U	3.9 U	3.8 U
Aroclor 1232	4.0 U	20 U	3.9 U	19 U	20 U	3.8 U	3.8 U	3.9 U	3.8 U
Aroclor 1242	4.0 U	20 U	3.9 U	19 U	20 U	3.8 U	3.8 U	3.9 U	3.8 U
Aroclor 1248	37	130 U	3.9 U	19 U	330	32	37	26	45
Aroclor 1254	36	260	39	72	370	53	63	46	140
Aroclor 1260	22	110	24	42	190	37	38	43	92
Total PCBs	95	370	63	110	890	120	140	120	280
Grain size (% DW)									
Phi Scale <-1	0.5	0.1	44.9	39.8	13.6	0.4	0.5	0.1	2.1
Phi Scale -1 to 0	1.3	1.6	7.1	7.6	8.3	1.2	1.4	0.9	2.5
Phi Scale 0 to 1	2.8	2.0	8.5	8.6	9.9	1.1	1.4	1.1	3.1
Phi Scale 1 to 2	5.7	5.6	12.5	13.4	14.5	1.2	2.5	1.5	4.6
Phi Scale 2 to 3	1.2	7.7	10.1	10.4	10.0	2.5	3.8	3.1	4.1
Phi Scale 3 to 4	20.0	18.0	4.6	4.9	7.6	10.1	10.5	11.3	9.1
Phi Scale 4 to 5	13.1	14.1	0.3	2.7	2.5	17.1	11.0	15.8	12.8
Phi Scale 5 to 6	14.8	15.1	3.0	3.1	9.3	20.9	21.2	25.0	13.8
Phi Scale 6 to 7	13.7	12.0	2.4	2.6	11.6	19.6	19.8	17.4	25.4
Phi Scale 7 to 8	9.8	8.6	2.1	2.3	6.3	10.8	11.7	9.9	9.9
Phi Scale 8 to 9	5.9	5.2	1.9	2.0	2.6	5.1	5.9	4.7	4.3
Phi Scale 9 to 10	4.0	3.6	1.1	1.1	1.5	3.2	3.6	3.0	2.8
Phi Scale >10	7.3	6.2	1.5	1.5	2.2	6.9	6.7	6.2	5.4
Total Clay (<0.004 mm - 0.004 mm)	17.2	15.0	4.5	4.6	6.3	15.2	16.2	13.9	12.5
Total Silt (0.06 mm - 0.004 mm)	51.4	49.8	7.8	10.7	29.7	68.4	63.7	68.1	61.9
Total Fines (Silt/Clay)	68.5	65.0	12.4	15.3	36.0	83.6	79.8	82.0	74.4
Total Sand (<2.0 mm - 0.06 mm)	31.0	34.9	42.8	44.9	50.3	16.1	19.6	17.9	23.4
Total Gravel (>2.0 mm)	0.5	0.1	44.9	39.8	13.6	0.4	0.5	0.1	2.1
Conventionals									
Total Organic Carbon (% DW)	2.07	2.17	11.7	4.11	3.00	2.13	1.38	2.18	2.52
Total Solids (% WW)	47.10	49.40	62.60	66.90	44.50	43.00	43.20	43.20	41.50

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2032-A	LDW-SS2034-D	LDW-SS2034-U	LDW-SS2034-U-2	LDW-SS2035-A	LDW-SS2035-D	LDW-SS2035-U	LDW-SS2036-A	LDW-SS2036-D
Metals (mg/kg DW)									
Arsenic	20	61 J	20 J	20 J	20	10	10	10	20
Cadmium	0.6	0.5	0.4 U	0.4	0.5	0.5	0.4	0.5	0.4
Chromium	32 J	28.5	30	31	30	29	28	30	34
Copper	55.7 J	57.6 J	43.5 J	46.2 J	48.7	46.0	46.2	46.2	49.8
Lead	31	50	18	18	19	18	19	19	20
Mercury	0.13	0.08	0.15	0.10	0.17	0.16	0.12	0.11	0.17
Silver	0.6 U	0.6 U	0.6 U	0.6 U	0.7 U	0.6 U	0.6 U	0.6 U	0.6 U
Zinc	240	215 J	95 J	104 J	102	104	112	100	109
PAHs (µg/kg DW)									
Acenaphthene	28	67	32	27	43	45	530	54	18 J
Acenaphthylene	16 J	37	19 U	19 U	19 U	20 U	20 U	19 U	19 U
Anthracene	72	260	100	130	61	60	600	47	67
Benzo(a)anthracene	180	1100 J	220	140	100	100	700	110	190
Benzofluoranthene	310	1300 J	330	200	180	180	820	190	310
Benzo(g,h,i)perylene	73	230 J	82 J	48 J	42	49	100	51	76
Benzo(a)pyrene	150	540 J	140	78	62	73	280	77	130
Chrysene	250	1600 J	270	180	180	140	790	140	330
Dibenzo(a,h)anthracene	28	84	32 J	17 J	14	16	47	16	30 J
Dibenzofuran	20	25	32	29	19 U	36	400	36	16 J
Fluoranthene	410	960 J	600	370	250	300	2800	340	420
Fluorene	31	76	49	49	34	53	520	44	24
Indeno(1,2,3-cd)pyrene	67	230 J	75 J	46 J	36	43	100	47	68
1-Methylnaphthalene	13 J	18 J	11 J	10 J	13 J	14 J	79	18 J	19 U
2-Methylnaphthalene	16 J	19	17 J	16 J	18 J	22	90	22	19 U
Naphthalene	28	24	20	18 J	23	20	89	19	14 J
Phenanthrene	260	590 J	280	200	150	190	2300	190	150
Pyrene	420	1300 J	420	270	220	230	1800	250	360
Total HPAHs	1900	7300 J	2200 J	1300 J	1100	1100	7400	1200	1900 J
Total LPAHs	440 J	1100 J	480	420 J	310	370	4000	350	270 J
cPAHs	220	850 J	220 J	130 J	100	110	470	120	200 J
Phthalates (µg/kg DW)									
Butyl benzyl phthalate	24 J	19	15	12	27	32	23	23 J	60 J
Dibutyl phthalate	19 U	19 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U
Di-n-octyl phthalate	19 U	19 U	19 U	19 U	10 J	20 U	20 U	19 U	29
Diethyl phthalate	19 U	19 U	19 U	19 U	19 U	20 U	14 J	19 U	19 U
Dimethyl phthalate	5.0	8.6	4.7 U	4.7 U	4.7 U	4.9 U	4.9 U	4.8 U	4.8 U
Bis(2-ethylhexyl)phthalate	170	180	150	160	84	180	190	120	110

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2032-A	LDW-SS2034-D	LDW-SS2034-U	LDW-SS2034-U-2	LDW-SS2035-A	LDW-SS2035-D	LDW-SS2035-U	LDW-SS2036-A	LDW-SS2036-D
Phenols (µg/kg DW)									
2,4,5-Trichlorophenol	97 U	95 U	95 U	94 U	93 U	98 U	98 U	96 U	96 U
2,4,6-Trichlorophenol	97 U	95 U	95 U	94 U	93 U	98 U	98 U	96 U	96 U
2,4-Dichlorophenol	97 U	95 U	95 U	94 U	93 U	98 U	98 U	96 U	96 U
2,4-Dimethylphenol	6.0 J	4.8 U	5.8	4.7 U	4.7 U	4.9 U	4.9 U	4.8 U	4.8 U
2,4-Dinitrophenol	R	R	200 U	200 U	200 U	R	210 U	200 UJ	200 UJ
2-Chlorophenol	19 U	19 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U
2-Nitrophenol	97 U	95 U	95 U	94 U	93 U	98 U	98 U	96 U	96 U
4,6-Dinitro-2-Methylphenol	190 U	190 U	190 U	190 U	190 U	200 U	200 U	190 U	190 U
4-Chloro-3-methylphenol	97 U	95 U	95 U	94 U	93 U	98 U	98 U	96 U	96 U
2-Methylphenol	7.2	4.8 U	4.7 U	4.7 U	4.7 U	4.9 U	4.9 U	4.8 U	4.8 U
4-Methylphenol	31	18 J	25	20	45	100	95	200	280
4-Nitrophenol	97 U	95 U	95 U	94 U	93 U	98 U	98 U	96 U	96 U
Pentachlorophenol	24 UJ	24 U	24 U	23 U	23 U	24 U	5.3 J	24 U	24 U
Phenol	87	25	52	48	51	45	58	44	45
Other SVOCs (µg/kg DW)									
Benzoic Acid	600	170 J	500	410	530	260	490	230	190
Benzyl Alcohol	450	130	340	340	400	200 J	350	150 J	140 J
4-Bromophenyl phenyl ether	19 U	19 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U
Carbazole	19	63	36	39	16 J	15 J	120	19	22
Bis(2-chloro-1-methylethyl) ether	19 U	19 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U
4-Chloroaniline	97 U	R	95 U	94 U	93 U	98 U	98 U	96 U	96 U
2-Chloronaphthalene	19 U	19 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U
Bis(2-Chloroethoxy)Methane	19 U	19 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U
Bis(2-Chloroethyl)Ether	19 U	19 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U
4-Chlorophenyl-phenylether	19 U	19 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U
1,2-Dichlorobenzene	4.8 U	4.8 U	4.7 U	4.7 U	4.7 U	4.9 U	4.9 U	4.8 U	4.8 U
1,3-Dichlorobenzene	19 U	19 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U
1,4-Dichlorobenzene	4.8 U	4.8 U	4.7 U	4.7 U	4.7 U	4.9 U	4.9 U	4.8 U	4.8 U
3,3'-Dichlorobenzidine	97 U	R	95 U	94 U	93 U	98 U	98 U	96 U	96 U
2,4-Dinitrotoluene	97 U	95 U	95 U	94 U	93 U	98 U	98 U	96 U	96 U
2,6-Dinitrotoluene	97 U	95 U	95 U	94 U	93 U	98 U	98 U	96 U	96 U
Hexachlorobenzene	4.8 U	4.8 U	4.7 U	4.7 U	4.7 U	4.9 U	4.9 U	4.8 U	4.8 U
Hexachlorobutadiene	4.8 U	4.8 U	4.7 U	4.7 U	4.7 U	4.9 U	4.9 U	4.8 U	4.8 U
Hexachlorocyclopentadiene	97 U	R	95 U	94 U	93 U	98 U	98 U	96 U	96 U
Hexachloroethane	19 U	19 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U
Isophorone	19 U	19 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U
2-Nitroaniline	97 U	95 U	95 U	94 U	93 U	98 U	98 U	96 U	96 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2032-A	LDW-SS2034-D	LDW-SS2034-U	LDW-SS2034-U-2	LDW-SS2035-A	LDW-SS2035-D	LDW-SS2035-U	LDW-SS2036-A	LDW-SS2036-D
4-Nitroaniline	97 U	95 UJ	95 U	94 U	93 U	98 U	98 U	96 U	96 U
3-Nitroaniline	97 U	95 U	95 U	94 U	540	98 U	98 U	96 U	96 U
Nitrobenzene	19 U	19 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U
N-Nitrosodiphenylamine	4.8 U	5.2	4.7 U	4.7 U	4.7 U	4.9 U	4.9 U	4.8 U	4.8 U
N-Nitrosodi-n-propylamine	4.8 U	4.8 U	4.7 U	4.7 U	4.7 U	4.9 U	4.9 U	4.8 U	4.8 U
1,2,4-Trichlorobenzene	4.8 U	4.8 U	4.7 U	4.7 U	4.7 U	4.9 U	4.9 U	4.8 U	4.8 U
Aniline	130 U	R	120 U	120 U	120 U	15 J	130 U	120 U	120 U
N-Nitrosodimethylamine	24 U	24 U	24 U	23 U	23 U	24 U	24 U	24 U	24 U
PCB Aroclors (µg/kg DW)									
Aroclor 1016	4.0 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U
Aroclor 1221	4.0 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U
Aroclor 1232	4.0 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U	3.9 U
Aroclor 1242	4.0 U	3.9 U	3.9 U	3.9 U	15	3.9 U	10 J	3.9 U	3.9 U
Aroclor 1248	26	46	22	29	3.9 U	43	3.9 U	24	26
Aroclor 1254	58	82	27	42	56	95	25 J	49	58
Aroclor 1260	48	120 J	17	38	120	47	25	37	42
Total PCBs	130	250 J	66	110	190	190	60 J	110	130
Grain size (% DW)									
Phi Scale <-1	2.7	7.0	1.9	1.1	0.1 U	0.5	1.9	0.1 U	1.3
Phi Scale -1 to 0	1.1	3.6	1.4	1.3	1.9	1.5	2.6	1.1	1.5
Phi Scale 0 to 1	1.7	6.1	2.2	2.7	1.7	1.7	2.3	1.6	1.9
Phi Scale 1 to 2	2.8	7.7	3.8	4.7	1.9	2.1	2.8	2.8	3.3
Phi Scale 2 to 3	4.0	7.7	8.4	8.1	5.3	6.9	7.5	5.4	7.6
Phi Scale 3 to 4	10.5	14.9	14.7	15.2	13.1	15.5	15.8	15.3	15.4
Phi Scale 4 to 5	19.9	11.1	14.6	12.1	13.9	15.3	11.8	15.9	16.6
Phi Scale 5 to 6	21.1	12.6	15.1	16.1	20.1	17.3	16.5	17.5	14.1
Phi Scale 6 to 7	20.2	10.5	13.5	13.9	17.0	15.4	14.9	16.2	14.7
Phi Scale 7 to 8	8.0	6.8	9.3	9.1	12.1	10.2	10.0	10.8	9.3
Phi Scale 8 to 9	2.7	4.6	5.5	6.1	5.4	5.0	5.1	5.0	5.2
Phi Scale 9 to 10	0.9	2.9	3.7	3.6	2.8	2.6	2.9	2.8	3.2
Phi Scale >10	4.3	4.5	5.8	5.9	4.8	6.1	5.8	5.7	5.8
Total Clay (<0.004 mm - 0.004 mm)	7.9	12.0	15.0	15.6	13.0	13.7	13.8	13.5	14.2
Total Silt (0.06 mm - 0.004 mm)	69.2	41.0	52.5	51.2	63.1	58.2	53.2	60.4	54.7
Total Fines (Silt/Clay)	77.2	53.0	67.5	67.0	76.1	71.8	67.2	73.8	68.9
Total Sand (<2.0 mm - 0.06 mm)	20.1	40.0	30.5	32.0	23.9	27.7	31.0	26.2	29.7
Total Gravel (>2.0 mm)	2.7	7.0	1.9	1.1	0.1 U	0.5	1.9	0.1 U	1.3
Conventionals									
Total Organic Carbon (% DW)	2.36	1.86	2.67	2.56	2.82	2.65	2.48	2.18	2.08
Total Solids (% WW)	42.00	52.00	45.70	46.20	43.70	45.50	46.00	52.20	46.60

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2037-A	LDW-SS2037-D	LDW-SS2037-U	LDW-SS2038-A	LDW-SS2038-D	LDW-SS2039-A	LDW-SS2039-D	LDW-SS2040-A	LDW-SS2040-D
Metals (mg/kg DW)									
Arsenic	10	10	14	15	44	18	23	7 U	7 U
Cadmium	0.4 U	0.4	0.4 U	0.4	0.5	0.4	0.5	0.3 U	0.3 U
Chromium	30	30	50.0	23.6	22.3	25.7	25.5	11.7	13.1
Copper	45.1	45.2	37.9	30.8 J	51.9 J	35.7 J	52.2 J	10.6	14.3
Lead	19	19	30	22 J	38 J	25 J	30 J	9	8
Mercury	0.28	0.11	0.05	0.07	0.03	0.07	0.05	0.03 U	0.03 U
Silver	0.7 U	0.6 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.4 U	0.4 U
Zinc	98	97	107	87 J	211 J	80 J	193 J	41	50
PAHs (µg/kg DW)									
Acenaphthene	24	37	20 U	19 U	9.3 J	16 J	20 U	19 U	19 U
Acenaphthylene	19 U	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U
Anthracene	45	96	20	9.5 J	89	70	16 J	19 U	19 U
Benzo(a)anthracene	130	160	73	35	360	260	68	19 U	19 U
Benzofluoranthene	250	350	160	71	440	410	140	19 U	12 J
Benzo(g,h,i)perylene	43	64	35	21	81	96	42	19 U	19 U
Benzo(a)pyrene	86	120	63	26	190	160	53	19 U	19 U
Chrysene	180	230	120	79	410	390	100	9.6 J	19 U
Dibenzo(a,h)anthracene	18	26	13	7.7	44	36	17	4.8 U	4.8 U
Dibenzofuran	19 U	19 U	20 U	19 U	19 U	15 J	20 U	19 U	19 U
Fluoranthene	360	520	130	82	550	570	180	19 U	13 J
Fluorene	20	43	20 U	19 U	27	25	20 U	19 U	19 U
Indeno(1,2,3-cd)pyrene	42	63	29	17 J	78	90	35	19 U	19 U
1-Methylnaphthalene	12 J	15 J	20 U	19 U	19 U	19 U	20 U	19 U	19 U
2-Methylnaphthalene	18 J	22	20 U	19 U	19 U	11 J	11 J	19 U	19 U
Naphthalene	29	38	9.9 J	19 U	19 U	13 J	17 J	19 U	19 U
Phenanthrene	110	200	54	42	270	280	64	19 U	19 U
Pyrene	300	430	120	78	470	510	180	19 U	12 J
Total HPAHs	1400	2000	740	420 J	2600	2500	820	9.6 J	37 J
Total LPAHs	230	410	84 J	52 J	400 J	400 J	97 J	19 U	19 U
cPAHs	140	190	96	42 J	300	250	85	13 J	14 J
Phthalates (µg/kg DW)									
Butyl benzyl phthalate	23	25	44	52	19	21	22 J	4.8 U	4.8 U
Dibutyl phthalate	19 U	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U
Di-n-octyl phthalate	19 U	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U
Diethyl phthalate	19 U	12 J	9.9 J	12 J	9.3 J	10 J	15 J	19 U	19 U
Dimethyl phthalate	4.9 U	4.8 U	5.0 U	5.5	4.7	6.5	3.9 J	4.8 U	4.8 U
Bis(2-ethylhexyl)phthalate	130	200	100	99 U	47 U	71 U	87 U	21 U	21 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2037-A	LDW-SS2037-D	LDW-SS2037-U	LDW-SS2038-A	LDW-SS2038-D	LDW-SS2039-A	LDW-SS2039-D	LDW-SS2040-A	LDW-SS2040-D
Phenols (µg/kg DW)									
2,4,5-Trichlorophenol	97 U	96 U	99 U	95 U	93 U	93 U	98 U	96 U	95 U
2,4,6-Trichlorophenol	97 U	96 U	99 U	95 U	93 U	93 U	98 U	96 U	95 U
2,4-Dichlorophenol	97 U	96 U	99 U	95 U	93 U	93 U	98 U	96 U	95 U
2,4-Dimethylphenol	4.9 U	4.8 U	5.0 U	4.8 U	4.7 U	4.6 U	4.9 U	4.8 U	4.8 U
2,4-Dinitrophenol	210 U	200 U	210 U	200 U	200 U	200 U	210 U	210 UJ	200 UJ
2-Chlorophenol	19 U	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U
2-Nitrophenol	97 U	96 U	99 U	95 U	93 U	93 U	98 U	96 U	95 U
4,6-Dinitro-2-Methylphenol	190 U	190 U	200 U	190 U	190 U	190 U	200 U	190 U	190 U
4-Chloro-3-methylphenol	97 U	96 U	99 U	95 U	93 U	93 U	98 U	96 U	95 U
2-Methylphenol	4.9 U	4.8 U	5.0 U	4.8 U	4.7 U	4.6 U	4.9 U	4.8 U	4.8 U
4-Methylphenol	81	180	34	19 U	19 U	19 U	20 U	19 U	19 U
4-Nitrophenol	97 U	96 U	99 U	95 U	93 U	93 U	98 U	96 U	95 U
Pentachlorophenol	5.3 J	8.7 J	25 U	24 UJ	23 UJ	23 UJ	19 J	24 U	24 U
Phenol	120	100	25	38 J	19 U	19 J	42 J	19 U	19 U
Other SVOCs (µg/kg DW)									
Benzoic Acid	940	990	180 J	110 J	190 U	120 J	200	190 U	190 U
Benzyl Alcohol	550	550	100	63 J	22	48	110	4.8 U	4.8 U
4-Bromophenyl phenyl ether	19 U	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U
Carbazole	15 J	25	20 U	19 U	17 J	49	11 J	19 U	19 U
Bis(2-chloro-1-methylethyl) ether	19 U	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U
4-Chloroaniline	97 U	96 U	99 U	95 U	93 U	93 U	98 U	96 U	95 U
2-Chloronaphthalene	19 U	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U
Bis(2-Chloroethoxy)Methane	19 U	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U
Bis(2-Chloroethyl)Ether	19 U	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U
4-Chlorophenyl-phenylether	19 U	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U
1,2-Dichlorobenzene	4.9 U	4.8 U	5.0 U	4.8 U	4.7 U	4.6 U	4.9 U	4.8 U	4.8 U
1,3-Dichlorobenzene	19 U	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U
1,4-Dichlorobenzene	4.9 U	4.8 U	5.0 U	4.8 U	4.7 U	4.6 U	4.9 U	4.8 U	4.8 U
3,3'-Dichlorobenzidine	97 U	96 U	99 U	95 U	93 U	93 U	98 U	96 U	95 U
2,4-Dinitrotoluene	97 U	96 U	99 U	95 U	93 U	93 U	98 U	96 U	95 U
2,6-Dinitrotoluene	97 U	96 U	99 U	95 U	93 U	93 U	98 U	96 U	95 U
Hexachlorobenzene	4.9 U	4.8 U	5.0 U	4.8 U	4.7 U	4.6 U	4.9 U	4.8 U	4.8 U
Hexachlorobutadiene	4.9 U	4.8 U	5.0 U	4.8 U	4.7 U	4.6 U	4.9 U	4.8 U	4.8 U
Hexachlorocyclopentadiene	97 U	96 U	99 U	95 UJ	93 UJ	93 UJ	98 UJ	96 U	95 U
Hexachloroethane	19 U	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U
Isophorone	19 U	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U
2-Nitroaniline	97 U	96 U	99 U	95 U	93 U	93 U	98 U	96 U	95 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2037-A	LDW-SS2037-D	LDW-SS2037-U	LDW-SS2038-A	LDW-SS2038-D	LDW-SS2039-A	LDW-SS2039-D	LDW-SS2040-A	LDW-SS2040-D
4-Nitroaniline	97 U	96 U	99 U	95 U	93 U	93 U	98 U	96 U	95 U
3-Nitroaniline	97 U	96 U	99 U	95 U	93 U	93 U	98 U	96 U	95 U
Nitrobenzene	19 U	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U
N-Nitrosodiphenylamine	4.9 U	4.8 U	5.0 U	4.8 U	4.7 U	4.6 U	2.6 J	4.8 U	4.8 U
N-Nitrosodi-n-propylamine	4.9 U	4.8 U	5.0 U	4.8 U	4.7 U	4.6 U	4.9 U	4.8 U	4.8 U
1,2,4-Trichlorobenzene	4.9 U	4.8 U	5.0 U	4.8 U	4.7 U	4.6 U	4.9 U	4.8 U	4.8 U
Aniline	130 U	120 U	130 U	120 U	120 U	120 U	130 U	120 U	120 U
N-Nitrosodimethylamine	24 U	24 U	25 U	24 U	23 U	23 U	25 U	24 U	24 U
PCB Aroclors (µg/kg DW)									
Aroclor 1016	4.0 U	3.9 U	3.8 U	3.8 U	3.8 U	3.8 U	3.9 U	3.9 U	3.9 U
Aroclor 1221	4.0 U	3.9 U	3.8 U	3.8 U	3.8 U	3.8 U	3.9 U	3.9 U	3.9 U
Aroclor 1232	4.0 U	3.9 U	3.8 U	3.8 U	3.8 U	3.8 U	3.9 U	3.9 U	3.9 U
Aroclor 1242	4.0 U	3.9 U	3.8 U	3.8 U	3.8 U	3.8 U	3.9 U	3.9 U	3.9 U
Aroclor 1248	26	27	14 J	12 U	6.6 U	12 U	20 U	3.9 U	14 U
Aroclor 1254	43	46	30	35	15	31	65	5.7	35
Aroclor 1260	31	36	19	28	12	29	160	7.7	8.6
Total PCBs	100	110	63 J	63	27	60	230	13	44
Grain size (% DW)									
Phi Scale <-1	0.1	0.3	7.8	17.3	13.8	0.7	6.6	0.1 U	0.1 U
Phi Scale -1 to 0	1.6	1.4	5.0	3.3	5.0	0.9	2.8	0.2	0.3
Phi Scale 0 to 1	2.0	1.7	7.0	9.7	10.4	6.9	7.2	9.7	9.7
Phi Scale 1 to 2	2.4	2.3	11.8	27.1	24.7	23.0	19.7	67.8	70.9
Phi Scale 2 to 3	6.6	6.3	13.8	11.7	16.8	18.3	16.0	17.3	14.6
Phi Scale 3 to 4	16.3	15.3	14.3	6.7	11.0	18.0	13.8	2.2	2.2
Phi Scale 4 to 5	13.6	14.2	6.9	0.6	1.9	7.2	7.6	2.9 U	2.3 U
Phi Scale 5 to 6	17.6	18.9	10.1	7.9	5.2	7.8	7.8	2.9 U	2.3 U
Phi Scale 6 to 7	16.2	16.1	9.2	6.1	4.0	5.7	6.5	2.9 U	2.3 U
Phi Scale 7 to 8	10.7	10.3	6.1	4.3	2.7	4.3	4.7	2.9 U	2.3 U
Phi Scale 8 to 9	4.7	4.8	3.6	2.2	1.7	2.6	2.8	2.9 U	2.3 U
Phi Scale 9 to 10	2.8	2.6	2.0	1.2	1.0	1.6	1.7	2.9 U	2.3 U
Phi Scale >10	5.4	5.8	2.6	1.9	2.0	3.0	2.9	2.9 U	2.3 U
Total Clay (<0.004 mm - 0.004 mm)	12.9	13.2	8.2	5.3	4.7	7.2	7.4	2.9 U	2.3 U
Total Silt (0.06 mm - 0.004 mm)	58.1	59.5	32.3	18.9	13.8	25.0	26.6	2.9 U	2.3 U
Total Fines (Silt/Clay)	70.9	72.7	40.4	24.2	18.4	32.2	34.0	2.9	2.3
Total Sand (<2.0 mm - 0.06 mm)	28.9	27.0	51.9	58.5	67.9	67.1	59.5	97.2	97.7
Total Gravel (>2.0 mm)	0.1	0.3	7.8	17.3	13.8	0.7	6.6	0.1 U	0.1 U
Conventionals									
Total Organic Carbon (% DW)	1.90	2.29	1.58	2.64	1.87	1.49	1.71	0.403	0.671
Total Solids (% WW)	44.60	47.10	53.60	60.50	62.40	58.60	58.70	75.00	74.50

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2040-U	LDW-SS2078-A	LDW-SS2078-D	LDW-SS2078-U	LDW-SS2080-A	LDW-SS2082-U	LDW-SS2083-A	LDW-SS2085-A	LDW-SS2089-A
Metals (mg/kg DW)									
Arsenic	7	10	10	20	20	20	20	10	20
Cadmium	0.3 U	0.5	0.5 U	0.5 U	0.6	0.6	0.6	0.4	0.5
Chromium	11.7	32	31	32	35	34	32	28	30
Copper	15.6	61.7	59.9	60.5	60.1	58.4	56.7	37.2	46.6
Lead	9	20	18	21	24	20	19	11	15
Mercury	0.03 U	0.15	0.10	0.14	0.13	0.13	0.17	0.11	0.15
Silver	0.4 U	0.7 U	0.7 U	0.8 U	0.8 U	0.8 U	0.8 U	0.6 U	0.7 U
Zinc	55	119	100	120	135	115	111	81	96
PAHs (µg/kg DW)									
Acenaphthene	20 U	5.8 J	8.5 J	6.7 J	11 J	20 U	15 J	19 U	20 U
Acenaphthylene	20 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U	20 U
Anthracene	20 U	16 J	20	12 J	50	26	52	19 U	26
Benzo(a)anthracene	14 J	110	140	85	290	140	320	24	190
Benzofluoranthene	26	310	370	260	700	370	860	66	600
Benzo(g,h,i)perylene	20 U	110	120	82	220	120	280	28	190
Benzo(a)pyrene	12 J	120	150	100	280	140	330	26	210
Chrysene	20	190	220	140	470	220	520	42	310
Dibenzo(a,h)anthracene	4.9 U	42	43	33	75	37	86	6.1	51
Dibenzofuran	20 U	6.8 J	8.5 J	6.7 J	14 J	14 J	20	19 U	12 J
Fluoranthene	22	300	400	260	840	390	980	71	580
Fluorene	20 U	8.7 J	11 J	8.6 J	20	14 J	23	19 U	11 J
Indeno(1,2,3-cd)pyrene	20 U	96	110	78	200	100	260	22	180
1-Methylnaphthalene	20 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U	20 U
2-Methylnaphthalene	20 U	19 U	4.7 J	19 U	20 U	20 U	19 U	19 U	20 U
Naphthalene	20 U	5.8 J	6.6 J	19 U	4.9 J	14 J	16 J	10 J	14 J
Phenanthrene	20 U	140	200	120	360	160	410	44	260
Pyrene	26	320	460	290	760	350	890	64	540
Total HPAHs	120 J	1600	2000	1300	3800	1900	4500	350	2900
Total LPAHs	20 U	180 J	250 J	150 J	450 J	210 J	520 J	54 J	310 J
cPAHs	18 J	190	230	160	430	220	510	40	330
Phthalates (µg/kg DW)									
Butyl benzyl phthalate	5.3 J	20 J	19 J	15 J	38 J	21	18	6.0	15 J
Dibutyl phthalate	69	7.7 J	19 U	9.6 J	20 U	20 U	19 U	19 U	20 U
Di-n-octyl phthalate	20 U	19 U	12 J	19 U	7.8 J	20 U	19 U	19 U	11 J
Diethyl phthalate	20 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U	12 J
Dimethyl phthalate	4.9 U	33	120	32	970	4.2 J	4.5 J	4.7 U	4.9 U
Bis(2-ethylhexyl)phthalate	40 U	110	130	130	220	180	170	84	140

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2040-U	LDW-SS2078-A	LDW-SS2078-D	LDW-SS2078-U	LDW-SS2080-A	LDW-SS2082-U	LDW-SS2083-A	LDW-SS2085-A	LDW-SS2089-A
Phenols (µg/kg DW)									
2,4,5-Trichlorophenol	98 U	97 U	95 U	96 U	98 U	99 U	96 U	94 U	98 U
2,4,6-Trichlorophenol	98 U	97 U	95 U	96 U	98 U	99 U	96 U	94 U	98 U
2,4-Dichlorophenol	98 U	97 U	95 U	96 U	98 U	99 U	96 U	94 U	98 UJ
2,4-Dimethylphenol	4.9 U	4.8 UJ	4.7 UJ	4.8 UJ	4.9 UJ	2.8 J	2.4 J	2.7 J	4.9 U
2,4-Dinitrophenol	210 UJ	210 U	200 U	200 U	210 U	R	200 UJ	200 U	210 U
2-Chlorophenol	20 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U	20 U
2-Nitrophenol	98 U	97 U	95 U	96 U	98 U	99 U	96 U	94 U	98 U
4,6-Dinitro-2-Methylphenol	200 U	190 U	190 U	190 U	200 U	R	190 U	190 U	200 U
4-Chloro-3-methylphenol	98 U	97 U	95 U	96 U	98 U	99 U	96 U	94 U	98 U
2-Methylphenol	4.9 U	4.8 U	4.7 U	4.8 U	4.9 U	4.0 J	4.7 J	3.2 J	3.7 J
4-Methylphenol	58	14 J	9.5 J	10 J	13 J	20	21	16 J	20
4-Nitrophenol	98 U	97 U	95 U	96 U	98 U	99 U	96 U	94 U	98 U
Pentachlorophenol	24 U	24 UJ	24 UJ	24 UJ	24 UJ	25 UJ	24 UJ	24 UJ	25 UJ
Phenol	20 U	16 J	16 J	14 J	16 J	34	30	32	31
Other SVOCs (µg/kg DW)									
Benzoic Acid	45 J	140 J	140 J	100 J	98 J	370	380	420	550
Benzyl Alcohol	13 J	120 J	120 J	93 J	86 J	280	290	360	360
4-Bromophenyl phenyl ether	20 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U	20 UJ
Carbazole	20 U	23	33	21	56	34	97	19 U	58
Bis(2-chloro-1-methylethyl) ether	20 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U	20 U
4-Chloroaniline	98 U	97 U	95 U	96 U	98 U	R	96 U	94 U	98 U
2-Chloronaphthalene	20 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U	20 U
Bis(2-Chloroethoxy)Methane	20 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U	20 U
Bis(2-Chloroethyl)Ether	20 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U	20 U
4-Chlorophenyl-phenylether	20 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U	20 UJ
1,2-Dichlorobenzene	4.9 U	4.8 U	4.7 U	4.8 U	4.9 U	5.0 U	4.8 U	4.7 U	4.9 U
1,3-Dichlorobenzene	20 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U	20 U
1,4-Dichlorobenzene	4.9 U	4.8 U	4.7 U	4.8 U	4.9 U	5.0 U	4.8 U	4.7 U	4.9 U
3,3'-Dichlorobenzidine	98 U	97 U	95 U	96 U	98 U	R	96 U	94 U	98 U
2,4-Dinitrotoluene	98 U	97 U	95 U	96 U	98 U	99 U	96 U	94 U	98 U
2,6-Dinitrotoluene	98 U	97 U	95 U	96 U	98 U	99 U	96 U	94 U	98 U
Hexachlorobenzene	4.9 U	4.8 U	4.7 U	4.8 U	1.0 J	5.0 U	4.8 U	4.7 U	4.9 U
Hexachlorobutadiene	4.9 U	4.8 U	4.7 U	4.8 U	4.9 U	5.0 U	4.8 U	4.7 U	4.9 U
Hexachlorocyclopentadiene	98 U	97 UJ	95 UJ	96 UJ	98 UJ	R	96 UJ	94 UJ	98 UJ
Hexachloroethane	20 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U	20 U
Isophorone	20 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U	20 U
2-Nitroaniline	98 U	97 U	95 U	96 U	98 U	99 U	96 U	94 U	98 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2040-U	LDW-SS2078-A	LDW-SS2078-D	LDW-SS2078-U	LDW-SS2080-A	LDW-SS2082-U	LDW-SS2083-A	LDW-SS2085-A	LDW-SS2089-A
4-Nitroaniline	98 U	97 U	95 U	96 U	98 U	R	96 U	94 U	98 U
3-Nitroaniline	98 U	97 U	95 U	96 U	98 U	R	96 U	94 U	98 U
Nitrobenzene	20 U	19 U	19 U	19 U	20 U	20 U	19 U	19 U	20 U
N-Nitrosodiphenylamine	4.9 U	4.8 U	4.7 U	4.8 U	4.9 U	5.0 U	4.8 U	4.7 U	4.9 U
N-Nitrosodi-n-propylamine	4.9 U	4.8 U	4.7 U	4.8 U	4.9 U	5.0 U	4.8 U	4.7 U	4.9 U
1,2,4-Trichlorobenzene	4.9 U	4.8 U	4.7 U	4.8 U	4.9 U	5.0 U	4.8 U	4.7 U	4.9 U
Aniline	130 U	120 UJ	120 UJ	120 UJ	130 UJ	R	120 U	120 U	130 U
N-Nitrosodimethylamine	24 U	24 U	24 U	24 U	24 U	25 U	24 U	24 U	25 U
PCB Aroclors (µg/kg DW)									
Aroclor 1016	3.9 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	3.9 U	4.0 U
Aroclor 1221	3.9 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	3.9 U	4.0 U
Aroclor 1232	3.9 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	3.9 U	4.0 U
Aroclor 1242	3.9 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	3.9 U	4.0 U
Aroclor 1248	5.8 U	25	14	31	21	8.2	6.0	3.9 U	10
Aroclor 1254	12	35	18	35	30	9.3	6.7	5.6	11
Aroclor 1260	7.4	21	12	19	17	5.5	4.2	3.9 U	4.8
Total PCBs	19	81	44	85	68	23	17	5.6	26
Grain size (% DW)									
Phi Scale <-1	1.4	0.3	10.5	0.1 U	0.4	0.1 U	0.1 U	0.1 U	0.1 U
Phi Scale -1 to 0	1.1	1.7	9.2	2.3	2.8	1.2	1.3	1.0	2.0
Phi Scale 0 to 1	16.1	3.0	8.8	2.4	5.3	1.0	1.5	0.9	1.7
Phi Scale 1 to 2	64.3	2.5	6.3	2.0	5.6	0.4	0.6	1.0	0.6
Phi Scale 2 to 3	11.1	1.4	2.3	1.1	1.8	0.6	1.1	3.8	0.9
Phi Scale 3 to 4	2.7	1.1	1.2	1.0	1.2	2.8	3.6	15.5	5.6
Phi Scale 4 to 5	3.4 U	3.0	3.2	5.6	5.9	7.1	9.2	18.3	13.2
Phi Scale 5 to 6	3.4 U	21.8	14.0	23.7	22.6	27.2	26.0	21.2	26.8
Phi Scale 6 to 7	3.4 U	27.8	15.6	28.1	23.8	28.0	26.4	14.4	22.6
Phi Scale 7 to 8	3.4 U	16.5	12.7	14.8	12.8	14.0	13.0	9.5	11.4
Phi Scale 8 to 9	3.4 U	7.8	6.6	6.9	6.6	6.1	6.3	5.6	5.5
Phi Scale 9 to 10	3.4 U	4.6	4.1	4.1	3.8	4.0	3.6	3.8	3.6
Phi Scale >10	3.4 U	8.5	5.5	7.9	7.3	7.8	7.5	4.9	6.2
Total Clay (<0.004 mm - 0.004 mm)	3.4 U	20.9	16.2	18.9	17.7	17.9	17.4	14.3	15.3
Total Silt (0.06 mm - 0.004 mm)	3.4 U	69.1	45.5	72.2	65.1	76.3	74.6	63.4	74.0
Total Fines (Silt/Clay)	3.4	90.0	61.7	91.1	82.9	94.1	92.0	77.8	89.3
Total Sand (<2.0 mm - 0.06 mm)	95.3	9.7	27.8	8.8	16.7	6.0	8.1	22.2	10.8
Total Gravel (>2.0 mm)	1.4	0.3	10.5	0.1 U	0.4	0.1 U	0.1 U	0.1 U	0.1 U
Conventionals									
Total Organic Carbon (% DW)	0.831	3.13	3.27	2.23	4.17	4.00	2.66	2.35	3.53
Total Solids (% WW)	74.30	38.10	43.00	36.10	35.00	36.70	37.90	48.20	40.30

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2089-D	LDW-SS2090-A	LDW-SS2090-D	LDW-SS2091-U	LDW-SS2092-A	LDW-SS2093-D	LDW-SS2094-D	LDW-SS2096-A	LDW-SS2096-U
Metals (mg/kg DW)									
Arsenic	10	10	20	9	10	7	10	9	10
Cadmium	0.5	0.5	0.5	0.4	0.4 U	0.3 U	0.4 U	0.3 U	0.3 U
Chromium	29	30	31	21.4	27	15.1	25	20.2	18.9
Copper	44.1	42.3	42.9	29.4	34.0	16.2	34.2	22.8	21.2
Lead	14	15	17	10	11	6	13	12	11
Mercury	0.13	0.17	0.11	0.06	0.07	0.03 U	0.10	0.06	0.04
Silver	0.7 U	0.7 U	0.7 U	0.5 U	0.6 U	0.4 U	0.6 U	0.4 U	0.4 U
Zinc	88	95	98	66	79	53	80	63	69
PAHs (µg/kg DW)									
Acenaphthene	19 U	19 U	62	14 J	19 U	18 U	20 U	19 U	19 U
Acenaphthylene	19 U	19 U	19 U	19 U	19 U	18 U	20 U	19 U	19 U
Anthracene	19	19 U	120	19 U	19 U	18 U	20 U	18 J	13 J
Benzo(a)anthracene	130	35	240	17 J	38	18 U	30	120	120
Benzofluoranthene	420	86	350	52	94	18	77	300	300
Benzo(g,h,i)perylene	150	34	110	19	36	18 U	31	110	110
Benzo(a)pyrene	150	36	200	19	42	18 U	32	120	120
Chrysene	220	53	270	30	56	13 J	51	180	170
Dibenzo(a,h)anthracene	38	7.6	36	4.3 J	9.6 J	4.6 U	9.0	33	34
Dibenzofuran	11 J	19 U	27	19 U	19 U	18 U	20 U	19 U	19 U
Fluoranthene	440	95	560	51	110	22	84	360	340
Fluorene	11 J	19 U	58	19 U	19 U	18 U	20 U	19 U	19 U
Indeno(1,2,3-cd)pyrene	140	29	110	16 J	32	18 U	25	100	100
1-Methylnaphthalene	19 U	19 U	19 U	19 U	19 U	11 J	17 J	19 U	19 U
2-Methylnaphthalene	19 U	19 U	11 J	19 U	19 U	9.2 J	20 U	19 U	19 U
Naphthalene	13 J	19 U	17 J	19 U	19 U	18 U	20 U	19 U	19 U
Phenanthrene	190	40	530	26	50	15 J	44	160	120
Pyrene	410	92	630	43	100	20	79	300	280
Total HPAHs	2100	470	2500	250 J	520 J	73 J	420	1600	1600
Total LPAHs	230 J	40	790 J	40 J	50	15 J	44	180 J	130 J
cPAHs	240	55	290	30 J	63 J	14 J	49	190	190
Phthalates (µg/kg DW)									
Butyl benzyl phthalate	11 J	8.2	12	8.2	5.3 J	4.6 U	9.1 J	3.1 J	3.9 J
Dibutyl phthalate	19 U	12 J	19 U	19 U	19 U	18 U	20 U	19 U	19 U
Di-n-octyl phthalate	19 U	19 U	19 U	19 U	19 U	18 U	20 U	19 U	19 U
Diethyl phthalate	19 U	19 U	44	19 U	51 U	18 U	20 U	19 U	19 U
Dimethyl phthalate	2.5 J	2.9 J	4.7 U	4.8 U	4.8 U	4.6 U	2.9 J	4.7 U	4.8 U
Bis(2-ethylhexyl)phthalate	160	130	130	67	65 U	38 U	140	49 U	22 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2089-D	LDW-SS2090-A	LDW-SS2090-D	LDW-SS2091-U	LDW-SS2092-A	LDW-SS2093-D	LDW-SS2094-D	LDW-SS2096-A	LDW-SS2096-U
Phenols (µg/kg DW)									
2,4,5-Trichlorophenol	97 U	96 U	93 U	96 U	96 U	92 U	99 U	94 U	97 U
2,4,6-Trichlorophenol	97 U	96 U	93 U	96 U	96 U	92 U	99 U	94 U	97 U
2,4-Dichlorophenol	97 U	96 U	93 U	96 UJ	96 U	92 U	99 U	94 U	97 U
2,4-Dimethylphenol	4.9 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	2.7 J	4.7 U	4.8 U
2,4-Dinitrophenol	210 UJ	200 UJ	200 UJ	200 U	200 U	200 U	210 U	200 U	210 U
2-Chlorophenol	19 U	19 U	19 U	19 U	19 U	18 U	20 U	19 U	19 U
2-Nitrophenol	97 U	96 U	93 U	96 U	96 U	92 U	99 U	94 U	97 U
4,6-Dinitro-2-Methylphenol	190 U	190 U	190 U	190 U	190 U	180 U	200 U	190 U	190 U
4-Chloro-3-methylphenol	97 U	96 U	93 U	96 U	96 U	92 U	99 U	94 U	97 U
2-Methylphenol	2.9 J	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.0 U	4.7 U	4.8 U
4-Methylphenol	18 J	9.6 J	11 J	19 U	14 J	18 U	25	19 U	19 U
4-Nitrophenol	97 U	96 U	93 U	96 U	96 U	92 U	99 U	94 U	97 U
Pentachlorophenol	24 UJ	24 UJ	23 UJ	24 UJ	24 UJ	23 UJ	25 UJ	24 UJ	24 UJ
Phenol	24	14 J	17 J	19 U	26	18 U	26	12 J	19 U
Other SVOCs (µg/kg DW)									
Benzoic Acid	400	210	250	190 U	280	180 U	310	140 J	68 J
Benzyl Alcohol	300	130	150	31	250	6.5	220	68	17
4-Bromophenyl phenyl ether	19 U	19 U	19 U	19 UJ	19 U	18 U	20 U	19 U	19 U
Carbazole	44	19 U	50	19 U	19 U	18 U	20 U	31	27
Bis(2-chloro-1-methylethyl) ether	19 U	19 U	19 U	19 U	19 U	18 U	20 U	19 U	19 U
4-Chloroaniline	97 U	96 U	93 U	96 U	96 U	92 U	99 U	94 U	97 U
2-Chloronaphthalene	19 U	19 U	19 U	19 U	19 U	18 U	20 U	19 U	19 U
Bis(2-Chloroethoxy)Methane	19 U	19 U	19 U	19 U	19 U	18 U	20 U	19 U	19 U
Bis(2-Chloroethyl)Ether	19 U	19 U	19 U	19 U	19 U	18 U	20 U	19 U	19 U
4-Chlorophenyl-phenylether	19 U	19 U	19 U	19 UJ	19 U	18 U	20 U	19 U	19 U
1,2-Dichlorobenzene	4.9 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.0 U	4.7 U	4.8 U
1,3-Dichlorobenzene	19 U	19 U	19 U	19 U	19 U	18 U	20 U	19 U	19 U
1,4-Dichlorobenzene	4.9 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.0 U	4.7 U	4.8 U
3,3'-Dichlorobenzidine	97 U	96 U	93 U	96 U	96 U	92 U	99 U	94 U	97 U
2,4-Dinitrotoluene	97 U	96 U	93 U	96 U	96 U	92 U	99 U	94 U	97 U
2,6-Dinitrotoluene	97 U	96 U	93 U	96 U	96 U	92 U	99 U	94 U	97 U
Hexachlorobenzene	4.9 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.0 U	4.7 U	4.8 U
Hexachlorobutadiene	4.9 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.0 U	4.7 U	4.8 U
Hexachlorocyclopentadiene	97 UJ	96 UJ	93 UJ	96 UJ	96 UJ	92 UJ	99 UJ	94 UJ	97 UJ
Hexachloroethane	19 U	19 U	19 U	19 U	19 U	18 U	20 U	19 U	19 U
Isophorone	19 U	19 U	19 U	19 U	19 U	18 U	20 U	19 U	19 U
2-Nitroaniline	97 U	96 U	93 U	96 U	96 U	92 U	99 U	94 U	97 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2089-D	LDW-SS2090-A	LDW-SS2090-D	LDW-SS2091-U	LDW-SS2092-A	LDW-SS2093-D	LDW-SS2094-D	LDW-SS2096-A	LDW-SS2096-U
4-Nitroaniline	97 U	96 U	93 U	96 U	96 U	92 U	99 U	94 U	97 U
3-Nitroaniline	97 U	96 U	93 U	96 U	96 U	92 U	99 U	94 U	97 U
Nitrobenzene	19 U	19 U	19 U	19 U	19 U	18 U	20 U	19 U	19 U
N-Nitrosodiphenylamine	4.9 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.0 U	4.7 U	4.8 U
N-Nitrosodi-n-propylamine	4.9 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.0 U	4.7 U	4.8 U
1,2,4-Trichlorobenzene	4.9 U	4.8 U	4.7 U	4.8 U	4.8 U	4.6 U	5.0 U	4.7 U	4.8 U
Aniline	130 U	120 U	120 U	120 U	120 UJ	120 UJ	130 UJ	23 J	120 UJ
N-Nitrosodimethylamine	24 U	24 U	23 U	24 U	24 U	23 U	25 U	24 U	24 U
PCB Aroclors (µg/kg DW)									
Aroclor 1016	4.0 U	4.0 U	3.9 U	3.9 U	3.9 U	3.9 U	4.0 U	7.2 U	3.9 U
Aroclor 1221	4.0 U	4.0 U	3.9 U	3.9 U	3.9 U	3.9 U	4.0 U	7.2 U	3.9 U
Aroclor 1232	4.0 U	4.0 U	3.9 U	3.9 U	3.9 U	3.9 U	4.0 U	7.2 U	3.9 U
Aroclor 1242	4.0 U	4.0 U	3.9 U	3.9 U	3.9 U	3.9 U	4.0 U	7.2 U	3.9 U
Aroclor 1248	4.0 U	5.9 U	14 U	14	37	20	18	26	11
Aroclor 1254	4.0 U	7.1	30	9.6	22	12	16	52	16
Aroclor 1260	4.0 U	6.4	32 JN	3.9 U	7.5	3.1 J	8.9	21	5.4
Total PCBs	4.0 U	14	62 JN	24	67	35 J	43	99	32
Grain size (% DW)									
Phi Scale <-1	0.1 U	0.1	0.1 U	0.1	0.1	0.8	0.1 U	0.8	0.2
Phi Scale -1 to 0	1.8	1.4	1.8	0.6	1.0	4.3	1.6	1.7	1.1
Phi Scale 0 to 1	1.2	1.5	1.5	1.6	1.5	24.4	5.5	10.9	12.4
Phi Scale 1 to 2	0.7	2.9	1.3	14.8	1.8	43.4	8.8	35.9	38.1
Phi Scale 2 to 3	1.4	4.8	2.8	23.5	5.4	8.3	10.9	14.6	7.2
Phi Scale 3 to 4	6.2	7.5	8.5	19.6	18.4	8.8	13.0	6.9	5.4
Phi Scale 4 to 5	12.9	16.5	19.1	12.4	21.5	4.3	14.6	8.1	7.0
Phi Scale 5 to 6	28.9	20.6	21.2	7.5	18.1	1.9	19.9	6.6	8.7
Phi Scale 6 to 7	21.7	17.9	19.0	6.4	12.1	1.4	12.9	5.3	6.6
Phi Scale 7 to 8	11.0	10.9	10.4	4.5	8.4	0.8	5.4	3.4	4.9
Phi Scale 8 to 9	5.3	6.1	5.1	3.3	5.0	0.7	2.2	2.6	3.3
Phi Scale 9 to 10	3.2	3.8	3.5	2.1	3.1	0.5	1.7	1.5	2.4
Phi Scale >10	5.8	5.9	5.6	3.6	3.5	0.5	3.5	1.6	2.7
Total Clay (<0.004 mm - 0.004 mm)	14.3	15.8	14.2	9.0	11.6	1.7	7.4	5.7	8.4
Total Silt (0.06 mm - 0.004 mm)	74.5	65.9	69.7	30.8	60.1	8.4	52.8	23.4	27.2
Total Fines (Silt/Clay)	88.8	81.9	83.9	39.8	71.7	10.1	60.2	29.2	35.6
Total Sand (<2.0 mm - 0.06 mm)	11.3	18.1	15.9	60.1	28.1	89.2	39.8	70.0	64.2
Total Gravel (>2.0 mm)	0.1 U	0.1	0.1 U	0.1	0.1	0.8	0.1 U	0.8	0.2
Conventionals									
Total Organic Carbon (% DW)	3.31	3.32	3.24	1.93	1.99	1.20	2.46	2.61	2.78
Total Solids (% WW)	41.60	44.10	44.90	57.80	49.00	74.00	47.40	67.30	70.00

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2097-A	LDW-SS2097-D	LDW-SS2098-A	LDW-SS2098-D	LDW-SS2098-U	LDW-SS2099-A	LDW-SS2099-D	LDW-SS2099-U	LDW-SS2103-A
Metals (mg/kg DW)									
Arsenic	10	10	7	7	6 U	7	10 U	8	9
Cadmium	0.4 U	0.4	0.3	0.3 U	0.3 U	0.3	0.6	0.3 U	0.3 U
Chromium	24.8	28	17.8	17.3	14.2	13.1	27	14.1	16.5
Copper	30.1	39.0	15.0	17.2	12.2	19.3 J	39.8 J	15.9 J	21.6
Lead	12	20	6	5	3	6 J	13 J	4 J	10
Mercury	0.06	0.11	0.03 U	0.03	0.03 U	0.02 U	0.10	0.03 U	0.04
Silver	0.5 U	0.6 U	0.4 U	0.4 U	0.4 U	0.4 U	0.7 U	0.4 U	0.5 U
Zinc	69	90	52	52	45	52 J	89 J	47 J	57
PAHs (µg/kg DW)									
Acenaphthene	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U
Acenaphthylene	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U
Anthracene	19 U	14 J	19 U	19 U	19 U	20 U	19 U	19 U	19 U
Benzo(a)anthracene	29	67	19 U	38	19 U	13 J	24	19 U	19
Benzofluoranthene	60	130	19 U	37	19 U	26	61	7.7 J	36
Benzo(g,h,i)perylene	25	52	19 U	13 J	19 U	11 J	25	19 U	14 J
Benzo(a)pyrene	25	60	19 U	18 J	19 U	11 J	25	19 U	16 J
Chrysene	40	85	19 U	37	19 U	16 J	40	5.7 J	26
Dibenzo(a,h)anthracene	5.7	16 J	4.7 U	10	4.8 U	4.9 U	6.8	4.8 U	4.8 U
Dibenzofuran	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U
Fluoranthene	80	170	17 J	64	14 J	26	63	9.6 J	53
Fluorene	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U
Indeno(1,2,3-cd)pyrene	21	47	19 U	10 J	19 U	20 U	21	19 U	12 J
1-Methylnaphthalene	19 U	20 U	19 U	10 J	19 U	20 U	19 U	19 U	19 U
2-Methylnaphthalene	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U
Naphthalene	9.6 J	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U
Phenanthrene	47	87	10 J	38	19 U	21	28	7.7 J	25
Pyrene	71	150	18 J	68	14 J	33	64	9.6 J	48
Total HPAHs	360	780 J	35 J	300 J	28 J	140 J	330	33 J	220 J
Total LPAHs	57 J	100 J	10 J	38	19 U	21	28	7.7 J	25
cPAHs	39	92 J	13 U	31 J	13 U	17 J	39	13 J	24 J
Phthalates (µg/kg DW)									
Butyl benzyl phthalate	6.2 J	11 J	4.7 U	7.3 J	4.8 U	4.9 U	9.9	4.8 U	22 J
Dibutyl phthalate	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U
Di-n-octyl phthalate	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U
Diethyl phthalate	19 U	20 U	81	19 U	19 U	20 U	9.4 J	4.8 J	19 U
Dimethyl phthalate	4.8 U	4.9 U	4.7 U	4.8 U	4.8 U	6.7	5.6	4.8 U	4.8 U
Bis(2-ethylhexyl)phthalate	73 U	120	35 U	43 U	28 U	24 U	72 U	31 U	44 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2097-A	LDW-SS2097-D	LDW-SS2098-A	LDW-SS2098-D	LDW-SS2098-U	LDW-SS2099-A	LDW-SS2099-D	LDW-SS2099-U	LDW-SS2103-A
Phenols (µg/kg DW)									
2,4,5-Trichlorophenol	96 U	97 U	94 U	95 U	96 U	98 U	94 U	96 U	96 U
2,4,6-Trichlorophenol	96 U	97 U	94 U	95 U	96 U	98 U	94 U	96 U	96 U
2,4-Dichlorophenol	96 U	97 U	94 U	95 U	96 U	98 U	94 U	96 U	96 U
2,4-Dimethylphenol	4.8 U	4.9 U	4.7 U	4.8 U	4.8 U	4.9 U	4.7 U	4.8 U	4.8 U
2,4-Dinitrophenol	210 U	210 U	200 UJ	200 UJ	200 UJ	210 U	200 U	200 UJ	200 UJ
2-Chlorophenol	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U
2-Nitrophenol	96 U	97 U	94 U	95 U	96 U	98 U	94 U	96 U	96 U
4,6-Dinitro-2-Methylphenol	190 U	200 U	190 U	190 U	190 U	200 U	190 U	190 U	190 U
4-Chloro-3-methylphenol	96 U	97 U	94 U	95 U	96 U	98 U	94 U	96 U	96 U
2-Methylphenol	4.8 U	4.9 U	4.7 U	4.8 U	4.8 U	4.9 U	4.7 U	4.8 U	4.8 U
4-Methylphenol	12 J	22	19 U	19 U	19 U	22	21	19 U	260
4-Nitrophenol	96 U	97 U	94 U	95 U	96 U	98 U	94 U	96 U	96 U
Pentachlorophenol	24 UJ	24 UJ	24 U	24 U	24 U	24 UJ	24 UJ	24 U	24 U
Phenol	9.6 J	23	19 U	12 J	19 U	20 U	16 J	19 U	17 J
Other SVOCs (µg/kg DW)									
Benzoic Acid	120 J	300	35 J	48 J	190 U	200 U	190	190 U	68 J
Benzyl Alcohol	76	220	10	10 J	5.4	15 J	120 J	6.7 J	37
4-Bromophenyl phenyl ether	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U
Carbazole	19 U	17 J	19 U	19 U	19 U	20 U	19 U	19 U	19 U
Bis(2-chloro-1-methylethyl) ether	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U
4-Chloroaniline	96 U	97 U	94 U	95 UJ	96 U	98 U	94 U	96 U	96 U
2-Chloronaphthalene	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U
Bis(2-Chloroethoxy)Methane	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U
Bis(2-Chloroethyl)Ether	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U	30
4-Chlorophenyl-phenylether	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U
1,2-Dichlorobenzene	4.8 U	4.9 U	4.7 U	4.8 U	4.8 U	4.9 U	4.7 U	4.8 U	4.8 U
1,3-Dichlorobenzene	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U
1,4-Dichlorobenzene	4.8 U	4.9 U	4.7 U	4.8 U	4.8 U	4.9 U	4.7 U	4.8 U	4.8 U
3,3'-Dichlorobenzidine	96 U	97 U	94 U	95 UJ	96 U	98 U	94 U	96 U	96 U
2,4-Dinitrotoluene	96 U	97 U	94 U	95 U	96 U	98 U	94 U	96 U	96 U
2,6-Dinitrotoluene	96 U	97 U	94 U	95 U	96 U	98 U	94 U	96 U	96 U
Hexachlorobenzene	4.8 U	4.9 U	4.7 U	4.8 U	4.8 U	4.9 U	4.7 U	4.8 U	4.8 U
Hexachlorobutadiene	4.8 U	4.9 U	4.7 U	4.8 U	4.8 U	4.9 U	4.7 U	4.8 U	4.8 U
Hexachlorocyclopentadiene	96 UJ	97 UJ	94 U	95 UJ	96 U	98 UJ	94 UJ	96 UJ	96 U
Hexachloroethane	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U
Isophorone	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U
2-Nitroaniline	96 U	97 U	94 U	95 U	96 U	98 U	94 U	96 U	96 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2097-A	LDW-SS2097-D	LDW-SS2098-A	LDW-SS2098-D	LDW-SS2098-U	LDW-SS2099-A	LDW-SS2099-D	LDW-SS2099-U	LDW-SS2103-A
4-Nitroaniline	96 U	97 U	94 U	95 U	96 U	98 U	94 U	96 U	96 U
3-Nitroaniline	96 U	97 U	94 U	95 U	96 U	98 U	94 U	96 U	96 U
Nitrobenzene	19 U	20 U	19 U	19 U	19 U	20 U	19 U	19 U	19 U
N-Nitrosodiphenylamine	4.8 U	4.9 U	4.7 U	4.8 U	4.8 U	4.9 U	4.7 U	4.8 U	4.8 U
N-Nitrosodi-n-propylamine	4.8 U	4.9 U	4.7 U	4.8 U	4.8 U	4.9 U	4.7 U	4.8 U	4.8 U
1,2,4-Trichlorobenzene	4.8 U	4.9 U	4.7 U	4.8 U	4.8 U	4.9 U	4.7 U	4.8 U	4.8 U
Aniline	120 UJ	130 UJ	120 U	120 UJ	120 U	130 U	120 U	120 U	120 U
N-Nitrosodimethylamine	24 U	24 U	24 U	24 U	24 U	24 U	24 U	24 U	24 U
PCB Aroclors (µg/kg DW)									
Aroclor 1016	4.0 U	3.9 U	3.9 U	3.8 U	3.9 U	3.8 U	3.9 U	3.7 U	3.9 U
Aroclor 1221	4.0 U	3.9 U	3.9 U	3.8 U	3.9 U	3.8 U	3.9 U	3.7 U	3.9 U
Aroclor 1232	4.0 U	3.9 U	3.9 U	3.8 U	3.9 U	3.8 U	3.9 U	3.7 U	3.9 U
Aroclor 1242	4.0 U	3.9 U	3.9 U	3.8 U	3.9 U	3.8 U	3.9 U	3.7 U	3.9 U
Aroclor 1248	24 U	17	4.8 U	5.1	3.9 U	6.0	7.0	7.3	9.7 U
Aroclor 1254	47	23	3.9 U	4.0	3.9 U	6.2	7.1	3.7 U	24
Aroclor 1260	13	12	3.9 U	3.8 U	3.9 U	3.8 U	5.3	3.7 U	13
Total PCBs	60	52	4.8 U	9.1	3.9 U	12	19	7.3	37
Grain size (% DW)									
Phi Scale <-1	0.2	0.1	0.9	7.7	1.9	8.5	0.1 U	1.3	36.9
Phi Scale -1 to 0	1.2	1.6	4.4	11.5	3.2	12.5	1.7	6.0	7.0
Phi Scale 0 to 1	6.2	2.0	35.5	39.1	25.5	36.8	1.1	32.1	9.0
Phi Scale 1 to 2	13.9	2.6	45.3	28.7	58.4	28.6	2.8	43.8	8.5
Phi Scale 2 to 3	13.5	4.8	4.4	3.2	4.5	2.9	9.7	5.5	9.0
Phi Scale 3 to 4	19.4	15.2	3.1	2.4	2.0	1.4	17.1	4.2	9.6
Phi Scale 4 to 5	15.5	22.2	1.5	0.5	0.7	2.4	14.6	2.3	7.9
Phi Scale 5 to 6	10.7	19.6	1.4	2.2	1.0	3.2	22.6	1.3	4.5
Phi Scale 6 to 7	7.1	12.4	1.2	1.8	0.9	1.5	17.9	1.1	2.8
Phi Scale 7 to 8	4.5	7.6	0.7	1.0	0.6	0.6	6.2	0.8	1.7
Phi Scale 8 to 9	3.3	5.4	0.5	0.6	0.3	0.4	1.8	0.4	1.3
Phi Scale 9 to 10	2.2	2.9	0.2	0.3	0.1	0.2	0.9	0.3	0.7
Phi Scale >10	2.4	3.5	0.9	1.0	0.9	1.0	3.5	0.9	1.1
Total Clay (<0.004 mm - 0.004 mm)	7.9	11.8	1.6	1.9	1.3	1.6	6.2	1.6	3.1
Total Silt (0.06 mm - 0.004 mm)	37.8	61.8	4.8	5.5	3.2	7.7	61.3	5.5	16.9
Total Fines (Silt/Clay)	45.6	73.7	6.3	7.4	4.5	9.3	67.6	7.1	20.0
Total Sand (<2.0 mm - 0.06 mm)	54.2	26.2	92.7	84.9	93.6	82.2	32.4	91.6	43.1
Total Gravel (>2.0 mm)	0.2	0.1	0.9	7.7	1.9	8.5	0.1 U	1.3	36.9
Conventionals									
Total Organic Carbon (% DW)	2.07	2.17	1.25	1.16	0.844	2.20	4.01	1.86	0.928
Total Solids (% WW)	55.80	45.50	74.50	75.80	74.30	74.90	44.00	73.90	63.50

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2103-D	LDW-SS2103-U	LDW-SS2106-A	LDW-SS2106-D	LDW-SS2106-U	LDW-SS2108-A	LDW-SS2108-U	LDW-SS2112-A	LDW-SS2113-A
Metals (mg/kg DW)									
Arsenic	12	7 U	10	13	20	10	20	20 J	10
Cadmium	0.3 U	0.3 U	0.5	0.4	0.5	0.5	0.5	1.1	0.4
Chromium	16.8	15.6	30	24.8	28	28	27	49	23.6
Copper	21.8	14.5	46.5	40.1	53.4	58.8	63.0	109 J	38.5
Lead	9	5	15	18	20	24	24	72 J	26
Mercury	0.03	0.03 U	0.08	0.09	0.12	0.09	0.13	6.5	0.10
Silver	0.4 U	0.4 U	0.7 U	0.6 U	0.7 U	0.6 U	0.7 U	0.8 U	0.6 U
Zinc	59	38	99	79	107	106	121	348 J	81
PAHs (µg/kg DW)									
Acenaphthene	19 U	19 U	24	19 U	23	12 J	12 J	50	20 U
Acenaphthylene	19 U	19 U	20 U	19 U	19 U	19 U	20 U	22 J	11 J
Anthracene	11 J	19 U	19 J	16 J	24	19	22	110	27
Benzo(a)anthracene	43	12 J	50	48	61	55	57	240	90
Benzofluoranthene	58	18 J	64	89	120	120	110	480	180
Benzo(g,h,i)perylene	15 J	19 U	21	33	37	42	37	160	54
Benzo(a)pyrene	19	11 J	28	42	46	48	44	200	71
Chrysene	80	16 J	59	72	81	79	95	390	130
Dibenzo(a,h)anthracene	4.8 U	4.8 U	4.9 U	7.0	11 J	12 J	11	58	15
Dibenzofuran	19 U	19 U	24	19 U	22	15 J	14 J	45	13 J
Fluoranthene	56	32	140	110	180	140	140	740	210
Fluorene	19 U	19 U	26	19 U	26	15 J	15 J	46	14 J
Indeno(1,2,3-cd)pyrene	11 J	19 U	17 J	24	30	36	32	130	46
1-Methylnaphthalene	19 U	19 U	20 U	19 U	19 U	19 U	20 U	24	20 U
2-Methylnaphthalene	19 U	19 U	14 J	19 U	13 J	11 J	11 J	36	12 J
Naphthalene	19 U	19 U	11 J	17 J	12 J	15 J	13 J	48	22
Phenanthrene	17 J	18 J	96	54	110	78	70	350	74
Pyrene	51	32	110	100	140	130	110	820	180
Total HPAHs	330 J	120 J	490 J	530	710 J	660 J	640	3200	980
Total LPAHs	28 J	18 J	180 J	87 J	200 J	140 J	130 J	630 J	150 J
cPAHs	32 J	16 J	43 J	62	72 J	75 J	69	310	110
Phthalates (µg/kg DW)									
Butyl benzyl phthalate	11 J	7.2 J	19 J	13 J	17 J	16 J	13 J	110	13 J
Dibutyl phthalate	19 U	19 U	20 U	19 U	19 U	19 U	20 U	33	20 U
Di-n-octyl phthalate	19 U	19 U	20 U	19 U	19 U	19 U	20 U	31	20 U
Diethyl phthalate	19 U	19 U	20 U	19 U	19 U	19 U	20 U	22	20 U
Dimethyl phthalate	4.8 U	4.8 U	8.0	4.8 U	4.7 U	4.8 U	4.9 U	23	4.9 U
Bis(2-ethylhexyl)phthalate	48 U	19 U	88 U	86 U	120	120	120	1600	78

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2103-D	LDW-SS2103-U	LDW-SS2106-A	LDW-SS2106-D	LDW-SS2106-U	LDW-SS2108-A	LDW-SS2108-U	LDW-SS2112-A	LDW-SS2113-A
Phenols (µg/kg DW)									
2,4,5-Trichlorophenol	95 U	96 U	98 U	96 U	95 U	96 U	98 U	99 U	98 U
2,4,6-Trichlorophenol	95 U	96 U	98 U	96 U	95 U	96 U	98 U	99 U	98 U
2,4-Dichlorophenol	95 U	96 U	98 U	96 U	95 U	96 U	98 U	99 U	98 U
2,4-Dimethylphenol	4.8 U	4.8 U	4.9 U	4.8 U	4.7 U	4.8 U	4.9 U	13	4.9 U
2,4-Dinitrophenol	200 UJ	210 UJ	210 UJ	210 UJ	R	R	R	210 UJ	R
2-Chlorophenol	19 U	19 U	20 U	19 U	19 U	19 U	20 U	20 U	20 U
2-Nitrophenol	95 U	96 U	98 U	96 U	95 U	96 U	98 U	99 U	98 U
4,6-Dinitro-2-Methylphenol	190 U	190 U	200 U	190 U	190 U	190 U	200 U	200 U	200 U
4-Chloro-3-methylphenol	95 U	96 U	98 U	96 U	95 U	96 U	98 U	99 U	98 U
2-Methylphenol	4.8 U	4.8 U	4.9 U	4.8 U	4.7 U	4.8 U	4.9 U	9.5	4.9 U
4-Methylphenol	300	64	160	200	220	73	460	34	53
4-Nitrophenol	95 U	96 U	98 U	96 U	95 U	96 U	98 U	99 U	98 U
Pentachlorophenol	24 U	24 U	24 U	24 U	24 U	24 U	24 U	17 J	24 U
Phenol	55	19 U	38	34	46	36	87	120	33
Other SVOCs (µg/kg DW)									
Benzoic Acid	88 J	190 U	380	290	340	330	480	640	250
Benzyl Alcohol	110	7.0	350	210	650	170	330 J	540	120 J
4-Bromophenyl phenyl ether	19 U	19 U	20 U	19 U	19 U	19 U	20 U	20 UJ	20 U
Carbazole	19 U	19 U	20 U	19 U	10 J	11 J	11 J	50	11 J
Bis(2-chloro-1-methylethyl) ether	19 U	19 U	20 U	19 U	19 U	19 U	20 U	20 U	20 U
4-Chloroaniline	95 U	96 U	98 U	96 U	95 U	96 U	R	99 UJ	98 U
2-Chloronaphthalene	19 U	19 U	20 U	19 U	19 U	19 U	20 U	20 U	20 U
Bis(2-Chloroethoxy)Methane	19 U	19 U	20 U	19 U	19 U	19 U	20 U	20 U	20 U
Bis(2-Chloroethyl)Ether	19 U	19 U	20 U	19 U	19 U	19 U	20 U	20 U	20 U
4-Chlorophenyl-phenylether	19 U	19 U	20 U	19 U	19 U	19 U	20 U	20 UJ	20 U
1,2-Dichlorobenzene	4.8 U	4.8 U	4.9 U	4.8 U	4.7 U	4.8 U	4.9 U	5.0 U	4.9 U
1,3-Dichlorobenzene	19 U	19 U	20 U	240	19 U	19 U	20 U	20 U	20 U
1,4-Dichlorobenzene	4.8 U	4.8 U	4.9 U	150	4.7 U	4.8 U	4.9 U	5.0 U	4.9 U
3,3'-Dichlorobenzidine	95 U	96 U	98 U	96 U	95 U	96 U	R	99 U	98 U
2,4-Dinitrotoluene	95 U	96 U	98 U	96 U	95 U	96 U	98 U	99 U	98 U
2,6-Dinitrotoluene	95 U	96 U	98 U	96 U	95 U	96 U	98 U	99 U	98 U
Hexachlorobenzene	4.8 U	4.8 U	4.9 U	4.8 U	4.7 U	4.8 U	4.9 U	24 J	4.9 U
Hexachlorobutadiene	4.8 U	4.8 U	4.9 U	4.8 U	4.7 U	4.8 U	4.9 U	5.0 U	4.9 U
Hexachlorocyclopentadiene	95 U	96 U	98 U	96 U	95 U	96 U	R	99 U	98 U
Hexachloroethane	19 U	19 U	20 U	19 U	19 U	19 U	20 U	20 U	20 U
Isophorone	19 U	19 U	20 U	19 U	19 U	19 U	20 U	20 U	20 U
2-Nitroaniline	95 U	96 U	98 U	96 U	95 U	96 U	98 U	99 U	98 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2103-D	LDW-SS2103-U	LDW-SS2106-A	LDW-SS2106-D	LDW-SS2106-U	LDW-SS2108-A	LDW-SS2108-U	LDW-SS2112-A	LDW-SS2113-A
4-Nitroaniline	95 U	96 U	98 U	96 U	95 U	96 U	98 UJ	99 U	98 U
3-Nitroaniline	95 U	96 U	98 U	96 U	95 U	96 U	98 U	99 U	98 U
Nitrobenzene	19 U	19 U	20 U	19 U	19 U	19 U	20 U	20 U	20 U
N-Nitrosodiphenylamine	4.8 U	4.8 U	4.9 U	4.8 U	4.7 U	4.8 U	4.9 U	5.0 U	4.9 U
N-Nitrosodi-n-propylamine	4.8 U	4.8 U	4.9 U	4.8 U	4.7 U	4.8 U	4.9 U	5.0 U	4.9 U
1,2,4-Trichlorobenzene	4.8 U	4.8 U	4.9 U	7.1	4.7 U	4.8 U	4.9 U	6.1	4.9 U
Aniline	120 U	120 U	130 U	120 U	120 U	120 U	R	130 U	130 U
N-Nitrosodimethylamine	24 U	24 U	24 U	24 U	24 U	24 U	24 U	25 U	24 U
PCB Aroclors (µg/kg DW)									
Aroclor 1016	3.9 U	3.9 U	79 U	3.9 U	39 U	3.9 U	3.9 U	4.0 U	3.8 U
Aroclor 1221	3.9 U	3.9 U	79 U	3.9 U	39 U	3.9 U	3.9 U	4.0 U	3.8 U
Aroclor 1232	3.9 U	3.9 U	79 U	3.9 U	39 U	3.9 U	3.9 U	4.0 U	3.8 U
Aroclor 1242	3.9 U	3.9 U	79 U	3.9 U	39 U	3.9 U	3.9 U	4.0 U	3.8 U
Aroclor 1248	12 U	5.9 U	79 U	49 U	39 U	22	15	40	22
Aroclor 1254	24	13	200 U	89	58 U	40	25	78	46
Aroclor 1260	13	8.0	1200	50	200	38	24	78	24
Total PCBs	37	21	1200	140	200	100	64	200	92
Grain size (% DW)									
Phi Scale <-1	20.7	33.2	0.4	0.1 U	3.5	0.4	0.3	1.2	0.8
Phi Scale -1 to 0	8.4	4.9	1.7	0.8	1.5	1.5	1.2	3.3	0.7
Phi Scale 0 to 1	11.0	17.9	1.6	4.3	1.7	2.1	2.1	2.3	2.2
Phi Scale 1 to 2	11.9	21.6	1.3	15.7	3.4	3.0	5.9	2.5	7.8
Phi Scale 2 to 3	15.5	9.6	2.3	14.3	4.3	4.7	5.6	2.8	14.7
Phi Scale 3 to 4	15.0	5.4	8.5	13.4	9.4	10.0	10.2	4.4	18.2
Phi Scale 4 to 5	3.9	4.2	15.5	10.3	15.2	15.1	15.3	10.1	14.1
Phi Scale 5 to 6	4.5	1.0	22.8	14.0	20.8	21.6	20.3	29.2	13.1
Phi Scale 6 to 7	3.2	0.7	19.0	9.8	16.9	18.9	17.0	23.4	10.2
Phi Scale 7 to 8	2.0	0.4	11.2	6.4	9.9	9.6	10.8	10.7	7.3
Phi Scale 8 to 9	1.7	0.5	6.4	4.6	4.5	4.5	4.0	3.9	4.3
Phi Scale 9 to 10	0.7	0.2	3.0	2.4	3.1	3.1	2.7	1.9	2.7
Phi Scale >10	1.5	0.4	6.4	3.8	6.0	5.6	4.6	4.3	3.9
Total Clay (<0.004 mm - 0.004 mm)	3.9	1.1	15.8	10.8	13.6	13.2	11.3	10.1	10.9
Total Silt (0.06 mm - 0.004 mm)	13.6	6.3	68.5	40.5	62.8	65.2	63.4	73.4	44.7
Total Fines (Silt/Clay)	17.6	7.4	84.3	51.4	76.3	78.3	74.8	83.6	55.6
Total Sand (<2.0 mm - 0.06 mm)	61.8	59.4	15.4	48.5	20.3	21.3	25.0	15.3	43.6
Total Gravel (>2.0 mm)	20.7	33.2	0.4	0.1 U	3.5	0.4	0.3	1.2	0.8
Conventionals									
Total Organic Carbon (% DW)	1.05	0.510	2.61	2.26	3.55	2.35	2.81	4.53	1.59
Total Solids (% WW)	63.30	76.20	39.40	50.20	41.60	43.30	42.40	34.40	51.80

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2113-A-2	LDW-SS2113-U	LDW-SS2115-A	LDW-SS2115-D	LDW-SS2115-U	LDW-SS2122-A	LDW-SS2122-D	LDW-SS2122-U	LDW-SS2139-A
Metals (mg/kg DW)									
Arsenic	10	8 U	10	9	42	20	20	20	15 J
Cadmium	0.4 U	0.3 U	0.3 U	0.3 U	0.3 U	0.5	0.5	0.5	0.4
Chromium	24.1	17.5	22.2 J	25.0 J	21.9 J	30	31	30	25.6
Copper	39.4	27.0	40.9 J	36.5 J	68.1 J	45.0	51.0	51.3	55.6 J
Lead	26	28	34	29	30	18	23	30	25 J
Mercury	0.09	0.05	0.04	0.04	0.05	0.10	0.13	0.23	0.10
Silver	0.6 U	0.5 U	0.4 U	0.4 U	0.4 U	0.6 U	0.6 U	0.6 U	0.5 U
Zinc	85	59	90	85	86	99	136	112	102 J
PAHs (µg/kg DW)									
Acenaphthene	20 U	20 U	13 J	14 J	19 J	120	150	83	21
Acenaphthylene	20 U	20 U	19 U	18 U	13 J	16 J	30	14 J	33 J
Anthracene	27	20 U	150	76	60	74	190	98	160
Benzo(a)anthracene	68	35	210	300	230	140	560	250	610
Benzofluoranthene	150	83	370	570	440	260	1200	430	1000
Benzo(g,h,i)perylene	49	28	140	180	170	66	210	94	200
Benzo(a)pyrene	57	31	130 J	320	190 J	100	340	170	410
Chrysene	99	54	310	360	310	210	1100	330	620
Dibenzo(a,h)anthracene	13 J	6.6	59	71	74	21	72	29	75
Dibenzofuran	12 J	20 U	9.5 J	17 J	16 J	100	100	51	28
Fluoranthene	220	85	460	700	490	710	2400	870	1000
Fluorene	13 J	20 U	18 J	20	25	130	110	50	40
Indeno(1,2,3-cd)pyrene	40	22	140	180	150	61	220	86	200
1-Methylnaphthalene	20 U	20 U	19 U	18 U	20 U	30	22	19	19 U
2-Methylnaphthalene	20 U	20 U	19 U	18 U	11 J	42	30	26	16 J
Naphthalene	16 J	18 J	14 J	18 U	13 J	45	52	40	34
Phenanthrene	84	30	250	300	200	810	780	260	220
Pyrene	180	86	410	580	440	490	1600	600	1200
Total HPAHs	880 J	430	2200 J	3300	2500 J	2100	7700	2900	5300
Total LPAHs	140 J	48 J	450 J	410 J	330 J	1200 J	1300	550 J	510 J
cPAHs	89 J	48	230 J	460	300 J	160	580	260	630
Phthalates (µg/kg DW)									
Butyl benzyl phthalate	12 J	26 J	7.2 J	10 J	26 J	5.3	31	96	20
Dibutyl phthalate	20 U	20 U	16 J	30	96	19 U	46	19 U	19 U
Di-n-octyl phthalate	20 U	20 U	19 U	18 U	20 U	19 U	18 U	19 U	19 U
Diethyl phthalate	20 U	20 U	49	18 U	20 U	19 U	18 U	19 U	19 U
Dimethyl phthalate	4.9 U	4.9 U	4.8 U	4.6 U	4.9 U	4.8 U	2.6 J	11	4.8 U
Bis(2-ethylhexyl)phthalate	87	85	63 U	46 U	130	170 U	570	260 U	100

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2113-A-2	LDW-SS2113-U	LDW-SS2115-A	LDW-SS2115-D	LDW-SS2115-U	LDW-SS2122-A	LDW-SS2122-D	LDW-SS2122-U	LDW-SS2139-A
Phenols (µg/kg DW)									
2,4,5-Trichlorophenol	97 U	98 U	95 U	92 U	98 U	95 U	92 U	95 U	95 U
2,4,6-Trichlorophenol	97 U	98 U	95 U	92 U	98 U	95 U	92 U	95 U	95 U
2,4-Dichlorophenol	97 U	98 U	95 U	92 U	98 U	95 U	92 U	95 U	95 U
2,4-Dimethylphenol	4.9 U	4.9 U	4.8 UJ	4.6 UJ	4.9 UJ	3.8 J	4.2 J	4.6 J	3.6 J
2,4-Dinitrophenol	R	R	R	R	R	200 U	200 U	200 U	200 UJ
2-Chlorophenol	20 U	20 U	19 U	18 U	20 U	19 U	18 U	19 U	19 U
2-Nitrophenol	97 U	98 U	95 U	92 U	98 U	95 U	92 U	95 U	95 U
4,6-Dinitro-2-Methylphenol	200 U	200 U	190 U	180 U	200 U	190 U	180 U	190 U	190 U
4-Chloro-3-methylphenol	97 U	98 U	95 U	92 U	98 U	95 U	92 U	95 U	95 U
2-Methylphenol	4.9 U	4.9 U	4.8 U	4.6 U	4.9 U	5.6	4.6	6.2	3.6 J
4-Methylphenol	60	270	19 U	18 U	20 U	210	250	220	17 J
4-Nitrophenol	97 U	98 U	95 U	92 U	98 U	95 U	92 U	95 U	95 U
Pentachlorophenol	24 U	24 U	20 J	36 J	19 J	24 U	12 J	24 U	24 U
Phenol	30	19 J	21	19	26	110	95	78	33
Other SVOCs (µg/kg DW)									
Benzoic Acid	250	130 J	55 J	57 J	88 J	620	220	580	190 U
Benzyl Alcohol	100	46 J	33	61	53	360	210	320	55
4-Bromophenyl phenyl ether	20 U	20 U	19 U	18 U	20 U	19 U	18 U	19 U	19 UJ
Carbazole	12 J	20 U	25	18	24	34	80	27	49
Bis(2-chloro-1-methylethyl) ether	20 U	20 U	19 U	18 U	20 U	19 U	18 U	19 U	19 U
4-Chloroaniline	97 U	98 U	95 U	92 U	98 U	95 U	92 U	95 U	95 UJ
2-Chloronaphthalene	20 U	20 U	19 U	18 U	20 U	19 U	18 U	19 U	19 U
Bis(2-Chloroethoxy)Methane	20 U	20 U	19 U	18 U	20 U	19 U	18 U	19 U	19 U
Bis(2-Chloroethyl)Ether	20 U	20 U	19 U	18 U	20 U	19 U	18 U	19 U	19 U
4-Chlorophenyl-phenylether	20 U	20 U	19 U	18 U	20 U	19 U	18 U	19 U	19 UJ
1,2-Dichlorobenzene	4.9 U	4.9 U	4.8 U	4.6 U	4.9 U	4.8 U	4.6 U	4.7 U	4.8 U
1,3-Dichlorobenzene	20 U	20 U	19 U	18 U	20 U	19 U	18 U	19 U	19 U
1,4-Dichlorobenzene	4.9 U	4.9 U	4.8 U	4.6 U	4.9 U	4.8 U	4.6 U	4.7 U	4.8 U
3,3'-Dichlorobenzidine	97 U	98 U	95 U	92 U	98 U	95 U	92 U	95 U	95 U
2,4-Dinitrotoluene	97 U	98 U	95 U	92 U	98 U	95 U	92 U	95 U	95 U
2,6-Dinitrotoluene	97 U	98 U	95 U	92 U	98 U	95 U	92 U	95 U	95 U
Hexachlorobenzene	4.9 U	4.9 U	4.8 U	4.6 U	4.9 U	4.8 U	4.6 U	4.7 U	4.8 U
Hexachlorobutadiene	4.9 U	4.9 U	4.8 U	4.6 U	4.9 U	4.8 U	4.6 U	4.7 U	4.8 U
Hexachlorocyclopentadiene	97 U	98 U	95 U	92 U	98 U	95 U	92 U	95 U	95 U
Hexachloroethane	20 U	20 U	19 U	18 U	20 U	19 U	18 U	19 U	19 U
Isophorone	20 U	20 U	19 U	18 U	20 U	19 U	18 U	19 U	19 U
2-Nitroaniline	97 U	98 U	95 U	92 U	98 U	95 U	92 U	95 U	95 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2113-A-2	LDW-SS2113-U	LDW-SS2115-A	LDW-SS2115-D	LDW-SS2115-U	LDW-SS2122-A	LDW-SS2122-D	LDW-SS2122-U	LDW-SS2139-A
4-Nitroaniline	97 U	98 U	95 U	92 U	98 U	95 U	92 U	95 U	95 U
3-Nitroaniline	97 U	98 U	95 U	92 U	98 U	95 U	92 U	95 U	95 U
Nitrobenzene	20 U	20 U	19 U	18 U	20 U	19 U	18 U	19 U	19 U
N-Nitrosodiphenylamine	4.9 U	4.9 U	4.8 U	4.6 U	4.9 U	4.8 U	5.8 J	4.7 U	4.8 U
N-Nitrosodi-n-propylamine	4.9 U	4.9 U	4.8 U	4.6 U	4.9 U	4.8 U	4.6 U	4.7 U	4.8 U
1,2,4-Trichlorobenzene	4.9 U	4.9 U	4.8 U	4.6 U	4.9 U	4.8 U	4.6 U	4.7 U	4.8 U
Aniline	130 U	130 U	120 U	120 U	130 U	120 U	120 U	120 U	120 U
N-Nitrosodimethylamine	24 U	24 U	24 U	23 U	25 U	24 U	23 U	24 U	24 U
PCB Aroclors (µg/kg DW)									
Aroclor 1016	3.8 U	3.8 U	3.8 U	3.9 U	3.8 U	4.0 U	4.0 U	3.9 U	3.9 U
Aroclor 1221	3.8 U	3.8 U	3.8 U	3.9 U	3.8 U	4.0 U	4.0 U	3.9 U	3.9 U
Aroclor 1232	3.8 U	3.8 U	3.8 U	3.9 U	3.8 U	4.0 U	4.0 U	3.9 U	3.9 U
Aroclor 1242	3.8 U	3.8 U	3.8 U	3.9 U	3.8 U	4.0 U	4.0 U	3.9 U	3.9 U
Aroclor 1248	25	12	19 U	16 U	14	7.3	17	11	24
Aroclor 1254	53	24	46	34	36	6.4	15	12	37
Aroclor 1260	29	12	14	10	27	6.1	13	19	28
Total PCBs	110	48	60	44	77	20	45	42	89
Grain size (% DW)									
Phi Scale <-1	0.3	8.7	3.2	11.7	0.6	1.3	0.1	0.3	7.1
Phi Scale -1 to 0	1.1	3.1	2.1	2.4	1.8	1.6	2.3	1.8	3.6
Phi Scale 0 to 1	2.5	8.7	18.7	16.0	17.9	1.8	1.7	2.0	8.4
Phi Scale 1 to 2	8.0	17.5	28.1	24.3	31.8	2.9	5.1	6.0	14.1
Phi Scale 2 to 3	14.1	16.6	13.1	10.8	11.9	5.9	7.6	8.0	12.0
Phi Scale 3 to 4	18.3	11.3	12.0	8.9	9.9	20.3	20.3	18.6	8.4
Phi Scale 4 to 5	13.7	8.4	7.1	8.6	6.4	17.3	13.7	12.2	5.8
Phi Scale 5 to 6	13.6	7.8	5.1	5.6	5.5	14.6	13.2	13.5	8.3
Phi Scale 6 to 7	10.2	6.8	4.1	4.4	4.8	11.3	10.8	11.1	9.4
Phi Scale 7 to 8	7.7	4.7	2.6	2.9	3.9	8.2	8.7	8.9	8.8
Phi Scale 8 to 9	4.5	2.5	1.6	1.8	2.2	4.5	4.9	5.2	4.7
Phi Scale 9 to 10	2.3	1.7	1.0	1.0	1.3	3.3	4.2	4.5	3.2
Phi Scale >10	3.8	2.3	1.4	1.7	2.0	7.1	7.4	8.0	6.0
Total Clay (<0.004 mm - 0.004 mm)	10.6	6.5	4.0	4.5	5.5	14.9	16.5	17.7	13.9
Total Silt (0.06 mm - 0.004 mm)	45.2	27.7	18.9	21.5	20.6	51.4	46.4	45.7	32.3
Total Fines (Silt/Clay)	55.8	34.2	22.8	26.0	26.2	66.3	62.9	63.4	46.3
Total Sand (<2.0 mm - 0.06 mm)	44.0	57.2	74.0	62.4	73.3	32.5	37.0	36.4	46.5
Total Gravel (>2.0 mm)	0.3	8.7	3.2	11.7	0.6	1.3	0.1	0.3	7.1
Conventionals									
Total Organic Carbon (% DW)	1.81	1.96	1.07	1.46	1.50	1.72	2.85	1.74	1.55
Total Solids (% WW)	50.50	60.90	67.40	65.60	63.90	48.90	49.30	50.50	58.10

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2144-A	LDW-SS2146-A	LDW-SS2147-D	LDW-SS2148-A	LDW-SS2148-A-2	LDW-SS2149-A	LDW-SS2150-A	LDW-SS2157-A	LDW-SS2200-A
Metals (mg/kg DW)									
Arsenic	20	14	10	32	34	10	36	20 J	12
Cadmium	0.4	0.4	0.5	0.3 U	0.3 U	0.7	0.3 U	0.5	0.4 U
Chromium	34.7	38.4	43.9	19.0 J	22.5 J	49 J	17.0 J	32	26.4
Copper	30.4	40.4	39.6	43.4 J	45.9 J	116 J	40.0 J	68.8 J	31.5
Lead	28	15	18	61	66	92	63	30	9
Mercury	0.04	0.04	0.05	0.04	0.04	0.13	0.03	0.27	0.07
Silver	0.5 U	0.5 U	0.5 U	0.4 U	0.5 U	0.6 U	0.4 U	0.7 U	0.6 U
Zinc	87	91	93	190 J	206 J	478 J	183 J	120 J	71
PAHs (µg/kg DW)									
Acenaphthene	18 U	19 U	19 U	18	95	17 J	19 U	47	19 U
Acenaphthylene	18 U	19 U	19 U	18 U	19 U	19	19 U	19 U	19 U
Anthracene	12 J	19 U	13 J	110	220	44	42	100	19 U
Benzo(a)anthracene	120	43	64	860	690	190	110	260	13 J
Benzofluoranthene	320	190	260	1100	940	590	190	560	30
Benzo(g,h,i)perylene	170	79	120	320	320	300	69	160	13 J
Benzo(a)pyrene	120	49	76	620	510	300	85	210	13 J
Chrysene	280	81	130	920	740	350	170	470	20
Dibenzo(a,h)anthracene	81	16 J	30	140	110	100	22	45	3.7 J
Dibenzofuran	18 U	19 U	19 U	10 J	55	17 J	19 U	48	19 U
Fluoranthene	120	100	130	1600	1800	400	530	640	36
Fluorene	18 U	19 U	19 U	16 J	75	18 J	11 J	55	19 U
Indeno(1,2,3-cd)pyrene	120	65	98	310	280	220	56	140	10 J
1-Methylnaphthalene	18 U	19 U	19 U	18 U	22	17 J	19 U	24	19 U
2-Methylnaphthalene	18 U	19 U	19 U	18 U	32	35	19 U	42	19 U
Naphthalene	18 U	19 U	19 U	16 J	44	54	19 U	67	19 U
Phenanthrene	52	48	81	370	1200	210	240	270	25
Pyrene	140	91	140	1700	1600	400	460	580 J	34
Total HPAHs	1500	710 J	1000	7600	7000	2900	1700	3100 J	170 J
Total LPAHs	64 J	48	94 J	530 J	1600	360 J	290 J	540	25
cPAHs	210	86 J	130	910	750	440	130	330	20 J
Phthalates (µg/kg DW)									
Butyl benzyl phthalate	6.2	12	30	37 J	34 J	220 J	16 J	45	4.4 J
Dibutyl phthalate	25	19 U	19 U	9.1 J	9.4 J	67 J	19 U	9.7 J	19 U
Di-n-octyl phthalate	18 U	19 U	19 U	18 U	19 U	19 U	19 U	19 U	19 U
Diethyl phthalate	18 U	14 J	19 U	18 U	10 J	14 J	19 U	19 U	19 U
Dimethyl phthalate	4.6 U	6.9	4.8 U	4.8	5.2	54	2.9 J	4.8 U	4.7 U
Bis(2-ethylhexyl)phthalate	140	88	150	420	430	1700	240	280	42 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2144-A	LDW-SS2146-A	LDW-SS2147-D	LDW-SS2148-A	LDW-SS2148-A-2	LDW-SS2149-A	LDW-SS2150-A	LDW-SS2157-A	LDW-SS2200-A
Phenols (µg/kg DW)									
2,4,5-Trichlorophenol	91 U	93 U	96 U	91 U	94 U	96 U	94 U	97 U	93 U
2,4,6-Trichlorophenol	91 U	93 U	96 U	91 U	94 U	96 U	94 U	97 U	93 U
2,4-Dichlorophenol	91 UJ	93 UJ	96 UJ	91 U	94 U	96 U	94 U	97 U	93 U
2,4-Dimethylphenol	4.6 U	4.7 U	4.8 U	4.6 U	4.7 U	7.3	4.7 U	5.7	4.7 U
2,4-Dinitrophenol	190 U	200 U	200 U	190 UJ	200 UJ	200 UJ	200 UJ	210 U	200 U
2-Chlorophenol	18 U	19 U	19 U	18 U	19 U	19 U	19 U	19 U	19 U
2-Nitrophenol	91 U	93 U	96 U	91 U	94 U	96 U	94 U	97 U	93 U
4,6-Dinitro-2-Methylphenol	180 U	190 U	190 U	180 U	190 U	190 U	190 U	190 U	190 U
4-Chloro-3-methylphenol	91 U	93 U	96 U	91 U	94 U	96 U	94 U	97 U	93 U
2-Methylphenol	4.6 U	4.7 U	4.8 U	4.6 U	4.7 U	11	4.7 U	4.8 U	4.7 U
4-Methylphenol	18 U	19 U	19 U	18 U	19 U	31	19 U	24	16 J
4-Nitrophenol	91 U	93 U	96 U	91 U	94 U	96 U	94 U	97 U	93 U
Pentachlorophenol	23 UJ	23 UJ	24 UJ	23 UJ	23 UJ	30 J	24 UJ	8.1 J	23 UJ
Phenol	18 U	19 U	19 U	19	26	120	19 U	42	12 J
Other SVOCs (µg/kg DW)									
Benzoic Acid	180 U	190 U	190 U	81 J	92 J	400	54 J	310	140 J
Benzyl Alcohol	21	46	15	18 U	19 U	100	14 U	290	140
4-Bromophenyl phenyl ether	18 UJ	19 UJ	19 UJ	18 U	19 U	19 U	19 U	19 U	19 U
Carbazole	10 J	19 U	12 J	56	170	35	14 J	47	19 U
Bis(2-chloro-1-methylethyl) ether	18 U	19 U	19 U	18 U	19 U	19 U	19 U	19 U	19 U
4-Chloroaniline	91 U	93 U	96 U	91 U	94 U	96 U	94 U	97 U	93 U
2-Chloronaphthalene	18 U	19 U	19 U	18 U	19 U	19 U	19 U	19 U	19 U
Bis(2-Chloroethoxy)Methane	18 U	19 U	19 U	18 U	19 U	19 U	19 U	19 U	19 U
Bis(2-Chloroethyl)Ether	18 U	19 U	19 U	18 U	19 U	19 U	19 U	19 U	19 U
4-Chlorophenyl-phenylether	18 UJ	19 UJ	19 UJ	18 U	19 U	19 U	19 U	19 U	19 U
1,2-Dichlorobenzene	4.6 U	4.7 U	4.8 U	4.6 U	4.7 U	4.8 U	4.7 U	4.8 U	4.7 U
1,3-Dichlorobenzene	18 U	19 U	19 U	18 U	19 U	19 U	19 U	19 U	19 U
1,4-Dichlorobenzene	4.6 U	4.7 U	4.8 U	4.6 U	4.7 U	4.8 U	4.7 U	4.8 U	4.7 U
3,3'-Dichlorobenzidine	91 U	93 U	96 U	91 U	94 U	96 U	94 U	97 U	93 U
2,4-Dinitrotoluene	91 U	93 U	96 U	91 U	94 U	96 U	94 U	97 U	93 U
2,6-Dinitrotoluene	91 U	93 U	96 U	91 U	94 U	96 U	94 U	97 U	93 U
Hexachlorobenzene	4.6 U	4.7 U	4.8 U	4.6 U	4.7 U	4.8 U	4.7 U	4.8 U	4.7 U
Hexachlorobutadiene	4.6 U	4.7 U	4.8 U	4.6 U	4.7 U	4.8 U	4.7 U	4.8 U	4.7 U
Hexachlorocyclopentadiene	91 UJ	93 UJ	96 UJ	91 U	94 U	96 U	94 U	97 U	93 UJ
Hexachloroethane	18 U	19 U	19 U	18 U	19 U	19 U	19 U	19 U	19 U
Isophorone	18 U	19 U	19 U	18 U	19 U	19 U	19 U	19 U	19 U
2-Nitroaniline	91 U	93 U	96 U	91 U	94 U	96 U	94 U	97 U	93 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2144-A	LDW-SS2146-A	LDW-SS2147-D	LDW-SS2148-A	LDW-SS2148-A-2	LDW-SS2149-A	LDW-SS2150-A	LDW-SS2157-A	LDW-SS2200-A
4-Nitroaniline	91 U	93 U	96 U	91 U	94 U	96 U	94 U	97 U	93 U
3-Nitroaniline	91 U	93 U	96 U	91 U	94 U	96 U	94 U	97 U	93 U
Nitrobenzene	18 U	19 U	19 U	18 U	19 U	19 U	19 U	19 U	19 U
N-Nitrosodiphenylamine	4.6 U	4.7 U	4.8 U	3.6 J	4.7 U	9.6	4.7 U	4.8 U	4.7 U
N-Nitrosodi-n-propylamine	4.6 U	4.7 U	4.8 U	4.6 U	6.5	29 J	4.7 U	4.8 U	4.7 U
1,2,4-Trichlorobenzene	4.6 U	4.7 U	4.8 U	4.6 U	4.7 U	4.8 U	4.7 U	4.8 U	4.7 U
Aniline	120 U	120 U	120 U	120 UJ	120 UJ	120 UJ	120 UJ	120 U	120 UJ
N-Nitrosodimethylamine	23 U	23 U	24 U	23 U	23 U	24 U	24 U	24 U	23 U
PCB Aroclors (µg/kg DW)									
Aroclor 1016	3.9 U	4.0 U	4.0 U	3.8 U	3.8 U	3.9 U	3.8 U	3.9 U	3.9 U
Aroclor 1221	3.9 U	4.0 U	4.0 U	3.8 U	3.8 U	3.9 U	3.8 U	3.9 U	3.9 U
Aroclor 1232	3.9 U	4.0 U	4.0 U	3.8 U	3.8 U	3.9 U	3.8 U	3.9 U	3.9 U
Aroclor 1242	3.9 U	4.0 U	4.0 U	3.8 U	3.8 U	3.9 U	3.8 U	3.9 U	3.9 U
Aroclor 1248	13	14	16	7.6 U	9.5 U	39 U	19 U	21	5.8 U
Aroclor 1254	8.7	8.7	12	18	22	96	65	26	13
Aroclor 1260	3.9 U	4.0 U	4.0 U	23	23	50	25	13	3.0 J
Total PCBs	22	23	28	41	45	150	90	60	16 J
Grain size (% DW)									
Phi Scale <-1	1.4	1.2	1.0	0.7	0.7	0.9	1.9	0.7	0.1 U
Phi Scale -1 to 0	1.6	1.6	1.5	2.7	1.9	2.2	2.5	3.2	0.9
Phi Scale 0 to 1	3.7	2.9	3.0	18.5	18.2	13.8	21.2	2.5	1.1
Phi Scale 1 to 2	8.4	13.1	9.7	50.7	51.2	41.4	49.7	3.0	1.5
Phi Scale 2 to 3	15.8	28.4	22.9	16.4	17.4	13.0	16.9	2.3	11.4
Phi Scale 3 to 4	29.5	23.7	24.4	2.0	2.0	3.7	2.1	6.6	29.5
Phi Scale 4 to 5	17.0	9.7	11.0	1.2	0.9	2.7	5.7 U	7.5	20.7
Phi Scale 5 to 6	5.8	3.4	4.0	1.1	1.2	6.2	5.7 U	13.2	10.7
Phi Scale 6 to 7	4.1	3.5	4.8	2.0	2.0	5.6	5.7 U	13.3	9.0
Phi Scale 7 to 8	3.5	3.4	4.8	3.1	2.8	4.8	5.7 U	16.3	6.3
Phi Scale 8 to 9	3.0	3.1	4.3	0.8	0.9	3.0	5.7 U	11.0	4.0
Phi Scale 9 to 10	1.9	1.9	2.9	0.1	0.1	1.2	5.7 U	7.4	2.2
Phi Scale >10	4.4	4.1	5.6	0.6	0.7	1.4	5.7 U	12.9	2.6
Total Clay (<0.004 mm - 0.004 mm)	9.3	9.1	12.8	1.5	1.7	5.6	5.7 U	31.3	8.8
Total Silt (0.06 mm - 0.004 mm)	30.4	20.0	24.6	7.4	6.9	19.3	5.7 U	50.3	46.7
Total Fines (Silt/Clay)	39.7	29.1	37.6	8.9	8.5	25.0	5.7	81.7	55.6
Total Sand (<2.0 mm - 0.06 mm)	59.0	69.7	61.5	90.3	90.7	74.1	92.4	17.6	44.4
Total Gravel (>2.0 mm)	1.4	1.2	1.0	0.7	0.7	0.9	1.9	0.7	0.1 U
Conventionals									
Total Organic Carbon (% DW)	0.849	1.01	0.782	5.62	4.18	9.22	4.42	1.81	2.33
Total Solids (% WW)	62.40	62.50	61.30	64.70	66.00	46.70	72.70	44.30	51.10

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2200-D	LDW-SS2201-A	LDW-SS2201-D	LDW-SS2201-U	LDW-SS2214-A	LDW-SS2214-D	LDW-SS2214-U	LDW-SS2223-A	LDW-SS2232-A
Metals (mg/kg DW)									
Arsenic	10	10	10	11	20	20	20	15	13
Cadmium	0.4 U	0.4 U	0.4 U	0.4 U	0.6	0.5	0.6	0.6	0.3 U
Chromium	27	27	28	26.5	34	34	33	37.5	21.7 J
Copper	33.3	33.2	36.7	32.4	66.7	67.2	64.0	62.8	38.7 J
Lead	9	10	12	13	22	22	24	37	17
Mercury	0.12	0.09	0.08	0.07	0.11	0.12	0.12	0.15	0.07
Silver	0.6 U	0.6 U	0.6 U	0.6 U	0.8 U	0.7 U	0.7 U	0.7	0.5 U
Zinc	71	75	79	74	119	115	117	154	57 J
PAHs (µg/kg DW)									
Acenaphthene	19 U	20 U	19 U	38	19 U	12 J	20 U	19	12 J
Acenaphthylene	19 U	20 U	19 U	19 U	19 U	19 U	20 U	11 J	41
Anthracene	19 U	20 U	19 U	19 U	26	36	26	60	23
Benzo(a)anthracene	27	13 J	19 U	17 J	81	99	86	180	32
Benzofluoranthene	50	31	29	46	230	230	200	340	58
Benzo(g,h,i)perylene	19	15 J	12 J	15 J	69	76	55	100	34
Benzo(a)pyrene	23	12 J	12 J	16 J	85	94	76	150	33
Chrysene	39	19 J	19	44	170	160	150	250	32
Dibenzo(a,h)anthracene	4.8	3.3 J	3.5 J	3.7 J	21	24	18	35	4.9
Dibenzofuran	19 U	20 U	19 U	19 U	15 J	14 J	20 U	19	18 J
Fluoranthene	71	30	30	60	270	270	230	460	140
Fluorene	19 U	20 U	19 U	19 U	13 J	18 J	11 J	27	18
Indeno(1,2,3-cd)pyrene	15 J	11 J	11 J	14 J	57	64	50	90	23
1-Methylnaphthalene	19 U	20 U	19 U	9.4 J	19 U	19 U	20 U	12 J	10 J
2-Methylnaphthalene	19 U	20 U	19 U	19 U	10 J	19 U	20 U	16 J	15 J
Naphthalene	19 U	20 U	19 U	22	14 J	14 J	12 J	20	82
Phenanthrene	58	22	17 J	31	85	120	85	210	74
Pyrene	73	28	28	51	210	210	170	430	150
Total HPAHs	320 J	160 J	140 J	270 J	1200	1200	1000	2000	510
Total LPAHs	58	22	17 J	91	140 J	200 J	130 J	350 J	250 J
cPAHs	35 J	19 J	19 J	26 J	130	140	120	230	47
Phthalates (µg/kg DW)									
Butyl benzyl phthalate	3.9 J	3.8 J	3.8 J	3.4 J	24 J	48 J	28	50 J	4.6 U
Dibutyl phthalate	19 U	20 U	19 U	19 U	10 J	19 U	20 U	17 J	18 U
Di-n-octyl phthalate	19 U	20 U	19 U	19 U	19 U	19 U	20 U	18 U	18 U
Diethyl phthalate	19 U	20 U	19 U	50 U	19 U	19 U	20 U	18 U	11 J
Dimethyl phthalate	4.8 U	4.9 U	4.8 U	4.7 U	27	27	9.8	34	4.6 U
Bis(2-ethylhexyl)phthalate	68 U	46 U	57 U	28 U	170	140	94	310	120

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2200-D	LDW-SS2201-A	LDW-SS2201-D	LDW-SS2201-U	LDW-SS2214-A	LDW-SS2214-D	LDW-SS2214-U	LDW-SS2223-A	LDW-SS2232-A
Phenols (µg/kg DW)									
2,4,5-Trichlorophenol	96 U	98 U	96 U	94 U	95 U	96 U	99 U	92 U	93 U
2,4,6-Trichlorophenol	96 U	98 U	96 U	94 U	95 U	96 U	99 U	92 U	93 U
2,4-Dichlorophenol	96 U	98 U	96 U	94 U	95 U	96 U	99 U	92 U	93 U
2,4-Dimethylphenol	4.8 U	4.9 U	4.8 U	4.7 U	4.8 U	4.8 U	5.0 U	4.6 UJ	4.6 U
2,4-Dinitrophenol	210 U	210 UJ	200 U	200 UJ	R	200 UJ	210 UJ	200 U	200 UJ
2-Chlorophenol	19 U	20 U	19 U	19 U	19 U	19 U	20 U	18 U	18 U
2-Nitrophenol	96 U	98 U	96 U	94 U	95 U	96 U	99 U	92 U	93 U
4,6-Dinitro-2-Methylphenol	190 U	200 U	190 U	190 U	190 U	190 U	200 U	180 U	180 U
4-Chloro-3-methylphenol	96 U	98 U	96 U	94 U	95 U	96 U	99 U	92 U	93 U
2-Methylphenol	4.8 U	4.9 U	4.8 U	4.7 U	4.8 U	4.8 U	5.0 U	4.6 U	4.6 U
4-Methylphenol	12 J	14 J	15 J	19 U	160	400	4900	27	13 J
4-Nitrophenol	96 U	98 U	96 U	94 U	95 U	96 U	99 U	92 U	93 U
Pentachlorophenol	24 UJ	24 UJ	24 UJ	24 UJ	15 J	24 U	25 U	23 UJ	23 UJ
Phenol	14 J	32	12 J	25	48	79	480	29 J	16 J
Other SVOCs (µg/kg DW)									
Benzoic Acid	180 J	170 J	190 J	110 J	480	490	440	160 J	43 J
Benzyl Alcohol	150	140	130	69	280 J	280 J	190 J	120 J	6.2 U
4-Bromophenyl phenyl ether	19 U	20 U	19 U	19 U	19 U	19 U	20 U	18 U	18 U
Carbazole	19 U	20 U	19 U	19 U	15 J	20	16 J	27	18 U
Bis(2-chloro-1-methylethyl) ether	19 U	20 U	19 U	19 U	19 U	19 U	20 U	18 U	18 U
4-Chloroaniline	96 U	98 UJ	96 U	94 UJ	95 U	96 U	99 U	92 U	93 U
2-Chloronaphthalene	19 U	20 U	19 U	19 U	19 U	19 U	20 U	18 U	18 U
Bis(2-Chloroethoxy)Methane	19 U	20 U	19 U	19 U	19 U	19 U	20 U	18 U	18 U
Bis(2-Chloroethyl)Ether	19 U	20 U	19 U	19 U	19 U	19 U	20 U	18 U	18 U
4-Chlorophenyl-phenylether	19 U	20 U	19 U	19 U	19 U	19 U	20 U	18 U	18 U
1,2-Dichlorobenzene	4.8 U	4.9 U	4.8 U	4.7 U	4.8 U	4.8 U	5.0 U	4.6 U	4.6 U
1,3-Dichlorobenzene	19 U	20 U	19 U	19 U	19 U	19 U	20 U	18 U	18 U
1,4-Dichlorobenzene	4.8 U	4.9 U	4.8 U	4.7 U	4.8 U	4.8 U	5.0 U	9.2 J	4.6 U
3,3'-Dichlorobenzidine	96 U	98 U	96 U	94 U	95 U	96 U	99 U	92 U	93 U
2,4-Dinitrotoluene	96 U	98 U	96 U	94 U	95 U	96 U	99 U	92 U	93 U
2,6-Dinitrotoluene	96 U	98 U	96 U	94 U	95 U	96 U	99 U	92 U	93 U
Hexachlorobenzene	4.8 U	4.9 U	4.8 U	4.7 U	4.8 U	4.8 U	5.0 U	4.6 U	4.6 U
Hexachlorobutadiene	4.8 U	4.9 U	4.8 U	4.7 U	4.8 U	4.8 U	5.0 U	4.6 U	4.6 U
Hexachlorocyclopentadiene	96 UJ	98 UJ	96 UJ	94 UJ	95 U	96 U	99 U	92 UJ	93 U
Hexachloroethane	19 U	20 U	19 U	19 U	19 U	19 U	20 U	18 U	18 U
Isophorone	19 U	20 U	19 U	19 U	19 U	19 U	20 U	18 U	18 U
2-Nitroaniline	96 U	98 U	96 U	94 U	95 U	96 U	99 U	92 U	93 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2200-D	LDW-SS2201-A	LDW-SS2201-D	LDW-SS2201-U	LDW-SS2214-A	LDW-SS2214-D	LDW-SS2214-U	LDW-SS2223-A	LDW-SS2232-A
4-Nitroaniline	96 U	98 U	96 U	94 U	95 U	96 U	99 U	92 U	93 U
3-Nitroaniline	96 U	98 U	96 U	94 U	95 U	96 U	99 U	92 U	93 U
Nitrobenzene	19 U	20 U	19 U	19 U	19 U	19 U	20 U	18 U	18 U
N-Nitrosodiphenylamine	4.8 U	4.9 U	4.8 U	4.7 U	4.8 U	4.8 U	5.0 U	4.6 U	4.6 U
N-Nitrosodi-n-propylamine	4.8 U	4.9 U	4.8 U	4.7 U	4.8 U	4.8 U	5.0 U	4.6 U	4.6 U
1,2,4-Trichlorobenzene	4.8 U	4.9 U	4.8 U	4.7 U	4.8 U	4.8 U	5.0 U	4.6 U	4.6 U
Aniline	120 UJ	130 UJ	120 UJ	120 UJ	120 U	120 U	130 U	120 UJ	120 UJ
N-Nitrosodimethylamine	24 U	24 U	24 U	24 U	24 U	24 U	25 U	23 U	23 U
PCB Aroclors (µg/kg DW)									
Aroclor 1016	3.9 U	3.9 U	3.9 U	3.9 U	39 U	39 U	39 U	3.9 U	4.0 U
Aroclor 1221	3.9 U	3.9 U	3.9 U	3.9 U	39 U	39 U	39 U	3.9 U	4.0 U
Aroclor 1232	3.9 U	5.9 U	3.9 U	3.9 U	39 U	39 U	39 U	3.9 U	4.0 U
Aroclor 1242	3.9 U	3.9 U	3.9 U	3.9 U	39 U	39 U	39 U	3.9 U	4.0 U
Aroclor 1248	4.9 U	3.9 U	3.9 U	12 U	39 U	39 U	39 U	35	11
Aroclor 1254	12	4.7	5.0 J	26	98 U	120 U	160 U	53	5.6
Aroclor 1260	3.9 U	3.8 J	3.0 J	7.9	290	310	410	39	4.0 U
Total PCBs	12	8.5 J	8.0 J	34	290	310	410	130	17
Grain size (% DW)									
Phi Scale <-1	0.1 U	0.1 U	0.1 U	1.1	0.4	0.1 U	0.2	13.5	12.9
Phi Scale -1 to 0	0.9	1.0	1.0	0.7	1.2	1.2	1.3	2.2	1.3
Phi Scale 0 to 1	1.1	1.0	1.5	1.1	1.0	2.4	1.3	6.9	6.6
Phi Scale 1 to 2	1.4	1.1	1.7	1.8	0.6	2.1	1.3	20.5	14.8
Phi Scale 2 to 3	9.1	5.9	4.3	4.9	0.6	1.1	1.3	11.7	5.2
Phi Scale 3 to 4	24.4	23.9	17.4	19.7	1.9	2.1	2.7	5.7	5.4
Phi Scale 4 to 5	20.4	23.2	21.3	20.2	7.0	10.2	11.4	4.2	8.1
Phi Scale 5 to 6	15.1	16.0	16.9	21.2	28.0	23.0	28.0	6.3	14.1
Phi Scale 6 to 7	10.2	11.7	14.2	12.1	27.3	25.6	27.8	8.2	11.6
Phi Scale 7 to 8	7.2	7.0	9.6	7.2	13.7	15.0	9.1	6.7	7.2
Phi Scale 8 to 9	4.5	4.2	5.2	4.1	6.5	6.7	4.4	4.7	4.7
Phi Scale 9 to 10	2.7	2.3	3.3	2.6	3.9	3.4	4.1	3.4	2.9
Phi Scale >10	3.0	2.8	3.5	3.2	8.1	7.1	7.2	5.9	5.0
Total Clay (<0.004 mm - 0.004 mm)	10.2	9.3	12.0	9.9	18.5	17.2	15.7	14.0	12.6
Total Silt (0.06 mm - 0.004 mm)	52.9	57.9	62.0	60.7	76.0	73.8	76.3	25.4	41.0
Total Fines (Silt/Clay)	63.1	67.1	74.0	70.7	94.5	91.2	91.9	39.4	53.7
Total Sand (<2.0 mm - 0.06 mm)	36.9	32.9	25.9	28.2	5.3	8.9	7.9	47.0	33.3
Total Gravel (>2.0 mm)	0.1 U	0.1 U	0.1 U	1.1	0.4	0.1 U	0.2	13.5	12.9
Conventionals									
Total Organic Carbon (% DW)	2.38	1.70	2.58	1.69	2.70	3.56	2.69	1.63	1.11
Total Solids (% WW)	50.00	50.30	48.00	52.70	37.40	38.20	39.80	58.50	65.00

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2232-D	LDW-SS2232-U	LDW-SS2233-D	LDW-SS2233-U	LDW-SS2244-A	LDW-SS2244-D	LDW-SS2246-A	LDW-SS2246-U	LDW-SS2246-U-2
Metals (mg/kg DW)									
Arsenic	8	12	22	10	20	20	20	20	20
Cadmium	0.3 U	0.3 U	0.2 U	0.3	0.6	0.5	0.7	0.5	0.6
Chromium	13.3 J	16.7 J	14.0 J	25.6 J	34	32	37	35	38
Copper	17.3 J	37.9 J	27.6 J	44.2 J	67.2	57.9	87.5	76.5	79.6
Lead	10	27	52	44	27	21	43	34	36
Mercury	0.03 U	0.04	0.05	0.03 U	0.16	0.14	0.32	0.19	0.19
Silver	0.4 U	0.4 U	0.4 U	0.4 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U
Zinc	46 J	73 J	128 J	190 J	126	112	161	142	144
PAHs (µg/kg DW)									
Acenaphthene	18 U	19 U	11 J	18 U	12 J	900	56	80	190
Acenaphthylene	18 U	10 J	18 U	18 U	19 U	42	61	16 J	20
Anthracene	18 U	20	23	18 U	37	1600	98	140	200
Benzo(a)anthracene	18 U	94	130	18	97	380	240	410	470
Benzofluoranthene	23	340	240	40	200	340	950	700	820
Benzo(g,h,i)perylene	18 U	110	82	18	56	74	170	210	260
Benzo(a)pyrene	18 U	130	120	17 J	83	150	240	340	430
Chrysene	15 J	210	170	25	150	460	870	570	630
Dibenzo(a,h)anthracene	4.6 U	38	33	5.9	23	28	63	87	90
Dibenzofuran	18 U	19 U	18 U	18 U	16 J	590	80	40	98
Fluoranthene	14 J	370	260	29 J	200	2300	2400	920	920
Fluorene	18 U	19 U	12 J	18 U	21	1100	67	82	160
Indeno(1,2,3-cd)pyrene	18 U	86	78	16 J	51	67	160	200	250
1-Methylnaphthalene	18 U	19 U	18 U	18 U	18 J	87	29	22	46
2-Methylnaphthalene	18 U	19 U	18 U	18 U	14 J	210	47	27	70
Naphthalene	18 U	19 U	18 U	18 U	14 J	80	60	39	160
Phenanthrene	11 J	41	120	18 J	92	5200	1300	750	950
Pyrene	25	330	270	36	200	1900	2400	970	980
Total HPAHs	77 J	1700	1400	200 J	1100	5700	7500	4400	4900
Total LPAHs	11 J	71 J	170 J	18 J	180 J	8900	1600	1100 J	1700
cPAHs	14 J	200	180	27 J	130	240	410	510	630
Phthalates (µg/kg DW)									
Butyl benzyl phthalate	4.2 J	4.8 J	4.5 J	2.7 J	20 J	14 J	23 J	17 J	25 J
Dibutyl phthalate	18 U	19 U	18 U	11 J	5.8 J	4.8 J	19 U	19 U	6.6 J
Di-n-octyl phthalate	18 U	19 U	18 U	18 U	19 U	19 U	19 U	19 U	19 U
Diethyl phthalate	18 U	19 U	18 U	18 U	19 U	19 U	19 U	19 U	19 U
Dimethyl phthalate	4.6 U	4.6 U	4.5 U	4.6 U	52	43	6.5	4.4 J	7.5 J
Bis(2-ethylhexyl)phthalate	36	120	55	16 J	140	120	210	130	160

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2232-D	LDW-SS2232-U	LDW-SS2233-D	LDW-SS2233-U	LDW-SS2244-A	LDW-SS2244-D	LDW-SS2246-A	LDW-SS2246-U	LDW-SS2246-U-2
Phenols (µg/kg DW)									
2,4,5-Trichlorophenol	92 U	93 U	89 U	91 U	96 U	97 U	94 U	94 U	94 U
2,4,6-Trichlorophenol	92 U	93 U	89 U	91 U	96 U	97 U	94 U	94 U	94 U
2,4-Dichlorophenol	92 U	93 U	89 U	91 U	96 U	97 U	94 U	94 U	94 U
2,4-Dimethylphenol	4.6 U	4.6 U	4.5 U	R	2.5 J	3.6 J	4.1 J	3.2 J	4.5 J
2,4-Dinitrophenol	200 UJ	200 UJ	190 UJ	200 UJ	200 U	210 U	200 U	200 U	200 U
2-Chlorophenol	18 U	19 U	18 U	18 U	19 U	19 U	19 U	19 U	19 U
2-Nitrophenol	92 U	93 U	89 U	91 U	96 U	97 U	94 U	94 U	94 U
4,6-Dinitro-2-Methylphenol	180 U	190 U	180 U	180 U	190 U	190 U	190 U	190 U	190 U
4-Chloro-3-methylphenol	92 U	93 U	89 U	91 U	96 U	97 U	94 U	94 U	94 U
2-Methylphenol	4.6 U	4.6 U	4.5 U	4.6 U	4.8 U	4.8 U	4.2 J	4.7 U	5.8
4-Methylphenol	18 U	20	18 U	18 U	26	34	19	16 J	22
4-Nitrophenol	92 U	93 U	89 U	91 U	96 U	97 U	94 U	94 U	94 U
Pentachlorophenol	23 UJ	23 UJ	22 UJ	23 UJ	24 UJ	24 UJ	24 UJ	23 UJ	23 U
Phenol	18 U	20	18 U	18 U	49 J	51 J	29 J	23 J	36 J
Other SVOCs (µg/kg DW)									
Benzoic Acid	180 U	190 U	180 U	180 U	330	420	150 J	150 J	150 J
Benzyl Alcohol	5.8 U	6.0 U	6.7 U	7.0 U	280 J	370 J	130 J	130 J	130 J
4-Bromophenyl phenyl ether	18 U	19 U	18 U	18 U	19 U	19 U	19 U	19 U	19 U
Carbazole	18 U	10 J	13 J	18 U	16 J	600	200	93	120
Bis(2-chloro-1-methylethyl) ether	18 U	19 U	18 U	18 U	19 U	19 U	19 U	19 U	19 U
4-Chloroaniline	92 U	93 U	89 U	R	96 U	97 U	94 U	94 U	94 U
2-Chloronaphthalene	18 U	19 U	18 U	18 U	19 U	19 U	19 U	19 U	19 U
Bis(2-Chloroethoxy)Methane	18 U	19 U	18 U	18 U	19 U	19 U	19 U	19 U	19 U
Bis(2-Chloroethyl)Ether	18 U	19 U	18 U	18 U	19 U	19 U	19 U	19 U	19 U
4-Chlorophenyl-phenylether	18 U	19 U	18 U	18 U	19 U	19 U	19 U	19 U	19 U
1,2-Dichlorobenzene	4.6 U	4.6 U	4.5 U	4.6 U	4.8 U	4.8 U	4.7 U	4.7 U	4.7 U
1,3-Dichlorobenzene	18 U	19 U	18 U	18 U	19 U	19 U	19 U	19 U	19 U
1,4-Dichlorobenzene	4.6 U	4.6 U	4.5 U	4.6 U	2.5 J	4.8 U	3.3 J	4.7 U	4.7 U
3,3'-Dichlorobenzidine	92 U	93 U	89 U	R	96 U	97 U	94 U	94 U	94 U
2,4-Dinitrotoluene	92 U	93 U	89 U	91 U	96 U	97 U	94 U	94 U	94 U
2,6-Dinitrotoluene	92 U	93 U	89 U	91 U	96 U	97 U	94 U	94 U	94 U
Hexachlorobenzene	4.6 U	4.6 U	4.5 U	4.6 U	4.8 U	4.8 U	4.7 U	4.7 U	4.7 U
Hexachlorobutadiene	4.6 U	4.6 U	4.5 U	4.6 U	4.8 U	4.8 U	4.7 U	4.7 U	4.7 U
Hexachlorocyclopentadiene	92 U	93 U	89 U	91 UJ	96 UJ	97 UJ	94 UJ	94 UJ	94 UJ
Hexachloroethane	18 U	19 U	18 U	18 U	19 U	19 U	19 U	19 U	19 U
Isophorone	18 U	19 U	18 U	18 U	19 U	19 U	19 U	19 U	19 U
2-Nitroaniline	92 U	93 U	89 U	91 U	96 U	97 U	94 U	94 U	94 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2232-D	LDW-SS2232-U	LDW-SS2233-D	LDW-SS2233-U	LDW-SS2244-A	LDW-SS2244-D	LDW-SS2246-A	LDW-SS2246-U	LDW-SS2246-U-2
4-Nitroaniline	92 U	93 U	89 U	91 U	96 U	97 U	94 U	94 U	94 U
3-Nitroaniline	92 U	93 U	89 U	91 U	96 U	97 U	94 U	94 U	94 U
Nitrobenzene	18 U	19 U	18 U	18 U	19 U	19 U	19 U	19 U	19 U
N-Nitrosodiphenylamine	4.6 U	4.6 U	4.5 U	4.6 U	4.8 U	4.8 U	4.7 U	4.7 U	4.7 U
N-Nitrosodi-n-propylamine	4.6 U	4.6 U	4.5 U	4.6 U	4.8 U	4.8 U	4.7 U	4.7 U	4.7 U
1,2,4-Trichlorobenzene	4.6 U	4.6 U	4.5 U	4.6 U	4.8 U	4.8 U	4.7 U	4.7 U	4.7 U
Aniline	120 UJ	120 UJ	120 UJ	R	120 UJ	130 UJ	120 UJ	120 UJ	120 UJ
N-Nitrosodimethylamine	23 U	23 U	22 U	23 U	24 U	24 U	24 U	23 U	23 U
PCB Aroclors (µg/kg DW)									
Aroclor 1016	3.9 U	3.7 U	3.8 U	3.8 U	3.9 U	4.0 U	4.0 U	4.0 U	4.0 U
Aroclor 1221	3.9 U	3.7 U	3.8 U	3.8 U	3.9 U	4.0 U	4.0 U	4.0 U	4.0 U
Aroclor 1232	3.9 U	3.7 U	3.8 U	3.8 U	3.9 U	4.0 U	4.0 U	4.0 U	4.0 U
Aroclor 1242	3.9 U	3.7 U	3.8 U	3.8 U	3.9 U	4.0 U	4.0 U	4.0 U	4.0 U
Aroclor 1248	5.9	5.4	12 U	7.6 U	34	28	86	62	69
Aroclor 1254	5.5	6.5	37	18	49	38	110	70	76
Aroclor 1260	3.9 U	5.4	32	9.8	29	25	58	42	42
Total PCBs	11	17	69	28	110	91	250	170	190
Grain size (% DW)									
Phi Scale <-1	5.2	9.2	6.0	19.7	0.6	9.1	0.2	0.1	0.1
Phi Scale -1 to 0	2.4	3.0	7.6	2.2	1.4	1.8	0.5	1.0	0.5
Phi Scale 0 to 1	10.5	9.6	26.6	8.2	2.0	1.2	1.6	2.0	1.6
Phi Scale 1 to 2	39.4	26.3	36.4	49.1	3.4	2.1	2.6	2.5	2.3
Phi Scale 2 to 3	31.5	23.7	15.6	17.1	3.4	1.8	2.5	2.2	1.9
Phi Scale 3 to 4	7.5	10.3	5.0	0.9	4.9	4.2	4.0	4.1	3.7
Phi Scale 4 to 5	3.6 U	6.0	2.8 U	2.8 U	9.0	9.4	6.5	5.8	6.6
Phi Scale 5 to 6	3.6 U	3.8	2.8 U	2.8 U	15.9	16.1	15.5	15.4	15.4
Phi Scale 6 to 7	3.6 U	2.2	2.8 U	2.8 U	19.9	16.2	20.1	19.9	20.4
Phi Scale 7 to 8	3.6 U	1.7	2.8 U	2.8 U	14.3	13.7	15.4	15.7	15.9
Phi Scale 8 to 9	3.6 U	1.5	2.8 U	2.8 U	8.6	8.9	10.9	11.4	11.0
Phi Scale 9 to 10	3.6 U	0.9	2.8 U	2.8 U	6.2	5.7	7.5	7.0	7.7
Phi Scale >10	3.6 U	1.7	2.8 U	2.8 U	10.4	9.9	12.7	12.9	12.9
Total Clay (<0.004 mm - 0.004 mm)	3.6 U	4.1	2.8 U	2.8 U	25.2	24.5	31.1	31.3	31.6
Total Silt (0.06 mm - 0.004 mm)	3.6 U	13.7	2.8 U	2.8 U	59.1	55.4	57.5	56.8	58.3
Total Fines (Silt/Clay)	3.6	17.9	2.8	2.8	84.4	79.9	88.6	88.1	89.9
Total Sand (<2.0 mm - 0.06 mm)	91.3	72.9	91.2	77.5	15.1	11.1	11.2	11.8	10.0
Total Gravel (>2.0 mm)	5.2	9.2	6.0	19.7	0.6	9.1	0.2	0.1	0.1
Conventionals									
Total Organic Carbon (% DW)	0.778	1.63	0.617	0.380	3.05	2.94	2.93	2.81	2.47
Total Solids (% WW)	58.20	68.80	80.60	76.20	46.60	45.10	45.90	48.40	47.70

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2247-A	LDW-SS2247-U	LDW-SS2503-A	LDW-SS2505-A	LDW-SS2506-A	LDW-SS2506-D	LDW-SS2512-A	LDW-SS2512-U	LDW-SS3037-A
Metals (mg/kg DW)									
Arsenic	20	20	7 UJ	6 U	15	16	8	6	10
Cadmium	0.6	0.7	0.3	0.2 U	0.6	0.3 U	0.2 U	0.2 U	0.3 U
Chromium	33	35	19.6	24.0	32.2	21.3	14.0	14.2	20.1
Copper	68.9	75.4	49.5 J	16.2	43.8	33.3	19.6	12.7	31.5 J
Lead	26	30	23	9	64	23	17	43	11 J
Mercury	0.20	0.17	0.04	0.03 U	0.14	0.06	0.02 U	0.02 U	0.04
Silver	0.7 U	0.7 U	0.4 U	0.3 U	0.5 U	0.5 U	0.3 U	0.3 U	0.4 U
Zinc	129	137	167 J	44	130	80	53	44	65 J
PAHs (µg/kg DW)									
Acenaphthene	34	27	19 U	19 U	16 J	19	20 U	19 U	18 U
Acenaphthylene	13 J	14 J	19 U	68	20 U	19 U	20 U	19 U	18 U
Anthracene	72	110	10 J	100	56	23	20 U	19 U	18 U
Benzo(a)anthracene	170	220	39	190	140	62	20 U	12 J	16 J
Benzofluoranthene	340	350	110	270	330	160	18 J	19	38
Benzo(g,h,i)perylene	86	91	86 J	71	100	30	20 U	19 U	24
Benzo(a)pyrene	130	140	59	150	110	62	16 J	19 U	17 J
Chrysene	260	500 J	64	170	250	97	15 J	13 J	33
Dibenzo(a,h)anthracene	31	34	17 J	24	28	12	4.9 U	4.8 U	8.6
Dibenzofuran	31	29	19 U	33	20 U	19 U	20 U	19 U	18 U
Fluoranthene	510	370	94	640	380	160	30	28	36
Fluorene	35	42	19 U	76	26	17 J	20 U	19 U	18 U
Indeno(1,2,3-cd)pyrene	79	79	53 J	71	62	29	20 U	19 U	16 J
1-Methylnaphthalene	11 J	11 J	19 U	12 J	11 J	19 U	20 U	19 U	18 U
2-Methylnaphthalene	19	19	19 U	12 J	15 J	9.5 J	20 U	19 U	18 U
Naphthalene	28	27	13 J	22	23	17 J	20 U	19 U	18 U
Phenanthrene	190	180	43	730	220	69	16 J	16 J	21
Pyrene	420	310	92	500	350	140	24	24	40
Total HPAHs	2000	2100 J	610 J	2100	1800	750	100 J	96 J	230 J
Total LPAHs	370 J	400 J	66 J	1000	340 J	150 J	16 J	16 J	21
cPAHs	200	220 J	87 J	210	180	93	21 J	15 J	28 J
Phthalates (µg/kg DW)									
Butyl benzyl phthalate	15 J	16 J	28	4.8 U	140	13	82	13	9.3
Dibutyl phthalate	8.5 J	5.8 J	19 U	19 U	30	19 U	20 U	19 U	18 U
Di-n-octyl phthalate	19 U	19 U	19 U	19 U	20 U	19 U	20 U	19 U	18 U
Diethyl phthalate	19 U	19 U	19 U	11 J	20 U	19 U	20 U	19 U	8.2 J
Dimethyl phthalate	3.8 J	4.3 J	4.7 U	4.8 U	4.9 U	4.8 U	4.9 U	4.8 U	4.6 U
Bis(2-ethylhexyl)phthalate	130	160	230	25	2500	4900	44	12 J	53 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2247-A	LDW-SS2247-U	LDW-SS2503-A	LDW-SS2505-A	LDW-SS2506-A	LDW-SS2506-D	LDW-SS2512-A	LDW-SS2512-U	LDW-SS3037-A
Phenols (µg/kg DW)									
2,4,5-Trichlorophenol	94 U	96 U	94 U	95 U	97 U	95 U	98 U	96 U	91 U
2,4,6-Trichlorophenol	94 U	96 U	94 U	95 U	97 U	95 U	98 U	96 U	91 U
2,4-Dichlorophenol	94 U	96 U	94 U	95 U	97 U	95 U	98 U	96 U	91 U
2,4-Dimethylphenol	2.9 J	4.2 J	4.7 U	4.8 U	4.9 U	4.8 U	4.9 U	4.8 U	4.6 U
2,4-Dinitrophenol	200 U	210 UJ	200 U	200 U	R	200 U	210 U	200 U	190 UJ
2-Chlorophenol	19 U	19 U	19 U	19 U	20 U	19 U	20 U	19 U	18 U
2-Nitrophenol	94 U	96 U	94 U	95 U	97 U	95 U	98 U	96 U	91 U
4,6-Dinitro-2-Methylphenol	190 U	190 U	190 U	190 U	200 U	190 U	200 U	190 U	180 U
4-Chloro-3-methylphenol	94 U	96 U	94 U	95 U	97 U	95 U	98 U	96 U	91 U
2-Methylphenol	4.7 U	4.8 U	4.7 U	4.8 U	4.9 U	4.8 U	4.9 U	4.8 U	4.6 U
4-Methylphenol	16 J	30	19 U	19 U	130	36	20 U	19 U	4.6 J
4-Nitrophenol	94 U	96 U	94 U	95 U	97 U	95 U	98 U	96 U	91 U
Pentachlorophenol	24 UJ	24 UJ	5.7 J	24 U	30 J	24 U	24 U	24 U	23 U
Phenol	25 J	52 J	15 J	19 U	60	26	20 U	19 U	10 J
Other SVOCs (µg/kg DW)									
Benzoic Acid	190	250	50 J	190 U	240 J	180 J	200 U	190 U	95 J
Benzyl Alcohol	180 J	240 J	11 J	7.3 U	120	56	8.4 U	8.1 U	42
4-Bromophenyl phenyl ether	19 U	19 U	19 U	19 U	20 U	19 U	20 U	19 U	18 U
Carbazole	26	23	19 U	57	26	12 J	20 U	19 U	18 U
Bis(2-chloro-1-methylethyl) ether	19 U	19 U	19 U	19 U	20 U	19 U	20 U	19 U	18 U
4-Chloroaniline	94 U	R	94 U	95 U	R	95 U	98 U	96 U	91 U
2-Chloronaphthalene	19 U	19 U	19 U	19 U	20 U	19 U	20 U	19 U	18 U
Bis(2-Chloroethoxy)Methane	19 U	19 U	19 U	19 U	20 U	19 U	20 U	19 U	18 U
Bis(2-Chloroethyl)Ether	19 U	19 U	19 U	19 U	20 U	19 U	20 U	19 U	18 U
4-Chlorophenyl-phenylether	19 U	19 U	19 U	19 U	20 U	19 U	20 U	19 U	18 U
1,2-Dichlorobenzene	4.7 U	4.8 U	4.7 U	4.8 U	4.9 U	4.8 U	4.9 U	4.8 U	4.6 U
1,3-Dichlorobenzene	19 U	19 U	19 U	19 U	20 U	19 U	20 U	19 U	18 U
1,4-Dichlorobenzene	4.7 U	2.9 J	4.7 U	4.8 U	68	12	4.9 U	4.8 U	4.6 U
3,3'-Dichlorobenzidine	94 U	R	94 U	95 U	R	95 U	98 U	96 U	91 U
2,4-Dinitrotoluene	94 U	96 U	94 U	95 U	97 U	95 U	98 U	96 U	91 U
2,6-Dinitrotoluene	94 U	96 U	94 U	95 U	97 U	95 U	98 U	96 U	91 U
Hexachlorobenzene	4.7 U	4.8 U	4.7 U	4.8 U	4.9 U	4.8 U	4.9 U	4.8 U	4.6 U
Hexachlorobutadiene	4.7 U	4.8 U	4.7 U	4.8 U	4.9 U	4.8 U	4.9 U	4.8 U	4.6 U
Hexachlorocyclopentadiene	94 UJ	R	94 U	95 U	R	95 U	98 U	96 U	91 U
Hexachloroethane	19 U	19 U	19 U	19 U	20 U	19 U	20 U	19 U	18 U
Isophorone	19 U	19 U	19 U	19 U	20 U	19 U	20 U	19 U	18 U
2-Nitroaniline	94 U	96 U	94 U	95 U	97 U	95 U	98 U	96 U	91 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS2247-A	LDW-SS2247-U	LDW-SS2503-A	LDW-SS2505-A	LDW-SS2506-A	LDW-SS2506-D	LDW-SS2512-A	LDW-SS2512-U	LDW-SS3037-A
4-Nitroaniline	94 U	96 U	94 U	95 U	R	95 U	98 U	96 U	91 U
3-Nitroaniline	94 U	R	94 U	95 U	R	95 U	98 U	96 U	91 U
Nitrobenzene	19 U	19 U	19 U	19 U	20 U	19 U	20 U	19 U	18 U
N-Nitrosodiphenylamine	4.7 U	4.8 U	5.0	4.8 U	4.9 U	4.8 U	4.9 U	4.8 U	4.6 U
N-Nitrosodi-n-propylamine	4.7 U	4.8 U	4.7 U	4.8 U	4.9 U	4.8 U	4.9 U	57	4.6 U
1,2,4-Trichlorobenzene	4.7 U	4.8 U	4.7 U	4.8 U	4.9 UJ	4.8 U	4.9 U	4.8 U	4.6 U
Aniline	120 UJ	R	120 U	120 U	R	120 U	130 U	120 U	120 U
N-Nitrosodimethylamine	24 U	24 U	23 U	24 U	5.6 J	24 U	24 U	24 U	23 U
PCB Aroclors (µg/kg DW)									
Aroclor 1016	3.9 U	4.0 U	3.8 U	3.9 U	3.9 U	3.8 U	3.9 U	3.9 U	3.9 U
Aroclor 1221	3.9 U	4.0 U	3.8 U	3.9 U	3.9 U	3.8 U	3.9 U	3.9 U	3.9 U
Aroclor 1232	3.9 U	4.0 U	3.8 U	3.9 U	3.9 U	3.8 U	3.9 U	3.9 U	3.9 U
Aroclor 1242	3.9 U	4.0 U	3.8 U	3.9 U	3.9 U	3.8 U	3.9 U	3.9 U	3.9 U
Aroclor 1248	62	74	5.8 U	3.9 U	15	11	3.9 U	3.9 U	5.8 U
Aroclor 1254	48	55	12	3.9 U	24	17	3.9 U	4.8	10
Aroclor 1260	29	29	11	3.9 U	18	12	4.4	5.1	13
Total PCBs	140	160	23	3.9 U	57	40	4.4	9.9	23
Grain size (% DW)									
Phi Scale <-1	1.1	1.4	34.7	22.9	4.5	0.1 U	38.1	15.0	14.9
Phi Scale -1 to 0	1.5	2.0	3.6	2.3	4.9	0.9	4.0	2.5	10.1
Phi Scale 0 to 1	1.4	1.6	10.1	11.0	13.5	1.3	9.4	6.0	10.2
Phi Scale 1 to 2	1.5	0.8	21.5	29.4	17.9	6.9	16.1	16.5	17.7
Phi Scale 2 to 3	0.8	0.6	10.7	26.2	15.5	21.2	18.6	25.0	13.7
Phi Scale 3 to 4	3.1	3.2	4.6	6.8	15.8	30.2	10.8	18.8	10.7
Phi Scale 4 to 5	8.5	5.0	3.0	1.5 U	7.1	13.1	3.1 U	6.5	5.8
Phi Scale 5 to 6	18.1	18.4	2.9	1.5 U	5.1	7.3	3.1 U	3.0	5.7
Phi Scale 6 to 7	18.3	21.6	2.8	1.5 U	5.3	6.6	3.1 U	2.1	3.9
Phi Scale 7 to 8	15.7	16.4	2.2	1.5 U	5.1	5.5	3.1 U	1.5	2.8
Phi Scale 8 to 9	10.7	10.1	1.7	1.5 U	2.3	3.4	3.1 U	1.2	1.6
Phi Scale 9 to 10	7.7	6.9	1.1	1.5 U	1.3	1.5	3.1 U	0.8	1.0
Phi Scale >10	11.8	11.9	1.1	1.5 U	1.9	2.1	3.1 U	0.9	1.8
Total Clay (<0.004 mm - 0.004 mm)	30.2	28.9	3.9	1.5 U	5.5	7.0	3.1 U	2.9	4.4
Total Silt (0.06 mm - 0.004 mm)	60.6	61.4	10.9	1.5 U	22.6	32.5	3.1 U	13.1	18.2
Total Fines (Silt/Clay)	90.6	90.4	14.7	1.5	28.0	39.6	3.1	16.1	22.6
Total Sand (<2.0 mm - 0.06 mm)	8.3	8.2	50.5	75.7	67.6	60.5	58.9	68.8	62.4
Total Gravel (>2.0 mm)	1.1	1.4	34.7	22.9	4.5	0.1 U	38.1	15.0	14.9
Conventionals									
Total Organic Carbon (% DW)	1.81	2.92	1.58	0.427	1.95	1.24	0.478	0.257	1.67
Total Solids (% WW)	43.10	44.30	70.10	81.00	57.30	58.10	85.80	80.80	65.70

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS3037-D	LDW-SS3037-D-2	LDW-SS3037-U	LDW-SS5000-A	LDW-SS5000-D	LDW-SS5000-U	LDW-SS5002-A	LDW-SS5002-D	LDW-SS5003-A
Metals (mg/kg DW)									
Arsenic	13	13	10	20 J	20 J	20 J	86	20	67
Cadmium	0.4	0.4	0.3 U	0.7	0.7	0.7	1.1	0.6	1.0
Chromium	23.3	22.6	18.6	33	33	34	28.9	35	33.9
Copper	34.2 J	33.8 J	29.5 J	85.1 J	77.5 J	79.7 J	133	78.2	124
Lead	16 J	16 J	17 J	29 J	31 J	31 J	166	35	127
Mercury	0.07	0.05	0.03 U	0.22	0.20	0.20	0.22	0.21	0.32
Silver	0.5 U	0.5 U	0.4 U	0.7 U	0.7 U	0.7 U	0.8	0.6 U	0.8
Zinc	71 J	72 J	69 J	132 J	134 J	137 J	299	143	261
PAHs (µg/kg DW)									
Acenaphthene	19 U	19 U	19 U	14 J	17 J	16 J	73	20	25
Acenaphthylene	19 U	19 U	4.8 J	19 U	19 U	20 U	16 U	16 U	16 U
Anthracene	5.7 J	14 J	6.7 J	78	62	55	130	66	63
Benzo(a)anthracene	24	89	18 J	140	160	130	550	200	210
Benzofluoranthene	71	240	55	300	340	270	610	380	390
Benzo(g,h,i)perylene	35	48	27	74	84	65	130	82	110
Benzo(a)pyrene	25	61	22	120	130	110	350	180	180
Chrysene	61	230	38	250	280	210	640	260	230
Dibenzo(a,h)anthracene	7.4	18	5.8	25	30	23	44	7.0	40
Dibenzofuran	19 U	19 U	19 U	18 J	18 J	15 J	16 U	28	23
Fluoranthene	92	380	73	260	400	240	1700	310	590
Fluorene	19 U	19 U	19 U	23	26	20	72	30	32
Indeno(1,2,3-cd)pyrene	25	46	18 J	70	77	60	120	73	96
1-Methylnaphthalene	19 U	12 J	19 U	19 U	19 U	20 U	16 U	15 J	20
2-Methylnaphthalene	19 U	23	19 U	14 J	14 J	11 J	48	20	32
Naphthalene	4.8 J	11 J	19 U	25	20	20	56	26	54
Phenanthrene	31	110	40	100	170	100	260	140	130
Pyrene	95	350	67	270	380	240	1300	360	560
Total HPAHs	440	1500	320 J	1500	1900	1300	5400	1900	2400
Total LPAHs	42 J	140 J	52 J	240 J	300 J	210 J	590	280	300
cPAHs	41	110	34 J	180	200	170	500	250	270
Phthalates (µg/kg DW)									
Butyl benzyl phthalate	12	8.8	3.7 J	22	27	16	15 J	30 J	14
Dibutyl phthalate	19 U	19 U	19 U	19 U	19 U	20 U	16 U	9.0 J	8.9 J
Di-n-octyl phthalate	19 U	19 U	19 U	19 U	19 U	20 U	14 J	16 U	16 U
Diethyl phthalate	5.7 J	9.3 J	5.8 J	19 U	11 J	20 U	16 U	16 U	16 U
Dimethyl phthalate	5.8	6.0	3.0 J	3.6 J	3.6 J	4.3 J	4.0 U	4.1 U	4.1 U
Bis(2-ethylhexyl)phthalate	71 U	33 U	33 U	160	170	170	390	210	220

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS3037-D	LDW-SS3037-D-2	LDW-SS3037-U	LDW-SS5000-A	LDW-SS5000-D	LDW-SS5000-U	LDW-SS5002-A	LDW-SS5002-D	LDW-SS5003-A
Phenols (µg/kg DW)									
2,4,5-Trichlorophenol	95 U	93 U	96 U	97 U	97 U	99 U	80 U	82 U	81 U
2,4,6-Trichlorophenol	95 U	93 U	96 U	97 U	97 U	99 U	80 U	82 U	81 U
2,4-Dichlorophenol	95 U	93 U	96 U	97 U	97 U	99 U	80 U	82 U	81 U
2,4-Dimethylphenol	4.8 U	4.6 U	4.8 U	4.9	3.7 J	3.8 J	6.5	5.1	5.0
2,4-Dinitrophenol	200 UJ	200 U	210 UJ	210 UJ	210 UJ	210 UJ	170 UJ	180 UJ	170 U
2-Chlorophenol	19 U	19 U	19 U	19 U	19 U	20 U	16 U	16 U	16 U
2-Nitrophenol	95 U	93 U	96 U	97 U	97 U	99 U	80 U	82 U	81 U
4,6-Dinitro-2-Methylphenol	190 U	190 U	190 U	190 U	190 U	200 U	160 U	160 U	160 U
4-Chloro-3-methylphenol	95 U	93 U	96 U	97 U	97 U	99 U	80 U	82 U	81 U
2-Methylphenol	4.8 U	4.6 U	4.8 U	5.2	4.2 J	4.2 J	5.4	4.1 U	4.5
4-Methylphenol	4.8 J	19 U	19 U	20	17 J	21	23	30	45
4-Nitrophenol	95 U	93 U	96 U	97 U	97 U	99 U	80 U	82 U	81 U
Pentachlorophenol	24 U	23 UJ	24 U	24 U	24 U	25 U	21 J	11 J	14 J
Phenol	9.5 J	10 J	12 J	37	24	32	58	16 U	47
Other SVOCs (µg/kg DW)									
Benzoic Acid	94 J	130 J	130 J	300	160 J	180 J	60 J	260	65 J
Benzyl Alcohol	34	39	18	220	130	150	69	280	110
4-Bromophenyl phenyl ether	19 U	19 U	19 U	19 UJ	19 UJ	20 UJ	16 U	16 U	16 U
Carbazole	6.6 J	16 J	7.7 J	20	20	18 J	50	23	23
Bis(2-chloro-1-methylethyl) ether	19 U	19 U	19 U	19 U	19 U	20 U	16 U	16 U	16 U
4-Chloroaniline	95 U	93 U	96 U	97 UJ	97 UJ	99 UJ	80 U	82 U	81 U
2-Chloronaphthalene	19 U	19 U	19 U	19 U	19 U	20 U	16 U	16 U	16 U
Bis(2-Chloroethoxy)Methane	19 U	19 U	19 U	19 U	19 U	20 U	16 U	16 U	16 U
Bis(2-Chloroethyl)Ether	19 U	19 U	19 U	19 U	19 U	20 U	16 U	16 U	16 U
4-Chlorophenyl-phenylether	19 U	19 U	19 U	19 UJ	19 UJ	20 UJ	16 U	16 U	16 U
1,2-Dichlorobenzene	4.8 U	4.6 U	4.8 U	4.8 U	4.8 U	4.9 U	6.7	4.1 U	4.1 U
1,3-Dichlorobenzene	19 U	19 U	19 U	19 U	19 U	20 U	16 U	16 U	16 U
1,4-Dichlorobenzene	4.8 U	4.6 U	4.8 U	4.8 U	4.8 U	4.9 U	5.4	4.1 U	4.9
3,3'-Dichlorobenzidine	95 U	93 U	96 U	97 U	97 U	99 U	80 U	82 U	81 U
2,4-Dinitrotoluene	95 U	93 U	96 U	97 U	97 U	99 U	80 U	82 U	81 U
2,6-Dinitrotoluene	95 U	93 U	96 U	97 U	97 U	99 U	80 U	82 U	81 U
Hexachlorobenzene	4.8 U	4.6 U	4.8 U	4.8 U	4.8 U	4.9 U	4.0 U	4.1 U	4.1 U
Hexachlorobutadiene	4.8 U	4.6 U	4.8 U	4.8 U	4.8 U	4.9 U	4.0 U	4.1 U	4.1 U
Hexachlorocyclopentadiene	95 U	93 UJ	96 U	97 U	97 U	99 U	80 U	82 U	81 U
Hexachloroethane	19 U	19 U	19 U	19 U	19 U	20 U	16 U	16 U	16 U
Isophorone	19 U	19 U	19 U	19 U	19 U	20 U	16 U	16 U	16 U
2-Nitroaniline	95 U	93 U	96 U	97 U	97 U	99 U	80 U	82 U	81 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS3037-D	LDW-SS3037-D-2	LDW-SS3037-U	LDW-SS5000-A	LDW-SS5000-D	LDW-SS5000-U	LDW-SS5002-A	LDW-SS5002-D	LDW-SS5003-A
4-Nitroaniline	95 U	93 U	96 U	97 U	97 U	99 U	80 UJ	82 UJ	81 U
3-Nitroaniline	95 U	93 U	96 U	97 U	97 U	99 U	80 UJ	82 UJ	81 U
Nitrobenzene	19 U	19 U	19 U	19 U	19 U	20 U	16 U	16 U	16 U
N-Nitrosodiphenylamine	4.8 U	4.6 U	4.8 U	4.8 U	4.8 U	4.9 U	4.0 U	4.1 U	4.1 U
N-Nitrosodi-n-propylamine	4.8 U	4.6 U	4.8 U	4.8 U	4.8 U	4.9 U	4.0 U	4.1 U	4.1 U
1,2,4-Trichlorobenzene	4.8 U	4.6 U	4.8 U	4.8 U	4.8 U	4.9 U	4.0 U	4.1 U	4.1 U
Aniline	120 U	120 U	120 U	130 U	130 U	130 U	100 U	110 U	100 U
N-Nitrosodimethylamine	24 U	23 U	24 U	24 U	24 U	25 U	20 U	20 U	20 U
PCB Aroclors (µg/kg DW)									
Aroclor 1016	3.9 U	3.8 U	3.8 U	3.9 U	4.0 U	4.0 U	19 U	3.9 U	20 U
Aroclor 1221	3.9 U	3.8 U	3.8 U	3.9 U	4.0 U	4.0 U	19 U	3.9 U	20 U
Aroclor 1232	3.9 U	3.8 U	3.8 U	3.9 U	4.0 U	4.0 U	19 U	3.9 U	20 U
Aroclor 1242	3.9 U	3.8 U	3.8 U	3.9 U	4.0 U	4.0 U	19 U	3.9 U	20 U
Aroclor 1248	6.9 U	6.7 U	5.7 U	34	33	33	240	45	310
Aroclor 1254	16	13	12	59	57	58	320	60	330
Aroclor 1260	39	18	17	46	43	47	120	34	110
Total PCBs	55	31	29	140	130	140	680	140	750
Grain size (% DW)									
Phi Scale <-1	0.9	0.1	8.5	0.3	0.2	0.1 U	0.1	2.9	0.6
Phi Scale -1 to 0	0.9	0.8	4.9	4.9	4.4	3.2	0.3	1.9	2.0
Phi Scale 0 to 1	2.6	2.6	10.3	2.6	2.4	1.7	1.4	3.5	6.0
Phi Scale 1 to 2	11.2	11.3	27.0	2.2	1.4	1.5	10.2	4.5	10.5
Phi Scale 2 to 3	16.8	17.4	17.8	1.0	0.9	0.9	20.6	2.3	9.4
Phi Scale 3 to 4	19.0	18.7	10.8	2.5	2.5	2.3	14.9	2.4	7.2
Phi Scale 4 to 5	12.3	11.6	6.1	6.5	8.0	6.4	6.8	5.3	6.6
Phi Scale 5 to 6	12.3	12.9	4.3	15.6	15.0	16.7	9.1	14.9	12.7
Phi Scale 6 to 7	9.4	9.7	3.3	20.2	18.8	19.7	10.5	20.2	17.8
Phi Scale 7 to 8	5.8	5.8	2.4	15.4	17.7	16.6	7.1	14.8	8.1
Phi Scale 8 to 9	3.5	3.7	1.6	9.9	9.8	10.5	6.1	10.2	5.8
Phi Scale 9 to 10	2.1	2.1	0.9	6.7	6.9	7.1	3.9	5.5	4.2
Phi Scale >10	3.3	3.4	2.0	12.3	12.2	13.4	8.8	11.7	9.1
Total Clay (<0.004 mm - 0.004 mm)	8.9	9.2	4.5	28.9	28.9	31.0	18.8	27.4	19.1
Total Silt (0.06 mm - 0.004 mm)	39.8	40.0	16.1	57.7	59.5	59.4	33.5	55.2	45.2
Total Fines (Silt/Clay)	48.6	49.1	20.6	86.5	88.2	90.5	52.4	82.5	64.2
Total Sand (<2.0 mm - 0.06 mm)	50.5	50.8	70.8	13.2	11.6	9.6	47.4	14.6	35.1
Total Gravel (>2.0 mm)	0.9	0.1	8.5	0.3	0.2	0.1 U	0.1	2.9	0.6
Conventionals									
Total Organic Carbon (% DW)	1.84	1.59	1.58	1.95	2.87	1.89	1.23	2.14	0.962
Total Solids (% WW)	55.40	55.20	69.40	42.20	42.60	42.80	62.30	49.80	56.10

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS5005-A	LDW-SS6146-A	LDW-SS6146-D	LDW-SS6146-U	LDW-SSBDC2-A	LDW-SSBDC2-A-2	LDW-SSBDC2-D	LDW-SSBDC2-U	LDW-SSBDC3-D
Metals (mg/kg DW)									
Arsenic	50	10	10	20	13	13	10	11	11
Cadmium	0.6	0.5	0.5	0.6	0.4	0.4	0.4	0.4	0.4
Chromium	38.3	29	28	29	23.0	23.8	25	23.3	25.1
Copper	169	46.4	44.4	46.8	29.6	29.5	32.1	31.0	31.1
Lead	105	14	15	16	11	11	11	10	10
Mercury	0.13	0.36	0.16	0.11	0.07	0.07	0.07	0.09	0.07
Silver	0.4	0.7 U	0.6 U	0.6 U	0.5 U	0.5 U	0.6 U	0.6 U	0.5 U
Zinc	305	93	89	100	71	71	72	69	72
PAHs (µg/kg DW)									
Acenaphthene	28	19 U	19 U	7.8 J	19 U	19 U	19 U	19 U	15 J
Acenaphthylene	16 U	19 U	19 U	20 U	19 U	19 U	19 U	19 U	20 U
Anthracene	73	11 J	16 J	20	9.4 J	19 U	19 U	11 J	33
Benzo(a)anthracene	170	37	48	36	56	48	26	51	110
Benzofluoranthene	470	73	110	84	120	110	63	140	140
Benzo(g,h,i)perylene	110	23	36	29	42	42	24	44	39
Benzo(a)pyrene	180	30	46	32	51	48	24	50	63
Chrysene	260	56	76	57	89	69	40	75	150
Dibenzo(a,h)anthracene	39	11	10	12	14	11 J	5.8	12 J	16 J
Dibenzofuran	28	4.7 J	12 J	9.8 J	19 U	19 U	19 U	19 U	20 U
Fluoranthene	370	68	120	92	150	130	70	140	220
Fluorene	36	6.6 J	11 J	13 J	19 U	19 U	19 U	19 U	15 J
Indeno(1,2,3-cd)pyrene	98	20	30	22	39	36	19	38	37
1-Methylnaphthalene	9.7 J	5.6 J	19 U	6.9 J	19 U	19 U	19 U	19 U	20 U
2-Methylnaphthalene	23	7.5 J	12 J	9.8 J	19 U	19 U	19 U	19 U	20 U
Naphthalene	27	6.6 J	13 J	9.8 J	19 U	19 U	19 U	19 U	20 U
Phenanthrene	160	45	62	63	77	61	44	74	140
Pyrene	520	83	100	100	150	110	67	140	220
Total HPAHs	2200	400	580	460	710	600 J	340	690 J	1000 J
Total LPAHs	320	69 J	100 J	110 J	86 J	61	44	85 J	200 J
cPAHs	270	48	70	52	79	72 J	38	78 J	100 J
Phthalates (µg/kg DW)									
Butyl benzyl phthalate	19	8.4 J	14 J	12 J	4.3 J	6.0	4.5 J	3.8 J	2.8 J
Dibutyl phthalate	16 U	19 U	19 U	20 U	19 U	19 U	19 U	19 U	20 U
Di-n-octyl phthalate	16 U	19 U	19 U	20 U	19 U	19 U	19 U	19 U	20 U
Diethyl phthalate	16 U	19 U	19 U	20 U	19 U	19 U	19 U	19 U	20 U
Dimethyl phthalate	4.0 U	26	4.7 U	71	4.7 U	4.8 U	4.8 U	4.8 U	4.9 U
Bis(2-ethylhexyl)phthalate	280	150	190 U	91 U	73	78	70	89	75

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS5005-A	LDW-SS6146-A	LDW-SS6146-D	LDW-SS6146-U	LDW-SSBDC2-A	LDW-SSBDC2-A-2	LDW-SSBDC2-D	LDW-SSBDC2-U	LDW-SSBDC3-D
Phenols (µg/kg DW)									
2,4,5-Trichlorophenol	81 U	94 U	94 U	98 U	94 U	96 U	95 U	95 U	98 U
2,4,6-Trichlorophenol	81 U	94 U	94 U	98 U	94 U	96 U	95 U	95 U	98 U
2,4-Dichlorophenol	81 U	94 U	94 U	98 U	94 UJ	96 UJ	95 UJ	95 UJ	98 UJ
2,4-Dimethylphenol	4.0 U	4.7 UJ	3.1 J	4.9 UJ	4.7 U	4.8 U	4.8 U	4.8 U	4.9 U
2,4-Dinitrophenol	170 U	200 U	200 U	210 U	200 U	200 U	200 U	200 U	210 U
2-Chlorophenol	16 U	19 U	19 U	20 U	19 U	19 U	19 U	19 U	20 U
2-Nitrophenol	81 U	94 U	94 U	98 U	94 U	96 U	95 U	95 U	98 U
4,6-Dinitro-2-Methylphenol	160 U	190 U	190 U	200 U	190 U	190 U	190 U	190 U	200 U
4-Chloro-3-methylphenol	81 U	94 U	94 U	98 U	94 U	96 U	95 U	95 U	98 U
2-Methylphenol	4.0 U	4.7 U	3.6 J	4.9 U	4.7 U	4.8 U	4.8 U	4.8 U	4.9 U
4-Methylphenol	16	83	180	21	10 J	12 J	19 U	9.5 J	26
4-Nitrophenol	81 U	94 U	94 U	98 U	94 U	96 U	95 U	95 U	98 U
Pentachlorophenol	12 J	23 UJ	24 U	24 UJ	24 UJ	24 UJ	24 UJ	24 UJ	24 UJ
Phenol	56	35	130	24	16 J	17 J	15 J	23	26
Other SVOCs (µg/kg DW)									
Benzoic Acid	140 J	150 J	370	180 J	220	240	240	280	180 J
Benzyl Alcohol	110	160 J	240	170 J	140	150	200	230	120
4-Bromophenyl phenyl ether	16 U	19 U	19 U	20 U	19 UJ	19 UJ	19 UJ	19 UJ	20 UJ
Carbazole	29	5.6 J	19 U	8.8 J	14 J	13 J	19 U	13 J	16 J
Bis(2-chloro-1-methylethyl) ether	16 U	19 U	19 U	20 U	19 U	19 U	19 U	19 U	20 U
4-Chloroaniline	81 U	94 U	94 U	98 U	94 U	96 U	95 U	95 U	98 UJ
2-Chloronaphthalene	16 U	19 U	19 U	20 U	19 U	19 U	19 U	19 U	20 U
Bis(2-Chloroethoxy)Methane	16 U	19 U	19 U	20 U	19 U	19 U	19 U	19 U	20 U
Bis(2-Chloroethyl)Ether	16 U	19 U	19 U	20 U	19 U	19 U	19 U	19 U	20 U
4-Chlorophenyl-phenylether	16 U	19 U	19 U	20 U	19 UJ	19 UJ	19 UJ	19 UJ	20 UJ
1,2-Dichlorobenzene	4.0 U	4.7 U	4.7 U	4.9 U	4.7 U	4.8 U	4.8 U	4.8 U	4.9 U
1,3-Dichlorobenzene	16 U	19 U	19 U	20 U	19 U	19 U	19 U	19 U	20 U
1,4-Dichlorobenzene	4.0 U	4.7 U	4.7 U	4.9 U	4.7 U	4.8 U	4.8 U	4.8 U	4.9 U
3,3'-Dichlorobenzidine	81 U	94 U	94 U	98 U	94 U	96 U	95 U	95 U	R
2,4-Dinitrotoluene	81 U	94 U	94 U	98 U	94 U	96 U	95 U	95 U	98 U
2,6-Dinitrotoluene	81 U	94 U	94 U	98 U	94 U	96 U	95 U	95 U	98 U
Hexachlorobenzene	4.0 U	4.7 U	4.7 U	4.9 U	4.7 U	4.8 U	4.8 U	4.8 U	4.9 U
Hexachlorobutadiene	4.0 U	4.7 U	4.7 U	4.9 U	4.7 U	4.8 U	4.8 U	4.8 U	4.9 U
Hexachlorocyclopentadiene	81 U	94 UJ	94 U	98 UJ	94 UJ	96 UJ	95 UJ	95 UJ	R
Hexachloroethane	16 U	19 U	19 U	20 U	19 U	19 U	19 U	19 U	20 U
Isophorone	16 U	19 U	19 U	20 U	19 U	19 U	19 U	19 U	20 U
2-Nitroaniline	81 U	94 U	94 U	98 U	94 U	96 U	95 U	95 U	98 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SS5005-A	LDW-SS6146-A	LDW-SS6146-D	LDW-SS6146-U	LDW-SSBDC2-A	LDW-SSBDC2-A-2	LDW-SSBDC2-D	LDW-SSBDC2-U	LDW-SSBDC3-D
4-Nitroaniline	81 U	94 U	94 U	98 U	94 U	96 U	95 U	95 U	98 U
3-Nitroaniline	81 U	94 U	94 U	98 U	94 U	96 U	95 U	95 U	98 U
Nitrobenzene	16 U	19 U	19 U	20 U	19 U	19 U	19 U	19 U	20 U
N-Nitrosodiphenylamine	4.0 U	4.7 U	4.7 U	4.9 U	4.7 U	4.8 U	4.8 U	4.8 U	4.9 U
N-Nitrosodi-n-propylamine	4.0 U	4.7 U	4.7 U	4.9 U	4.7 U	4.8 U	4.8 U	4.8 U	4.9 U
1,2,4-Trichlorobenzene	4.0 U	4.7 U	4.7 U	4.9 U	4.7 U	4.8 U	4.8 U	4.8 U	4.9 U
Aniline	100 U	120 UJ	120 U	130 UJ	120 U	120 U	120 U	120 U	R
N-Nitrosodimethylamine	20 U	23 U	24 U	24 U	24 U	24 U	24 U	24 U	24 U
PCB Aroclors (µg/kg DW)									
Aroclor 1016	3.9 U	4.0 U	4.0 U	3.9 U	4.0 U	4.0 U	3.9 U	3.9 U	3.9 U
Aroclor 1221	3.9 U	4.0 U	4.0 U	3.9 U	4.0 U	4.0 U	3.9 U	3.9 U	3.9 U
Aroclor 1232	3.9 U	4.0 U	4.0 U	3.9 U	4.0 U	4.0 U	3.9 U	3.9 U	7.8 U
Aroclor 1242	3.9 U	4.0 U	4.0 U	3.9 U	4.0 U	4.0 U	3.9 U	3.9 U	3.9 U
Aroclor 1248	31	15	4.9	19	11	8.0 U	3.9 U	7.8 U	3.9 U
Aroclor 1254	42	20	4.6	26	10	12	3.9 U	7.8	3.9 U
Aroclor 1260	21	19	4.7	17	5.3	7.5	3.9 U	5.2	3.9 U
Total PCBs	94	54	14	62	26	20	3.9 U	13	7.8 U
Grain size (% DW)									
Phi Scale <-1	46.6	0.1 U	0.1 U	0.1 U	0.1 U	0.1	0.3	0.3	0.1 U
Phi Scale -1 to 0	5.3	1.2	1.5	1.8	0.6	0.5	1.4	0.9	0.9
Phi Scale 0 to 1	7.1	1.1	1.5	1.9	1.2	1.3	2.6	1.8	0.8
Phi Scale 1 to 2	6.1	0.6	0.9	1.0	3.8	3.6	6.0	5.0	1.4
Phi Scale 2 to 3	2.1	1.9	2.0	2.2	11.2	11.3	10.5	13.9	7.7
Phi Scale 3 to 4	1.2	11.8	10.9	10.5	25.8	25.3	18.4	20.6	28.8
Phi Scale 4 to 5	0.6	18.4	15.1	15.8	24.8	25.9	24.9	23.5	28.2
Phi Scale 5 to 6	5.7	16.7	17.8	17.4	10.4	11.0	11.0	11.6	12.1
Phi Scale 6 to 7	7.3	16.0	16.0	17.3	8.2	7.8	9.2	8.1	7.4
Phi Scale 7 to 8	6.3	12.2	12.2	12.5	4.9	4.9	5.5	4.8	4.6
Phi Scale 8 to 9	4.1	6.8	7.1	6.7	3.4	2.9	4.2	3.8	3.4
Phi Scale 9 to 10	2.4	4.8	5.3	4.6	2.1	2.1	2.5	2.3	2.1
Phi Scale >10	5.1	8.5	9.7	8.3	3.5	3.4	3.5	3.3	2.8
Total Clay (<0.004 mm - 0.004 mm)	11.6	20.1	22.1	19.6	9.0	8.4	10.2	9.4	8.3
Total Silt (0.06 mm - 0.004 mm)	19.9	63.3	61.1	63.0	48.3	49.6	50.6	48.0	52.3
Total Fines (Silt/Clay)	31.6	83.4	83.1	82.6	57.3	57.9	60.8	57.5	60.5
Total Sand (<2.0 mm - 0.06 mm)	21.8	16.6	16.8	17.4	42.6	42.0	38.9	42.2	39.6
Total Gravel (>2.0 mm)	46.6	0.1 U	0.1 U	0.1 U	0.1 U	0.1	0.3	0.3	0.1 U
Conventionals									
Total Organic Carbon (% DW)	2.98	3.43	2.94	2.78	1.28	1.77	2.23	2.35	1.66
Total Solids (% WW)	66.40	46.60	47.00	46.10	54.30	54.30	51.20	51.60	54.90

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SSBDC3-U	LDW-SSBDC4-A	LDW-SSBRSTSD-A	LDW-SSBRSTSD-D	LDW-SSBRSTSD-U	LDW-SSPSF-A	LDW-SSPSF-D	LDW-SSPSF-U
Metals (mg/kg DW)								
Arsenic	13	11	20	20	20	20	20	20
Cadmium	0.4	0.4	0.6	0.6	0.6	0.4 U	0.4	0.5
Chromium	24.4	23.8	33	31	32	27	28	30
Copper	29.3	28.8	56.1	66.1	112	53.7	47.5	49.5
Lead	12	13	22	39	19	27	18	21
Mercury	0.06	0.06	0.14	0.16	0.10	0.12	0.11	0.10
Silver	0.6 U	0.5 U	0.6 U	0.6 U	0.7 U	0.7 U	0.6 U	0.6 U
Zinc	73	72	117	131	135	106	99	116
PAHs (µg/kg DW)								
Acenaphthene	13 J	100	32	160	50	130	19 J	62
Acenaphthylene	19 U	19 U	19 U	20 U	47	17 J	20 U	19
Anthracene	16 J	130	43	72	170	95	23	70
Benzo(a)anthracene	100	320	160	150	580	400	70	240
Benzofluoranthene	200	480	200	270	1600	580	140	370
Benzo(g,h,i)perylene	39	130	150	67	520	56	16 J	77
Benzo(a)pyrene	63	240	180	130	790	190	46	150
Chrysene	130	360	190	300	1700	550	79	430
Dibenzo(a,h)anthracene	14 J	47	60	23	200	26	7.4	29
Dibenzofuran	19 U	25	26	160	43	86	20 U	69
Fluoranthene	240	810	320	720	770	1600	200	780
Fluorene	19 U	66	30	270	67	100	17 J	65
Indeno(1,2,3-cd)pyrene	39	130	60	56	470	60	18 J	75
1-Methylnaphthalene	19 U	19 U	17 J	50	15 J	19 J	20 U	14 J
2-Methylnaphthalene	19 U	19 U	35	29	23	16 J	20 U	13 J
Naphthalene	19 U	19 U	29	28	28	25	20 U	20
Phenanthrene	65	550	160	760	360	480	73	540
Pyrene	230	800	260	440	450	1200	150	570
Total HPAHs	1100 J	3300	1600	2200	7100	4700	730 J	2700
Total LPAHs	94 J	850	290	1300	720	850 J	130 J	780
cPAHs	100 J	360	250	190	1200	310	73 J	230
Phthalates (µg/kg DW)								
Butyl benzyl phthalate	3.8 J	6.6	18 J	18 J	24	40	8.4	25 J
Dibutyl phthalate	19 U	19 U	19 U	11 J	33	20 U	20 U	19 U
Di-n-octyl phthalate	19 U	19 U	19 U	20 U	19 U	20 U	20 U	19 U
Diethyl phthalate	19 U	19 U	19 U	20 U	19 U	14 J	20 U	19 U
Dimethyl phthalate	4.8 U	4.8 U	4.8 U	4.9 U	4.8 U	4.9 U	5.0 U	24
Bis(2-ethylhexyl)phthalate	66	69	160 U	150 U	590	170	63	110

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SSBDC3-U	LDW-SSBDC4-A	LDW-SSBRSTSD-A	LDW-SSBRSTSD-D	LDW-SSBRSTSD-U	LDW-SSPSF-A	LDW-SSPSF-D	LDW-SSPSF-U
Phenols (µg/kg DW)								
2,4,5-Trichlorophenol	97 U	95 U	96 U	98 U	97 U	98 U	99 U	95 U
2,4,6-Trichlorophenol	97 U	95 U	96 U	98 U	97 U	98 U	99 U	95 U
2,4-Dichlorophenol	97 UJ	95 UJ	96 U	98 U	97 U	98 U	99 U	95 U
2,4-Dimethylphenol	4.8 U	4.8 U	4.8 U	4.9 U	4.8 U	4.9 U	5.0 U	4.7 U
2,4-Dinitrophenol	210 U	200 U	210 UJ	210 UJ	210 UJ	210 U	210 U	R
2-Chlorophenol	19 U	19 U	19 U	20 U	19 U	20 U	20 U	19 U
2-Nitrophenol	97 U	95 U	96 U	98 U	97 U	98 U	99 U	95 U
4,6-Dinitro-2-Methylphenol	190 U	190 U	190 U	200 U	190 U	200 U	200 U	190 U
4-Chloro-3-methylphenol	97 U	95 U	96 U	98 U	97 U	98 U	99 U	95 U
2-Methylphenol	4.8 U	4.8 U	4.8 U	4.9 U	4.8 U	4.9 U	5.0 U	4.7 U
4-Methylphenol	19 U	19 U	320	240	270	210	110	330
4-Nitrophenol	97 U	95 U	96 U	98 U	97 U	98 U	99 U	95 U
Pentachlorophenol	24 UJ	24 UJ	24 U	24 U	24 U	15 J	25 U	24 U
Phenol	11 J	12 J	150	99	120	200	86	60
Other SVOCs (µg/kg DW)								
Benzoic Acid	190 U	190 U	350	400	550	140 J	160 J	210
Benzyl Alcohol	30	28	320	630	410	150	170	150 J
4-Bromophenyl phenyl ether	19 UJ	19 UJ	19 U	20 U	19 U	20 U	20 U	19 U
Carbazole	14 J	41	18 J	180	160	32	20 U	47
Bis(2-chloro-1-methylethyl) ether	19 U	19 U	19 U	20 U	19 U	20 U	20 U	19 U
4-Chloroaniline	97 U	95 U	96 U	98 U	97 U	98 U	99 U	95 U
2-Chloronaphthalene	19 U	19 U	19 U	20 U	19 U	20 U	20 U	19 U
Bis(2-Chloroethoxy)Methane	19 U	19 U	19 U	20 U	19 U	20 U	20 U	19 U
Bis(2-Chloroethyl)Ether	19 U	19 U	19 U	20 U	19 U	20 U	20 U	19 U
4-Chlorophenyl-phenylether	19 UJ	19 UJ	19 U	20 U	19 U	20 U	20 U	19 U
1,2-Dichlorobenzene	4.8 U	4.8 U	4.8 U	4.9 U	4.8 U	4.9 U	5.0 U	4.7 U
1,3-Dichlorobenzene	19 U	19 U	19 U	20 U	19 U	20 U	20 U	19 U
1,4-Dichlorobenzene	4.8 U	4.8 U	4.8 U	4.9 U	4.8 U	4.9 U	5.0 U	4.7 U
3,3'-Dichlorobenzidine	97 U	95 U	96 U	98 U	97 U	98 U	99 U	95 U
2,4-Dinitrotoluene	97 U	95 U	96 U	98 U	97 U	98 U	99 U	95 U
2,6-Dinitrotoluene	97 U	95 U	96 U	98 U	97 U	98 U	99 U	95 U
Hexachlorobenzene	4.8 U	4.8 U	29	6.6	4.8 U	4.9 U	5.0 U	4.7 U
Hexachlorobutadiene	4.8 U	4.8 U	4.8 U	4.9 U	4.8 U	4.9 U	5.0 U	4.7 U
Hexachlorocyclopentadiene	97 UJ	95 UJ	96 U	98 U	97 U	98 U	99 U	95 U
Hexachloroethane	19 U	19 U	19 U	20 U	19 U	20 U	20 U	19 U
Isophorone	19 U	19 U	19 U	20 U	19 U	20 U	20 U	19 U
2-Nitroaniline	97 U	95 U	96 U	98 U	97 U	98 U	99 U	95 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SSBDC3-U	LDW-SSBDC4-A	LDW-SSBRSTSD-A	LDW-SSBRSTSD-D	LDW-SSBRSTSD-U	LDW-SSPSF-A	LDW-SSPSF-D	LDW-SSPSF-U
4-Nitroaniline	97 U	95 U	96 U	98 U	97 U	98 U	99 U	95 U
3-Nitroaniline	97 U	95 U	96 U	98 U	97 U	98 U	99 U	95 U
Nitrobenzene	19 U	19 U	19 U	20 U	19 U	20 U	20 U	19 U
N-Nitrosodiphenylamine	4.8 U	4.8 U	4.8 U	4.9 U	4.8 U	4.9 U	5.0 U	4.7 U
N-Nitrosodi-n-propylamine	4.8 U	4.8 U	4.8 U	4.9 U	4.8 U	4.9 U	5.0 U	4.7 U
1,2,4-Trichlorobenzene	4.8 U	4.8 U	4.8 U	4.9 U	4.8 U	4.9 U	5.0 U	4.7 U
Aniline	130 U	120 U	120 U	130 U	130 U	130 U	130 U	120 U
N-Nitrosodimethylamine	24 U	24 U	24 U	24 U	24 U	25 U	25 U	24 U
PCB Aroclors (µg/kg DW)								
Aroclor 1016	3.9 U	4.0 U	3.9 U	3.9 U	4.0 U	3.9 U	4.0 U	3.9 U
Aroclor 1221	3.9 U	4.0 U	3.9 U	3.9 U	4.0 U	3.9 U	4.0 U	3.9 U
Aroclor 1232	3.9 U	4.0 U	3.9 U	3.9 U	4.0 U	3.9 U	4.0 U	3.9 U
Aroclor 1242	3.9 U	4.0 U	3.9 U	3.9 U	4.0 U	3.9 U	4.0 U	3.9 U
Aroclor 1248	25	5.9 U	32	28	26	22	12	35
Aroclor 1254	27	9.7	42	35	40	34	18	88
Aroclor 1260	14	6.8	41	21	38	28	16	35
Total PCBs	66	17	120	84	100	84	46	160
Grain size (% DW)								
Phi Scale <-1	0.3	0.4	0.1	2.5	2.2	17.7	3.5	0.4
Phi Scale -1 to 0	0.9	1.2	2.9	2.0	3.5	4.0	2.4	1.2
Phi Scale 0 to 1	1.9	2.2	3.4	2.1	3.0	2.3	1.6	1.3
Phi Scale 1 to 2	5.0	7.1	4.9	3.6	4.5	3.2	2.3	2.8
Phi Scale 2 to 3	12.4	13.0	4.1	5.3	4.2	3.9	4.7	6.0
Phi Scale 3 to 4	25.6	22.1	9.4	10.9	7.6	7.4	17.2	19.9
Phi Scale 4 to 5	22.2	20.4	11.7	10.8	11.9	7.7	16.4	16.2
Phi Scale 5 to 6	9.8	10.0	16.6	15.8	16.8	13.3	12.0	12.1
Phi Scale 6 to 7	7.3	7.3	17.0	16.6	15.9	15.2	13.8	13.6
Phi Scale 7 to 8	5.4	5.6	12.1	11.9	12.3	8.7	10.0	10.4
Phi Scale 8 to 9	3.8	4.1	6.6	6.6	7.2	5.7	6.7	6.0
Phi Scale 9 to 10	2.2	2.6	3.5	3.8	3.5	4.0	2.9	3.6
Phi Scale >10	3.3	4.1	7.8	8.0	7.4	6.8	6.4	6.6
Total Clay (<0.004 mm - 0.004 mm)	9.3	10.8	17.9	18.4	18.1	16.5	16.0	16.2
Total Silt (0.06 mm - 0.004 mm)	44.7	43.3	57.4	55.1	56.9	44.9	52.2	52.3
Total Fines (Silt/Clay)	54.0	54.1	75.2	73.5	74.9	61.4	68.3	68.5
Total Sand (<2.0 mm - 0.06 mm)	45.8	45.6	24.7	23.9	22.8	20.8	28.2	31.2
Total Gravel (>2.0 mm)	0.3	0.4	0.1	2.5	2.2	17.7	3.5	0.4
Conventionals								
Total Organic Carbon (% DW)	1.63	1.60	2.50	2.07	2.35	1.90	3.01	1.88
Total Solids (% WW)	53.40	53.70	45.40	46.30	42.20	49.60	50.80	49.50

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SSPSF-U-2	LDW-SSRVSTSD-A	LDW-SSRVSTSD-D	LDW-SSRWSD-A	LDW-SSRWSD-A-2	LDW-SSRWSD-Ab	LDW-SSSP1-A	LDW-SSSP1-D
Metals (mg/kg DW)								
Arsenic	10	14	21	8	7	7 J	8	9
Cadmium	0.5	0.3	0.4	0.2 U	0.2 U	0.3 U	0.3 U	0.3 U
Chromium	30	23.7	29.4	16.4	12.3	12.7	24.7	15.6
Copper	52.2	56.2	53.1	14.3	13.5	11.9 J	15.3	19.2
Lead	20	33	131	5	4	3 J	8	10
Mercury	0.10	0.08	0.10	0.03 U	0.03	0.03 U	0.03 U	0.03 U
Silver	0.6 U	0.5 U	0.5 U	0.3 U	0.3 U	0.4 U	0.4 U	0.4 U
Zinc	106	129	106	51	48	41 J	56	65
PAHs (µg/kg DW)								
Acenaphthene	940	18 U	19 U	18 U	19 U	19 U	16 U	17 U
Acenaphthylene	180	12 J	19 U	18 U	19 U	19 U	16 U	17 U
Anthracene	630	46	22	18 U	19 U	19 U	16 U	17 U
Benzo(a)anthracene	720	340	64	18 U	19 U	19 U	16 U	26
Benzofluoranthene	1400	400	130	18 U	19 U	19 U	16 U	30
Benzo(g,h,i)perylene	200	85	44	18 U	19 U	19 U	16 U	9.9 J
Benzo(a)pyrene	410	240	66	18 U	19 U	19 U	16 U	17
Chrysene	1800	380	95	18 U	19 U	19 U	16 U	25
Dibenzo(a,h)anthracene	71	30	10	4.5 U	4.8 U	4.6 U	3.9 U	4.1 U
Dibenzofuran	1200	10 J	19 U	18 U	19 U	19 U	16 U	17 U
Fluoranthene	6400	390	170	18 U	19 U	19 U	7.7 J	32
Fluorene	1100	15 J	19 U	18 U	19 U	19 U	16 U	17 U
Indeno(1,2,3-cd)pyrene	210	72	34	18 U	19 U	19 U	16 U	17 U
1-Methylnaphthalene	210	11 J	19 U	18 U	19 U	19 U	16 U	17 U
2-Methylnaphthalene	85	18	11 J	18 U	19 U	19 U	16 U	17 U
Naphthalene	21	42	19 U	18 U	19 U	19 U	16 U	17 U
Phenanthrene	9200	90	49	11 J	33	19 U	16 U	17 U
Pyrene	4800	460	150	18 U	9.7 J	19 U	7.7 J	15 J
Total HPAHs	16000	2400	760	18 U	9.7 J	19 U	15 J	150 J
Total LPAHs	12000	210 J	71	11 J	33	19 U	16 U	17 U
cPAHs	690	340	94	13 U	13 U	13 U	11 U	25
Phthalates (µg/kg DW)								
Butyl benzyl phthalate	23 J	20 J	20 J	4.5 U	4.8 U	4.6 U	4.2 J	14 J
Dibutyl phthalate	19 U	32	19 U	18 U	19 U	19 U	16 U	17 U
Di-n-octyl phthalate	19 U	18 U	19 U	18 U	19 U	19 U	16 U	17 U
Diethyl phthalate	19 U	18 U	19 U	18 U	19 U	19 U	16 U	17 U
Dimethyl phthalate	5.9	4.6 U	4.8 U	4.5 U	3.1 J	4.6 U	3.9 U	4.1 U
Bis(2-ethylhexyl)phthalate	100	250	280	18 U	19 U	9.3 J	15 J	16 J

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SSPSF-U-2	LDW-SSRVSTSD-A	LDW-SSRVSTSD-D	LDW-SSRWSD-A	LDW-SSRWSD-A-2	LDW-SSRWSD-Ab	LDW-SSSP1-A	LDW-SSSP1-D
Phenols (µg/kg DW)								
2,4,5-Trichlorophenol	95 U	92 U	96 U	90 U	97 U	93 U	77 U	83 U
2,4,6-Trichlorophenol	95 U	92 U	96 U	90 U	97 U	93 U	77 U	83 U
2,4-Dichlorophenol	95 U	92 U	96 U	90 U	97 U	93 U	77 U	83 U
2,4-Dimethylphenol	4.7 U	6.2	4.8 U	4.5 U	4.8 U	4.6 U	3.9 U	4.1 U
2,4-Dinitrophenol	200 UJ	200 UJ	210 UJ	190 U	210 U	200 UJ	160 UJ	180 UJ
2-Chlorophenol	19 U	18 U	19 U	18 U	19 U	19 U	16 U	17 U
2-Nitrophenol	95 U	92 U	96 U	90 U	97 U	93 U	77 U	83 U
4,6-Dinitro-2-Methylphenol	190 U	180 U	190 U	180 U	190 U	190 U	160 U	170 U
4-Chloro-3-methylphenol	95 U	92 U	96 U	90 U	97 U	93 U	77 U	83 U
2-Methylphenol	4.7 U	4.6 U	4.8 U	4.5 U	4.8 U	4.6 U	3.9 U	4.1 U
4-Methylphenol	330	120	310	18 U	19 U	19 U	16 U	17 U
4-Nitrophenol	95 U	92 U	96 U	90 U	97 U	93 U	77 U	83 U
Pentachlorophenol	24 U	50 J	24 U	23 UJ	24 UJ	23 U	19 U	21 U
Phenol	52	160	210	18 U	19 U	19 U	16 U	17 U
Other SVOCs (µg/kg DW)								
Benzoic Acid	220	66 J	92 J	180 U	190 U	190 U	160 U	170 U
Benzyl Alcohol	140 J	68	92	4.5 U	4.8 U	4.6 U	6.1	2.5 J
4-Bromophenyl phenyl ether	19 U	18 U	19 U	18 U	19 U	19 UJ	16 U	17 U
Carbazole	610	13 J	19 U	18 U	19 U	19 U	16 U	17 U
Bis(2-chloro-1-methylethyl) ether	19 U	18 U	19 U	18 U	19 U	19 U	16 U	17 U
4-Chloroaniline	95 U	92 U	96 U	90 U	97 U	93 UJ	77 U	83 U
2-Chloronaphthalene	19 U	18 U	19 U	18 U	19 U	19 U	16 U	17 U
Bis(2-Chloroethoxy)Methane	19 U	18 U	19 U	18 U	19 U	19 U	16 U	17 U
Bis(2-Chloroethyl)Ether	19 U	18 U	19 U	18 U	19 U	19 U	16 U	17 U
4-Chlorophenyl-phenylether	19 U	18 U	19 U	18 U	19 U	19 UJ	16 U	17 U
1,2-Dichlorobenzene	4.7 U	4.6 U	4.8 U	4.5 U	4.8 U	4.6 U	3.9 U	4.1 U
1,3-Dichlorobenzene	19 U	18 U	19 U	18 U	19 U	19 U	16 U	17 U
1,4-Dichlorobenzene	4.7 U	4.6 U	4.8 U	4.5 U	4.8 U	4.6 U	3.9 U	4.1 U
3,3'-Dichlorobenzidine	95 U	92 U	96 U	90 U	97 U	93 U	77 U	83 U
2,4-Dinitrotoluene	95 U	92 U	96 U	90 U	97 U	93 U	77 U	83 U
2,6-Dinitrotoluene	95 U	92 U	96 U	90 U	97 U	93 U	77 U	83 U
Hexachlorobenzene	4.7 U	4.6 U	4.8 U	4.5 U	4.8 U	4.6 U	3.9 U	4.1 U
Hexachlorobutadiene	4.7 U	4.6 U	4.8 U	4.5 U	4.8 U	4.6 U	3.9 U	4.1 U
Hexachlorocyclopentadiene	95 U	92 U	96 U	90 UJ	97 UJ	93 U	77 U	83 UJ
Hexachloroethane	19 U	18 U	19 U	18 U	19 U	19 U	16 U	17 U
Isophorone	19 U	18 U	19 U	18 U	19 U	19 U	16 U	17 U
2-Nitroaniline	95 U	92 U	96 U	90 U	97 U	93 U	77 U	83 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SSPSF-U-2	LDW-SSRVSTSD-A	LDW-SSRVSTSD-D	LDW-SSRWSD-A	LDW-SSRWSD-A-2	LDW-SSRWSD-Ab	LDW-SSSP1-A	LDW-SSSP1-D
4-Nitroaniline	95 U	92 UJ	96 UJ	90 U	97 U	93 U	77 UJ	83 UJ
3-Nitroaniline	95 U	92 UJ	96 UJ	90 U	97 U	93 U	77 UJ	83 UJ
Nitrobenzene	19 U	18 U	19 U	18 U	19 U	19 U	16 U	17 U
N-Nitrosodiphenylamine	4.7 U	4.8	4.8 U	4.5 U	4.8 U	4.6 U	3.9 U	4.1 U
N-Nitrosodi-n-propylamine	4.7 U	4.6 U	4.8 U	4.5 U	4.8 U	4.6 U	3.9 U	4.1 U
1,2,4-Trichlorobenzene	4.7 U	4.6 U	4.8 U	4.5 U	4.8 U	4.6 U	3.9 U	4.1 U
Aniline	120 U	120 U	120 U	120 UJ	130 UJ	120 U	100 U	110 U
N-Nitrosodimethylamine	24 U	23 U	24 U	23 U	24 U	23 U	19 U	21 U
PCB Aroclors (µg/kg DW)								
Aroclor 1016	3.9 U	3.9 U	3.9 U	3.9 U	3.8 U	4.0 U	3.9 U	3.9 U
Aroclor 1221	3.9 U	3.9 U	3.9 U	3.9 U	3.8 U	4.0 U	3.9 U	3.9 U
Aroclor 1232	3.9 U	3.9 U	3.9 U	3.9 U	3.8 U	4.0 U	3.9 U	3.9 U
Aroclor 1242	3.9 U	3.9 U	3.9 U	3.9 U	3.8 U	4.0 U	3.9 U	3.9 U
Aroclor 1248	22	24 U	34	3.9 U	3.8 U	4.0 U	3.9 U	3.9 U
Aroclor 1254	57	53	45	3.9 U	3.8 U	4.0 U	9.0	29
Aroclor 1260	23	32	33	3.9 U	3.8 U	4.0 U	3.9 U	3.9 U
Total PCBs	100	85	110	3.9 U	3.8 U	4.0 U	9.0	29
Grain size (% DW)								
Phi Scale <-1	0.3	26.2	13.4	4.8	4.3	2.4	45.4	39.7
Phi Scale -1 to 0	1.5	5.2	5.6	11.9	13.4	6.1	10.2	9.4
Phi Scale 0 to 1	1.5	5.6	4.0	64.5	63.6	46.1	12.2	11.0
Phi Scale 1 to 2	2.9	16.5	8.7	15.4	15.7	42.7	17.4	20.3
Phi Scale 2 to 3	6.3	11.0	7.1	0.9	0.8	2.2	8.1	12.3
Phi Scale 3 to 4	20.4	10.5	11.0	0.4	0.4	0.1 U	2.6	4.2
Phi Scale 4 to 5	16.6	2.5	6.6	2.1 U	1.8 U	0.4 U	0.5	3.2 U
Phi Scale 5 to 6	11.6	5.1	8.5	2.1 U	1.8 U	0.4 U	1.3	3.2 U
Phi Scale 6 to 7	12.9	5.3	9.9	2.1 U	1.8 U	0.4 U	0.9	3.2 U
Phi Scale 7 to 8	10.1	4.5	8.6	2.1 U	1.8 U	0.4 U	0.6	3.2 U
Phi Scale 8 to 9	5.7	3.1	6.4	2.1 U	1.8 U	0.4 U	0.4	3.2 U
Phi Scale 9 to 10	3.6	1.5	3.3	2.1 U	1.8 U	0.4 U	0.2	3.2 U
Phi Scale >10	6.8	3.0	6.9	2.1 U	1.8 U	0.4 U	0.4	3.2 U
Total Clay (<0.004 mm - 0.004 mm)	16.1	7.6	16.6	2.1 U	1.8 U	0.4 U	1.0	3.2 U
Total Silt (0.06 mm - 0.004 mm)	51.2	17.4	33.6	2.1 U	1.8 U	0.4 U	3.3	3.2 U
Total Fines (Silt/Clay)	67.2	25.1	50.2	2.1	1.8	0.4	4.2	3.2
Total Sand (<2.0 mm - 0.06 mm)	32.6	48.8	36.4	93.1	93.9	97.1	50.5	57.2
Total Gravel (>2.0 mm)	0.3	26.2	13.4	4.8	4.3	2.4	45.4	39.7
Conventionals								
Total Organic Carbon (% DW)	2.54	1.34	1.69	0.488	0.243	0.156	0.663	0.926
Total Solids (% WW)	50.00	62.50	58.90	82.60	86.70	79.30	81.20	72.70

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SSSP1-U	LDW-SSSP2-A	LDW-SSSP2-D	LDW-SSSP2-U	LDW-SSSP3-A	LDW-SSSP3-D	LDW-SSSP3-U	LDW-SSSP5-A	LDW-SSSWCSO-A
Metals (mg/kg DW)									
Arsenic	7	10	9 J	10	30 UJ	10 J	10 J	11	20 J
Cadmium	0.3	0.3 U	0.3 U	0.3 U	1	0.3 U	0.3 U	0.3	0.6
Chromium	19.7	14.4	16.3	15.4	160	18.1	17.2	22.1	33
Copper	16.6	17.1	17.8 J	19.4	334 J	22.4 J	21.9 J	25.6 J	70.2 J
Lead	12	7	7	9	110	9	10	21 J	29 J
Mercury	0.03	0.03 U	0.03 U	0.03 U	0.03	0.05	0.04	0.04	0.18
Silver	0.4 U	0.4 U	0.4 U	0.4 U	2 U	0.4 U	0.4 U	0.5 U	0.6 U
Zinc	68	58	61 J	64	1440 J	64 J	64 J	72 J	119 J
PAHs (µg/kg DW)									
Acenaphthene	16 U	16 U	19 U	16 U	19 U	20 U	19 U	19 U	19 J
Acenaphthylene	16 U	16 U	19 U	16 U	19 U	20 U	19 U	19 U	26 J
Anthracene	16 U	16 U	19 U	16 U	14 J	20 U	19 U	19 U	91
Benzo(a)anthracene	16 U	16 U	19 U	16 U	88	20 U	12 J	28	330
Benzofluoranthene	16 U	10 J	20	16 U	170	23	38	59	580
Benzo(g,h,i)perylene	16 U	16 U	19 U	16 U	63 J	20 U	14 J	26	120
Benzo(a)pyrene	16 U	16 U	19 U	16 U	90	9.9 J	15 J	28	230
Chrysene	16 U	8.8 J	13 J	8.0 J	120	14 J	24	41	560
Dibenzo(a,h)anthracene	4.0 U	4.0 U	4.7 U	4.0 U	19	5.0 U	4.7 U	8.7	46
Dibenzofuran	16 U	16 U	19 U	16 U	19 U	20 U	19 U	19 U	27
Fluoranthene	16 U	12 J	21	11 J	200	30	42	61	780
Fluorene	16 U	16 U	19 U	16 U	19 U	20 U	19 U	19 U	34
Indeno(1,2,3-cd)pyrene	16 U	16 U	19 U	16 U	58 J	20 U	12 J	20	120
1-Methylnaphthalene	16 U	16 U	19 U	16 U	19 U	20 U	19 U	19 U	17 J
2-Methylnaphthalene	16 U	16 U	19 U	16 U	19 U	20 U	19 U	19 U	24
Naphthalene	16 U	16 U	19 U	16 U	19 U	20 U	19 U	19 U	40
Phenanthrene	16 U	16 U	19 U	16 U	99	13 J	21	32	350
Pyrene	16 U	12 J	20 J	11 J	180	28	39	62	660
Total HPAHs	16 U	43 J	74 J	30 J	990 J	100 J	200 J	330	3400
Total LPAHs	16 U	16 U	19 U	16 U	110 J	13 J	21	32	560 J
cPAHs	11 U	11 J	14 J	11 J	130 J	15 J	22 J	43	360
Phthalates (µg/kg DW)									
Butyl benzyl phthalate	6.8 J	6.7 J	8.2	11 J	71	7.4	24	10 J	19
Dibutyl phthalate	16 U	16 U	19 U	16 U	19 U	20 U	19 U	19 U	20 U
Di-n-octyl phthalate	16 U	16 U	11 J	16 U	110	20 U	14 J	19 U	20 U
Diethyl phthalate	16 U	16 U	19 U	16 U	19 U	20 U	19 U	19 U	20 U
Dimethyl phthalate	4.0 U	4.0 U	4.7 U	4.0 U	4.9	5.0 U	4.7 U	3.1 J	5.0 U
Bis(2-ethylhexyl)phthalate	23	19	17 J	16	130	37	31	150 U	170

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SSSP1-U	LDW-SSSP2-A	LDW-SSSP2-D	LDW-SSSP2-U	LDW-SSSP3-A	LDW-SSSP3-D	LDW-SSSP3-U	LDW-SSSP5-A	LDW-SSSWCSO-A
Phenols (µg/kg DW)									
2,4,5-Trichlorophenol	80 U	80 U	94 U	80 U	94 U	99 U	94 U	95 U	100 U
2,4,6-Trichlorophenol	80 U	80 U	94 U	80 U	94 U	99 U	94 U	95 U	100 U
2,4-Dichlorophenol	80 U	80 U	94 U	80 U	94 U	99 U	94 U	95 U	100 U
2,4-Dimethylphenol	4.0 U	4.0 U	4.7 U	4.0 U	4.7 U	5.0 U	4.7 U	4.7 U	6.1
2,4-Dinitrophenol	170 UJ	170 UJ	200 U	170 UJ	200 U	210 U	200 U	200 U	210 UJ
2-Chlorophenol	16 U	16 U	19 U	16 U	19 U	20 U	19 U	19 U	20 U
2-Nitrophenol	80 U	80 U	94 U	80 U	94 U	99 U	94 U	95 U	100 U
4,6-Dinitro-2-Methylphenol	160 U	160 U	190 U	160 U	190 U	200 U	190 U	190 U	200 U
4-Chloro-3-methylphenol	80 U	80 U	94 U	80 U	94 U	99 U	94 U	95 U	100 U
2-Methylphenol	4.0 U	4.0 U	4.7 U	4.0 U	4.7 U	5.0 U	4.7 U	4.7 U	6.9
4-Methylphenol	16 U	16 U	19 U	16 U	52	20 U	19 U	19 U	31
4-Nitrophenol	80 U	80 U	94 U	80 U	94 U	99 U	94 U	95 U	100 U
Pentachlorophenol	20 U	20 U	24 U	20 U	14 J	25 U	24 U	24 U	25 U
Phenol	16 U	12 J	19 U	16 U	26	20 U	12 J	13 J	64
Other SVOCs (µg/kg DW)									
Benzoic Acid	160 U	160 U	52 J	160 U	97 J	51 J	55 J	120 J	470
Benzyl Alcohol	4.0 U	31	13	14	180	41	59	46	270
4-Bromophenyl phenyl ether	16 U	16 U	19 U	16 U	19 U	20 U	19 U	19 U	20 UJ
Carbazole	16 U	16 U	19 U	16 U	14 J	20 U	19 U	19 U	41
Bis(2-chloro-1-methylethyl) ether	16 U	16 U	19 U	16 U	19 U	20 U	19 U	19 U	20 U
4-Chloroaniline	80 U	80 U	94 U	80 U	94 U	99 U	94 U	95 U	100 UJ
2-Chloronaphthalene	16 U	16 U	19 U	16 U	19 U	20 U	19 U	19 U	20 U
Bis(2-Chloroethoxy)Methane	16 U	16 U	19 U	16 U	19 U	20 U	19 U	19 U	20 U
Bis(2-Chloroethyl)Ether	16 U	16 U	19 U	16 U	19 U	20 U	19 U	19 U	20 U
4-Chlorophenyl-phenylether	16 U	16 U	19 U	16 U	19 U	20 U	19 U	19 U	20 UJ
1,2-Dichlorobenzene	4.0 U	4.0 U	4.7 U	4.0 U	4.7 U	5.0 U	4.7 U	4.7 U	5.0 U
1,3-Dichlorobenzene	16 U	16 U	19 U	16 U	19 U	20 U	19 U	19 U	20 U
1,4-Dichlorobenzene	4.0 U	4.0 U	4.7 U	4.0 U	4.7 U	5.0 U	4.7 U	4.7 U	5.0 U
3,3'-Dichlorobenzidine	80 U	80 U	94 U	80 U	94 U	99 U	94 U	95 U	100 U
2,4-Dinitrotoluene	80 U	80 U	94 U	80 U	94 U	99 U	94 U	95 U	100 U
2,6-Dinitrotoluene	80 U	80 U	94 U	80 U	94 U	99 U	94 U	95 U	100 U
Hexachlorobenzene	4.0 U	4.0 U	4.7 U	4.0 U	4.7 U	5.0 U	4.7 U	4.7 U	5.0 U
Hexachlorobutadiene	4.0 U	4.0 U	4.7 U	4.0 U	4.7 U	5.0 U	4.7 U	4.7 U	5.0 U
Hexachlorocyclopentadiene	80 U	80 U	94 U	80 U	94 U	99 U	94 U	95 UJ	100 U
Hexachloroethane	16 U	16 U	19 U	16 U	19 U	20 U	19 U	19 U	20 U
Isophorone	16 U	16 U	19 U	16 U	19 U	20 U	19 U	19 U	20 U
2-Nitroaniline	80 U	80 U	94 U	80 U	94 U	99 U	94 U	95 U	100 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SSSP1-U	LDW-SSSP2-A	LDW-SSSP2-D	LDW-SSSP2-U	LDW-SSSP3-A	LDW-SSSP3-D	LDW-SSSP3-U	LDW-SSSP5-A	LDW-SSSWCSO-A
4-Nitroaniline	80 UJ	80 UJ	94 U	80 UJ	94 U	99 U	94 U	95 U	100 U
3-Nitroaniline	80 UJ	80 UJ	94 U	80 UJ	94 U	99 U	94 U	95 U	100 U
Nitrobenzene	16 U	16 U	19 U	16 U	19 U	20 U	19 U	19 U	20 U
N-Nitrosodiphenylamine	4.0 U	4.0 U	4.7 U	4.0 U	4.7 U	5.0 U	4.7 U	4.7 U	5.0 U
N-Nitrosodi-n-propylamine	4.0 U	4.0 U	4.7 U	4.0 U	4.7 U	5.0 U	4.7 U	4.7 U	5.0 U
1,2,4-Trichlorobenzene	4.0 U	4.0 U	4.7 U	4.0 U	4.7 U	5.0 U	4.7 U	4.7 U	5.0 U
Aniline	100 U	100 U	120 U	100 U	120 U	130 U	120 U	120 U	130 U
N-Nitrosodimethylamine	20 U	20 U	24 U	20 U	24 U	25 U	24 U	3.1 J	25 U
PCB Aroclors (µg/kg DW)									
Aroclor 1016	3.9 U	3.9 U	3.9 U	4.0 U	3.9 U	3.9 U	3.9 U	3.8 U	4.0 U
Aroclor 1221	3.9 U	3.9 U	3.9 U	4.0 U	3.9 U	3.9 U	3.9 U	3.8 U	4.0 U
Aroclor 1232	3.9 U	3.9 U	3.9 U	4.0 U	3.9 U	3.9 U	3.9 U	3.8 U	4.0 U
Aroclor 1242	3.9 U	3.9 U	3.9 U	4.0 U	3.9 U	3.9 U	3.9 U	3.8 U	4.0 U
Aroclor 1248	73	3.9 U	3.9 U	4.0 U	5.9 U	3.9 U	5.5	5.7 U	33
Aroclor 1254	100	8.5	7.7	10	22	6.6	8.4	16	51
Aroclor 1260	22	3.9 U	5.8	7.2	9.7	9.5	9.7	20	34
Total PCBs	200	8.5	14	17	32	16	24	36	120
Grain size (% DW)									
Phi Scale <-1	37.9	32.7	26.6	45.7	77.6	53.9	45.9	24.2	0.3
Phi Scale -1 to 0	9.0	12.7	11.9	10.5	9.8	7.5	8.4	12.5	5.0
Phi Scale 0 to 1	9.7	15.1	14.3	10.2	5.5	6.1	7.6	11.4	2.0
Phi Scale 1 to 2	14.7	17.0	16.0	12.0	3.3	6.3	8.7	10.2	2.0
Phi Scale 2 to 3	15.7	14.2	15.7	10.9	2.5	7.5	9.6	9.8	2.2
Phi Scale 3 to 4	7.0	4.9	5.1	4.7	1.2	4.2	5.1	7.0	5.6
Phi Scale 4 to 5	0.7	3.3 U	4.1	0.8	0.1 U	4.3	2.4	6.6	6.9
Phi Scale 5 to 6	1.5	3.3 U	1.5	1.5	0.1 U	2.4	3.0	6.1	13.2
Phi Scale 6 to 7	1.2	3.3 U	1.1	1.0	0.1 U	2.2	2.8	4.7	17.7
Phi Scale 7 to 8	0.8	3.3 U	1.1	0.8	0.1 U	1.8	2.4	2.8	15.8
Phi Scale 8 to 9	0.6	3.3 U	0.9	0.7	0.1 U	1.5	1.7	1.9	9.8
Phi Scale 9 to 10	0.4	3.3 U	0.6	0.5	0.1 U	0.9	1.0	1.2	7.3
Phi Scale >10	0.8	3.3 U	1.0	0.8	0.1 U	1.4	1.6	1.4	12.2
Total Clay (<0.004 mm - 0.004 mm)	1.8	3.3 U	2.5	2.0	0.1 U	3.8	4.3	4.5	29.3
Total Silt (0.06 mm - 0.004 mm)	4.2	3.3 U	7.8	4.1	0.1 U	10.7	10.6	20.2	53.6
Total Fines (Silt/Clay)	5.9	3.3	10.5	6.1	0.1	14.5	14.7	24.8	82.9
Total Sand (<2.0 mm - 0.06 mm)	56.1	63.9	63.0	48.3	22.3	31.6	39.4	50.9	16.8
Total Gravel (>2.0 mm)	37.9	32.7	26.6	45.7	77.6	53.9	45.9	24.2	0.3
Conventionals									
Total Organic Carbon (% DW)	0.553	1.35	1.25	1.05	1.56	0.587	1.75	1.54	2.69
Total Solids (% WW)	75.90	67.10	67.90	67.90	68.30	69.30	69.80	61.10	44.50

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SSSWCSO-A-2	LDW-SSSWCSO-U	LDW-SSUNK-A	LDW-SSUNK-D
Metals (mg/kg DW)				
Arsenic	20	30 J	12	6 U
Cadmium	0.6	0.6	0.2 U	0.3 U
Chromium	31	34	15.5 J	10.9 J
Copper	68.2 J	79.5 J	35.2 J	10.7 J
Lead	29 J	35 J	24	5
Mercury	0.23	0.18	0.04	0.03 U
Silver	0.6 U	0.6 U	0.4 U	0.4 U
Zinc	119 J	143 J	94	31
PAHs (µg/kg DW)				
Acenaphthene	12 J	160	19 U	18 U
Acenaphthylene	19 U	27 J	19 U	18 U
Anthracene	57	440	14 J	18 U
Benzo(a)anthracene	200	870	71	18 U
Benzofluoranthene	340	830	140	18 U
Benzo(g,h,i)perylene	88	130	35	18 U
Benzo(a)pyrene	150	310	66	18 U
Chrysene	260	980	100	18 U
Dibenzo(a,h)anthracene	27	52	13	4.5 U
Dibenzofuran	14 J	66	19 U	18 U
Fluoranthene	430	2900	170	18 U
Fluorene	20	280	19 U	18 U
Indeno(1,2,3-cd)pyrene	80	130	34	18 U
1-Methylnaphthalene	19 U	14 J	19 U	18 U
2-Methylnaphthalene	11 J	23	19 U	18 U
Naphthalene	20	48	19 U	18 U
Phenanthrene	120	2200	55	18 U
Pyrene	350	1800 J	140	18 U
Total HPAHs	1900	8000 J	770	18 U
Total LPAHs	230 J	3200 J	69 J	18 U
cPAHs	230	520	97	13 U
Phthalates (µg/kg DW)				
Butyl benzyl phthalate	14	18	3.0 J	4.5 U
Dibutyl phthalate	19 U	12 J	19 U	18 U
Di-n-octyl phthalate	19 U	19 U	19 U	18 U
Diethyl phthalate	19 U	19 U	19 U	18 U
Dimethyl phthalate	4.8 U	4.8 U	4.7 U	4.5 U
Bis(2-ethylhexyl)phthalate	140	660	19 U	18 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SSSWCSO-A-2	LDW-SSSWCSO-U	LDW-SSUNK-A	LDW-SSUNK-D
Phenols (µg/kg DW)				
2,4,5-Trichlorophenol	97 U	96 U	94 U	90 U
2,4,6-Trichlorophenol	97 U	96 U	94 U	90 U
2,4-Dichlorophenol	97 U	96 U	94 U	90 U
2,4-Dimethylphenol	4.1 J	6.7	4.7 UJ	4.5 UJ
2,4-Dinitrophenol	210 UJ	200 UJ	R	R
2-Chlorophenol	19 U	19 U	19 U	18 U
2-Nitrophenol	97 U	96 U	94 U	90 U
4,6-Dinitro-2-Methylphenol	190 U	190 U	190 U	180 U
4-Chloro-3-methylphenol	97 U	96 U	94 U	90 U
2-Methylphenol	5.0	6.6	4.7 U	4.5 U
4-Methylphenol	18 J	28	19 U	18 U
4-Nitrophenol	97 U	96 U	94 U	90 U
Pentachlorophenol	24 U	24 U	13 J	23 UJ
Phenol	30	62	13 J	18 U
Other SVOCs (µg/kg DW)				
Benzoic Acid	200	300	38 J	180 U
Benzyl Alcohol	170	240	16 J	8.3 U
4-Bromophenyl phenyl ether	19 UJ	19 UJ	19 U	18 U
Carbazole	21	91	19 U	18 U
Bis(2-chloro-1-methylethyl) ether	19 U	19 U	19 U	18 U
4-Chloroaniline	97 UJ	96 UJ	94 U	90 U
2-Chloronaphthalene	19 U	19 U	19 U	18 U
Bis(2-Chloroethoxy)Methane	19 U	19 U	19 U	18 U
Bis(2-Chloroethyl)Ether	19 U	19 U	19 U	18 U
4-Chlorophenyl-phenylether	19 UJ	19 UJ	19 U	18 U
1,2-Dichlorobenzene	4.8 U	4.8 U	4.7 U	4.5 U
1,3-Dichlorobenzene	19 U	19 U	19 U	18 U
1,4-Dichlorobenzene	4.8 U	4.8 U	4.7 U	4.5 U
3,3'-Dichlorobenzidine	97 U	96 U	94 U	90 U
2,4-Dinitrotoluene	97 U	96 U	94 U	90 U
2,6-Dinitrotoluene	97 U	96 U	94 U	90 U
Hexachlorobenzene	4.8 U	4.8 U	4.7 U	4.5 U
Hexachlorobutadiene	4.8 U	4.8 U	4.7 U	4.5 U
Hexachlorocyclopentadiene	97 U	96 U	94 U	90 U
Hexachloroethane	19 U	19 U	19 U	18 U
Isophorone	19 U	19 U	19 U	18 U
2-Nitroaniline	97 U	96 U	94 U	90 U

Table A–1. LDW Outfall Surface Sediment Sample Results

Chemical	LDW-SSSWCSO-A-2	LDW-SSSWCSO-U	LDW-SSUNK-A	LDW-SSUNK-D
4-Nitroaniline	97 U	96 U	94 U	90 U
3-Nitroaniline	97 U	96 U	94 U	90 U
Nitrobenzene	19 U	19 U	19 U	18 U
N-Nitrosodiphenylamine	4.8 U	15 J	4.7 U	4.5 U
N-Nitrosodi-n-propylamine	4.8 U	4.8 U	4.7 U	4.5 U
1,2,4-Trichlorobenzene	4.8 U	4.8 U	4.7 U	4.5 U
Aniline	130 U	120 U	120 U	120 U
N-Nitrosodimethylamine	24 U	24 U	23 U	23 U
PCB Aroclors (µg/kg DW)				
Aroclor 1016	4.0 U	4.0 U	3.9 U	3.8 U
Aroclor 1221	4.0 U	4.0 U	3.9 U	3.8 U
Aroclor 1232	4.0 U	4.0 U	3.9 U	3.8 U
Aroclor 1242	4.0 U	4.0 U	3.9 U	3.8 U
Aroclor 1248	24	29	17 U	3.8 U
Aroclor 1254	42	43	43	120
Aroclor 1260	32	36	11	14 U
Total PCBs	98	110	54	120
Grain size (% DW)				
Phi Scale <-1	0.3	42.9	0.9	0.2
Phi Scale -1 to 0	3.9	1.7	1.7	2.4
Phi Scale 0 to 1	2.9	1.4	24.0	30.2
Phi Scale 1 to 2	2.4	2.2	40.2	57.1
Phi Scale 2 to 3	2.5	1.5	11.5	7.5
Phi Scale 3 to 4	5.3	1.8	6.1	1.1
Phi Scale 4 to 5	6.3	6.3	3.8	1.3 U
Phi Scale 5 to 6	13.5	6.0	4.1	1.3 U
Phi Scale 6 to 7	19.1	9.0	2.7	1.3 U
Phi Scale 7 to 8	15.4	8.7	1.8	1.3 U
Phi Scale 8 to 9	9.9	6.0	1.2	1.3 U
Phi Scale 9 to 10	6.7	4.3	0.7	1.3 U
Phi Scale >10	11.8	8.0	1.3	1.3 U
Total Clay (<0.004 mm - 0.004 mm)	28.4	18.3	3.2	1.3 U
Total Silt (0.06 mm - 0.004 mm)	54.3	30.0	12.4	1.3 U
Total Fines (Silt/Clay)	82.7	48.3	15.6	1.3
Total Sand (<2.0 mm - 0.06 mm)	17.0	8.6	83.5	98.3
Total Gravel (>2.0 mm)	0.3	42.9	0.9	0.2
Conventionals				
Total Organic Carbon (% DW)	2.18	1.20	1.22	0.225
Total Solids (% WW)	44.00	48.10	78.30	73.00

Table A–2. LDW Outfall Surface Sediment Sample Results for Dioxins/Furans (ng TEQ/kg dw)

Chemical	LDW-SS2008-A	LDW-SS2013-A	LDW-SS2021-A	LDW-SS2022-A	LDW-SS2022-A-2	LDW-SS2022-D	LDW-SS2035-A	LDW-SS2036-A	LDW-SS2040-A	LDW-SS2082-U
2,3,7,8-TCDD	0.428 J	0.292 J	0.081 U	0.357 J	0.306 U	0.401 U	0.306 U	0.382 U	0.058 U	0.44 J
1,2,3,7,8-PECDD	1.07 J	1.87 J	0.226 U	0.866 J	0.926 J	1.01 J	0.784 J	0.836 J	0.068 J	1.1 J
1,2,3,4,7,8-HXCDD	1.77 J	4.04 J	0.323 J	1.53 J	1.71 J	1.62 J	1.38 J	1.32 J	0.143 U	2.03 J
1,2,3,6,7,8-HXCDD	7.77	11.3	1.1 J	5.51	5.13 J	5.99 J	4.82 J	5.62 J	0.779 J	6.36
1,2,3,7,8,9-HXCDD	5.43	10.4 J	1.01 J	4.52 J	4.2 J	4.94 J	3.99 J	4.21 J	0.357 J	6.45
1,2,3,4,6,7,8-HPCDD	190	223	30.6	195	122	145	122	137	17.7	198
OCDD	1850	1630	273	1630	1210	1270	1140	1240	125	2160
2,3,7,8-TCDF	0.768 J	0.728 J	0.16 J	0.62 J	0.61 J	0.676 J	0.488 J	0.546 J	0.057 U	0.524 J
1,2,3,7,8-PECDF	0.629 J	0.543 U	0.087 U	0.465 U	0.426 U	0.486 J	0.379 J	0.436 U	0.0502 U	0.459 J
2,3,4,7,8-PECDF	1.25 J	1.41 J	0.181 J	1.13 J	1.02 U	1.19 J	0.808 J	0.85 J	0.097 U	0.879 J
1,2,3,4,7,8-HXCDF	5.61	3.72 J	0.379 J	3.68 J	3.09 J	3.22 J	2.67 J	2.85 J	0.276 J	2.86 J
1,2,3,6,7,8-HXCDF	1.62 J	1.57 J	0.173 J	1.09 J	1.19 J	1.25 J	0.956 J	1.12 J	0.107 U	1.12 J
1,2,3,7,8,9-HXCDF	0.142 J	0.085 U	0.0473 U	0.077 U	0.085 U	0.103 J	0.082 J	0.107 U	0.0502 U	0.106 U
2,3,4,6,7,8-HXCDF	1.18 J	1.21 J	0.163 J	0.926 J	0.979 J	0.962 J	0.778 J	0.878 J	0.097 J	0.927 J
1,2,3,4,6,7,8-HPCDF	35.5	35.1	3.05 J	25.4	23.9	27.3	20	25.2	5.7	23.8
1,2,3,4,7,8,9-HPCDF	3.2 J	2.17 J	0.257 J	2.15 U	1.9 J	1.97 J	1.65 J	2 J	0.404 J	1.94 J
OCDF	121	90.9	8.34 J	76.1	67.3	78.7	65.8	94.7	22.3	84.2
Dioxin/Furan TEQ	7.20 J	9.01 J	0.966 J	6.09 J	4.79 J	5.61 J	4.51 J	4.99 J	0.563 J	6.76 J
Total TCDD	5.33	3.17	1.17	3.65	3.63	3.69	4.15	4.30	0.0540	5.17
Total TCDF	22.4	22.1	4.37	21.7	20.5	24.2	12.5	13.9	0.697	15.3
Total PeCDD	9.72	8.98	1.08	6.78	5.72	7.60	7.32	7.94	0.355	9.22
Total PeCDF	24.9	25.5	2.90	17.2	16.1	20.7	13.8	15.5	0.986	17.3
Total HxCDD	66.7	77.7	14.8	45.4	43.4	52.0	45.0	53.0	3.76	93.5
Total HxCDF	60.8	48.0	5.83	36.6	35.5	39.1	32.1	37.0	4.85	38.9
Total HpCDD	513	467	159	480	335	392	356	435	34.7	905
Total HpCDF	128	101	9.94	86.0	78.1	90.6	67.9	93.4	20.6	81.9

Table A–2. LDW Outfall Surface Sediment Sample Results for Dioxins/Furans (ng TEQ/kg dw)

Chemical	LDW-SS2090-A	LDW-SS2091-U	LDW-SS2098-A	LDW-SS2099-A	LDW-SS2103-A	LDW-SS2106-A	LDW-SS2115-A	LDW-SS2122-A	LDW-SS2122-D	LDW-SS2139-A
2,3,7,8-TCDD	0.313 J	0.186 U	0.086 U	0.11 U	0.178 U	0.34 U	0.143 U	0.355 J	0.405 J	0.235 U
1,2,3,7,8-PECDD	0.636 J	0.419 J	0.085 U	0.138 J	0.302 J	0.659 J	0.87 J	0.814 J	1.06 J	1.01 U
1,2,3,4,7,8-HXCDD	1.09 J	0.68 J	0.118 U	0.178 J	0.377 J	1.12 J	1.81 J	1.41 J	1.91 J	1.94 J
1,2,3,6,7,8-HXCDD	3.46 J	2.06 J	0.396 J	0.87 J	0.947 J	3.49 J	13.3 J	5.23 J	9.16	6.85
1,2,3,7,8,9-HXCDD	3.34 J	1.79 J	0.329 U	0.616 J	0.9 J	3.01 J	4.48 J	3.99 J	6.26	6.16 J
1,2,3,4,6,7,8-HPCDD	63.5	43	7.68	16.2	17.9	72	179	122	279	192
OCDD	543	373	59.6	132	151	626	1310	1160	2410	1890
2,3,7,8-TCDF	0.45 J	0.236 J	0.0489 U	0.089 U	0.144 J	0.372 U	0.244 J	0.459 J	0.658 J	0.796 J
1,2,3,7,8-PECDF	0.26 J	0.153 J	0.0461 U	0.083 U	0.11 J	0.315 J	0.309 J	0.448 J	0.551 J	0.552 J
2,3,4,7,8-PECDF	0.489 J	0.344 J	0.066 U	0.193 J	0.243 J	0.526 J	0.437 J	0.758 J	1.07 J	1.3 J
1,2,3,4,7,8-HXCDF	1.28 J	0.924 J	0.136 J	0.829 J	0.505 J	1.84 J	1.57 J	2.79 J	3.99 J	5.75
1,2,3,6,7,8-HXCDF	0.715 J	0.475 J	0.065 U	0.229 J	0.216 J	0.669 J	1.26 J	0.965 J	1.44 J	1.51 J
1,2,3,7,8,9-HXCDF	0.056 U	0.0473 U	0.0461 U	0.0521 U	0.0485 U	0.085 U	0.1 J	0.139 J	0.104 J	0.132 U
2,3,4,6,7,8-HXCDF	0.643 J	0.387 J	0.08 U	0.159 J	0.207 J	0.619 J	1.24 J	0.891 J	1.18 J	1.16 J
1,2,3,4,6,7,8-HPCDF	12.3	9.43	1.32 J	4.28 J	3.67 J	16.1	19.5	21.6	29.6	38.2
1,2,3,4,7,8,9-HPCDF	0.9 J	0.707 J	0.126 J	0.44 J	0.297 J	1.21 J	1.14 J	1.78 J	2.35 J	3.8 J
OCDF	32.1	30.2	2.69 J	11.6	9.91 J	45.4	29.5	67.3	97.9	125
Dioxin/Furan TEQ	3.14 J	1.93 J	0.294 J	0.800 J	1.07 J	3.19 J	5.88 J	4.82 J	8.13 J	6.40 J
Total TCDD	3.2	1.75	0.345	0.900	1.07	3.36	1.12	3.92	5.13	3.99
Total TCDF	9.02	6.17	0.935	2.32	3.40	9.32	4.44	12.1	17.1 J	14.2
Total PeCDD	4.96	2.51	0.282	1.53	2.18	5.99	2.43	6.68	9.64	6.04
Total PeCDF	9.11	6.78	0.908	2.78	3.31	9.98	8.01	13.7	19.5	19.6
Total HxCDD	28.8	17.1	2.51	7.06	8.50	30.4	45.8	46.6	81.0	74.1
Total HxCDF	18.6	14.0	1.87	8.16	6.32	24.6	34.8	33.3	48.0	55.0
Total HpCDD	148	107	16.7	36.2	44.1	190	321	368	741	681
Total HpCDF	36.5	30.2	3.45	14.8	11.3	52.4	54.6	73.2	101	146

Table A–2. LDW Outfall Surface Sediment Sample Results for Dioxins/Furans (ng TEQ/kg dw)

Chemical	LDW-SS2150-A	LDW-SS2157-A	LDW-SS2200-A	LDW-SS2201-A	LDW-SS3037-A	LDW-SS5000-A	LDW-SS6146-A	LDW-SSPSF-A	LDW-SSPSF-U	LDW-SSPSF-U-2
2,3,7,8-TCDD	0.086 J	0.438 J	0.202 U	0.252 U	0.168 U	0.449 U	0.323 J	0.445 U	0.358 J	0.308 U
1,2,3,7,8-PECDD	0.455 J	1.2 J	0.317 J	0.383 J	0.36 J	1.24 J	0.633 J	1.16 J	0.927 J	0.745 J
1,2,3,4,7,8-HXCDD	0.766 J	2.51 J	0.466 J	0.65 J	0.556 U	2.66 J	1 J	2.25 J	1.67 J	1.4 U
1,2,3,6,7,8-HXCDD	2.14	9.17	1.34 J	1.63 J	1.8 J	20.8	3.24 J	8.89	6.08	5.06
1,2,3,7,8,9-HXCDD	1.81 J	7.27 J	1.39 J	1.6 J	1.5 J	8.32 J	2.82 J	7.16	4.94 J	4.18 J
1,2,3,4,6,7,8-HPCDD	47.5	246	23	31	47.7	578	66.9	280	160	136
OCDD	425	2290	190	241	499	5580	585	2810	1580	1310
2,3,7,8-TCDF	0.442 J	1.18	0.17 J	0.174 U	0.207 J	1.06	0.312 J	0.68 J	0.578 J	0.493 U
1,2,3,7,8-PECDF	0.244 U	0.819 J	0.1 U	0.177 U	0.171 J	1.76 J	0.265 J	0.571 J	0.453 J	0.375 J
2,3,4,7,8-PECDF	0.46 J	1.53 J	0.169 J	0.266 J	0.328 J	4.94	0.52 J	1.09 J	0.865 J	0.734 J
1,2,3,4,7,8-HXCDF	1.2 J	5.73	0.452 J	0.643 J	1.21 J	55.6	1.82 J	4.66 J	3.51 J	3.94 J
1,2,3,6,7,8-HXCDF	0.637 J	1.81 J	0.275 J	0.364 J	0.473 J	9.36	0.723 J	1.52 J	1.17 J	1.12 J
1,2,3,7,8,9-HXCDF	0.0484 U	0.13 U	0.0487 U	0.0486 U	0.0515 U	0.689 J	0.0505 U	0.122 J	0.109 J	0.069 U
2,3,4,6,7,8-HXCDF	0.607 U	1.41 J	0.255 J	0.294 J	0.353 J	4.6 J	0.598 J	1.22 J	0.949 J	0.849 J
1,2,3,4,6,7,8-HPCDF	18.7	48.3	4.66 U	6.13	8.55	210	13.1	38.8	26.8	26.5
1,2,3,4,7,8,9-HPCDF	0.813 J	3.93 J	0.343 J	0.473 J	0.934 J	28.4	1.15 J	3.26 J	2.19 J	2.61 J
OCDF	33.6	164	11.5 U	15.1	27.2	689	45.8	159	84	76.8
Dioxin/Furan TEQ	2.22 J	8.75 J	1.22 J	1.57 J	1.86 J	23.4 J	3.17 J	8.49 J	5.85 J	4.81 J
Total TCDD	2.76 J	7.00	1.58	2.03	1.38	5.72	3.43	5.08	4.43	3.05
Total TCDF	6.75	23.1	3.64	5.28	5.42	22.3	9.44	18.2	14.0	11.0
Total PeCDD	4.36 J	11.4	2.48	3.24	2.90	11.6	4.89	10.8	7.75	5.12
Total PeCDF	7.73	26.2	3.24	4.78	6.32	62.6	10.6	21.1	16.2	13.6
Total HxCDD	19.1 J	91.7	11.8	13.3	16.7	111	27.5	106	58.7	47.1
Total HxCDF	17.3	70.8	6.95	10.1	12.7	369	23.2	57.7	41.6	41.1
Total HpCDD	127	791	51.0	65.4	122	1260	157	1170	500	432
Total HpCDF	46.3	182	13.1	17.0	27.6	891	44.6	150	93.5	96.7

Table A–2. LDW Outfall Surface Sediment Sample Results for Dioxins/Furans (ng TEQ/kg dw)

Chemical	LDW-SSSP3-D	LDW-SSUNK-D
2,3,7,8-TCDD	0.218 U	0.06 U
1,2,3,7,8-PECDD	0.386 J	0.136 J
1,2,3,4,7,8-HXCDD	0.429 J	0.234 J
1,2,3,6,7,8-HXCDD	1.2 J	0.594
1,2,3,7,8,9-HXCDD	1.11 J	0.595 J
1,2,3,4,6,7,8-HPCDD	24.2	11.7
OCDD	235	81.7
2,3,7,8-TCDF	0.233 U	0.062 U
1,2,3,7,8-PECDF	0.106 U	0.0507 U
2,3,4,7,8-PECDF	0.217 J	0.102 J
1,2,3,4,7,8-HXCDF	0.534 J	0.257 J
1,2,3,6,7,8-HXCDF	0.226 J	0.102 J
1,2,3,7,8,9-HXCDF	0.0487 U	0.0507 U
2,3,4,6,7,8-HXCDF	0.204 J	0.082 J
1,2,3,4,6,7,8-HPCDF	3.85 J	1.7 J
1,2,3,4,7,8,9-HPCDF	0.312 J	0.132 U
OCDF	9.97 J	3.42 J
Dioxin/Furan TEQ	1.30 J	0.550 J
Total TCDD	1.31	0.128
Total TCDF	3.45	0.646
Total PeCDD	1.9	0.367
Total PeCDF	3.00	1.11
Total HxCDD	10.1	4.34
Total HxCDF	5.52	2.41
Total HpCDD	53.3	24.9
Total HpCDF	12.1	4.34

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2008-A	LDW-SS2009-A	LDW-SS2009-U	LDW-SS2010-A	LDW-SS2010-D	LDW-SS2010-U	LDW-SS2011-A	LDW-SS2011-D	LDW-SS2013-A
Metals												
Arsenic	57	93	mg/kg dw	20	20	30	14	10	15	13	16	21 J
Cadmium	5.1	6.7	mg/kg dw	0.5	0.6	0.7	0.6	0.5	0.5	0.3 U	0.4	0.3
Chromium	260	270	mg/kg dw	33	34	42	32.9	33	29.4	21.0	40.0	19.7
Copper	390	390	mg/kg dw	65.6	66.8	65.6	71.0	65.8	64.1	37.8	55.2	54.2 J
Lead	450	530	mg/kg dw	27	36	47	39	28	28	19	76	24 J
Mercury	0.41	0.59	mg/kg dw	0.21	0.18	0.23	0.17	0.16	0.15	0.12	0.12	0.04
Silver	6.1	6.1	mg/kg dw	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.5 U	0.5 U	0.4 U
Zinc	410	960	mg/kg dw	121	130	154	131	122	121	83	119	144 J
PAHs												
Acenaphthene	16	57	mg/kg OC	1.5	0.60 J	0.76 J	1.2	0.27 J	0.48 J	0.53 J	**58**	1.1 U
Acenaphthylene	66	66	mg/kg OC	0.92 J	0.33 J	0.55 J	0.60 J	0.69 U	0.50 J	1.3 J	5.8	1.1 U
Anthracene	220	1200	mg/kg OC	4.8	2.0	2.3	2.1	0.96	1.9	2.2	**230**	1.2
Benzo(a)anthracene	110	270	mg/kg OC	11	6.0	6.3	14	3.3	6.0	8.3	**230**	4.1
Benzofluoranthene	230	450	mg/kg OC	25	11	15	24	7.6	14	17	200	10
Benzo(g,h,i)perylene	31	78	mg/kg OC	7.7	3.3	4.2	5.6	2.2	3.5	4.7	19	2.8
Benzo(a)pyrene	99	210	mg/kg OC	11	5.0	6.3	11	3.2	5.5	6.9	67	3.1
Chrysene	110	460	mg/kg OC	19	8.1	9.7	15	4.8	10	12	**280**	8.0
Dibenzo(a,h)anthracene	12	33	mg/kg OC	2.1	1.1	1.5	2.6	0.89	1.3	1.7	9.6	0.69
Dibenzofuran	15	58	mg/kg OC	2.3	0.70	0.84	1.2	0.31 J	0.50 J	0.47 J	**25**	1.1 U
Fluoranthene	160	1200	mg/kg OC	24	9.7	13	32	5.8	13	19	**870**	23
Fluorene	23	79	mg/kg OC	2.7	0.97	1.0	1.6	0.38 J	0.70 J	0.76 J	**130**	1.1 U
Indeno(1,2,3-cd)pyrene	34	88	mg/kg OC	6.6	3.0	3.8	5.2	1.9	3.2	4.0	22	2.1
2-Methylnaphthalene	38	64	mg/kg OC	1.3 J	0.54 J	0.76	0.86	0.34 J	0.43 J	0.60 J	6.7	1.1 U
Naphthalene	99	170	mg/kg OC	1.7	1.2	1.1	1.3	0.48 J	0.70 J	1.1 J	1.7	0.69 J
Phenanthrene	100	480	mg/kg OC	13	6.0	5.9	12	2.6	5.0	8.3	**530**	5.4
Pyrene	1000	1400	mg/kg OC	22	9.4	12	33	6.9	14	23	670	22
Total HPAHs	960	5300	mg/kg OC	130	57	72	140	38	70	97	**2400**	74
Total LPAHs	370	780	mg/kg OC	24 J	11 J	12 J	19 J	4.8 J	9.0 J	14 J	**960**	7.4 J
Phthalates												
Butyl benzyl phthalate	4.9	64	mg/kg OC	2.6	0.91	0.84	0.60 J	0.48 J	0.75 J	1.5 J	0.41 J	0.55
Dibutyl phthalate	220	1700	mg/kg OC	0.99 J	0.64 U	0.51 J	0.37 J	0.31 J	2.3	0.33 J	1.7	1.1 U
Di-n-octyl phthalate	58	4500	mg/kg OC	1.3 U	0.64 U	0.76 U	0.82 U	0.69 U	0.95 U	1.3 U	0.87 U	1.2
Diethyl phthalate	61	110	mg/kg OC	1.3 U	0.64 U	0.76 U	0.82 U	0.69 U	0.95 U	1.3 U	0.87 U	1.1 U
Dimethyl phthalate	53	53	mg/kg OC	0.22 J	0.091 J	0.19 U	1.9	1.4	0.95	2.5	1.3	0.28 U
Bis(2-ethylhexyl)phthalate	47	78	mg/kg OC	21 U	4.7 U	11 U	6.0	4.1	5.0	8.3	4.5 U	6.9

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2008-A	LDW-SS2009-A	LDW-SS2009-U	LDW-SS2010-A	LDW-SS2010-D	LDW-SS2010-U	LDW-SS2011-A	LDW-SS2011-D	LDW-SS2013-A
Phenols												
2,4-Dimethylphenol	29	29	µg/kg dw	5.0	4.5 J	3.5 J	2.7 J	4.9 UJ	4.8 UJ	4.8 UJ	4.6 UJ	4.9 U
2-Methylphenol	63	63	µg/kg dw	5.2	5.0	3.1 J	4.8 U	4.9 U	4.8 U	4.8 U	4.6 U	4.9 U
4-Methylphenol	670	670	µg/kg dw	580	440	310	16 J	22	12 J	19 U	7.4 J	20 U
Pentachlorophenol	360	690	ug/kg dw	24 U	15 J	23 U	24 UJ	25 UJ	24 UJ	24 UJ	23 UJ	25 U
Phenol	420	1200	ug/kg dw	160	100	80	17 J	18 J	17 J	6.7 J	11 J	11 J
Other SVOCs												
Benzoic Acid	650	650	µg/kg dw	320	370	140 J	120 J	130 J	110 J	190 U	49 J	200 U
Benzyl Alcohol	57	73	µg/kg dw	**190**	**240**	**74**	**110 J**	**130 J**	**100 J**	25 J	37 J	4.5 J
1,2-Dichlorobenzene	2.3	2.3	mg/kg OC	0.34 U	0.16 U	0.19 U	0.21 U	0.17 U	0.24 U	0.33 U	0.22 U	0.28 U
1,4-Dichlorobenzene	3.1	9	mg/kg OC	0.20 J	0.16 U	0.19 U	0.21 U	0.17 U	0.24 U	0.33 U	0.22 U	0.28 U
Hexachlorobenzene	0.38	2.3	mg/kg OC	0.34 U	0.16 U	0.19 U	0.21 U	0.17 U	0.24 U	0.33 U	0.22 U	0.28 U
Hexachlorobutadiene	3.9	6.2	mg/kg OC	0.34 U	0.16 U	0.19 U	0.21 U	0.17 U	0.24 U	0.33 U	0.22 U	0.28 U
N-Nitrosodiphenylamine	11	11	mg/kg OC	0.34 U	0.16 U	0.19 U	0.21 U	0.17 U	0.24 U	0.33 U	0.22 U	0.28 U
1,2,4-Trichlorobenzene	0.81	1.8	mg/kg OC	0.34 U	0.16 U	0.19 U	0.21 U	0.17 U	0.24 U	0.33 U	0.22 U	0.28 U
PCB Aroclors												
Total PCBs	12	65	mg/kg OC	2.1	0.91	1.3	8.6	6.5	11	8.3	9.1	7.4

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2013-D	LDW-SS2013-U	LDW-SS2015-D	LDW-SS2018-U	LDW-SS2019-A	LDW-SS2021-A	LDW-SS2021-D	LDW-SS2021-U	LDW-SS2022-A
Metals												
Arsenic	57	93	mg/kg dw	14 J	7 J	12	11	14	8	9	9	10 J
Cadmium	5.1	6.7	mg/kg dw	0.3	0.4	0.4	0.3 U	0.7	0.3 U	0.3	0.3 U	0.5
Chromium	260	270	mg/kg dw	21.4	14.1	24.2	19.4	23.9 J	18.9	23.0	25.3	29
Copper	390	390	mg/kg dw	60.1 J	29.0 J	41.4	41.2	73.7 J	26.5	31.5	29.5	52.6 J
Lead	450	530	mg/kg dw	37 J	15 J	15	16	32	9	13	22	20
Mercury	0.41	0.59	mg/kg dw	0.06	0.07	0.11	0.08	0.09	0.14	0.12	0.06	0.21
Silver	6.1	6.1	mg/kg dw	0.4 U	0.4 U	0.5 U	0.5 U	0.5 U	0.4 U	0.4 U	0.4 U	0.6 U
Zinc	410	960	mg/kg dw	104 J	56 J	82	78	157	51	68	70	105 J
PAHs												
Acenaphthene	16	57	mg/kg OC	1.2 U	1.7	0.79 U	0.81 U	2.0	1.7 U	0.63 J	0.75 U	12
Acenaphthylene	66	66	mg/kg OC	0.98 J	1.4 U	0.79 U	0.81 U	0.82	1.7 U	0.54 J	0.75 U	0.81 U
Anthracene	220	1200	mg/kg OC	1.3	3.4	0.83	1.3	4.9	1.5 J	1.0	0.85	3.4
Benzo(a)anthracene	110	270	mg/kg OC	2.8	9.8	2.4	4.2	11	3.2	1.7	1.9	8.1
Benzofluoranthene	230	450	mg/kg OC	8.6	20	5.8	10	20	3.8	2.1	3.1	12
Benzo(g,h,i)perylene	31	78	mg/kg OC	3.8	5.7	1.8	2.3	4.6	1.3 J	0.80 J	0.94	2.5 J
Benzo(a)pyrene	99	210	mg/kg OC	3.3	9.1	2.3	3.6	7.5	2.3	1.2	1.6	4.3
Chrysene	110	460	mg/kg OC	4.9	16	3.6	8.6	17	4.7	2.0	2.5	9.8
Dibenzo(a,h)anthracene	12	33	mg/kg OC	0.80	1.7	0.54 J	0.77	1.8	0.42 U	0.23 U	0.20	0.90 J
Dibenzofuran	15	58	mg/kg OC	1.2 U	1.4 U	0.79 U	0.50 J	1.5	1.2 J	1.0	0.52 J	10
Fluoranthene	160	1200	mg/kg OC	6.7	28	5.0	12 J	46 J	7.0	6.3	5.2	35
Fluorene	23	79	mg/kg OC	1.2 U	0.98 J	0.79 U	0.54 J	2.1	1.1 J	0.91	0.44 J	14
Indeno(1,2,3-cd)pyrene	34	88	mg/kg OC	3.0	4.8	1.5	2.2	4.3	0.99 J	0.49 J	0.75	2.5 J
2-Methylnaphthalene	38	64	mg/kg OC	1.2 U	1.4 U	0.79 U	0.45 J	0.66	1.9	1.4	0.57 J	2.0
Naphthalene	99	170	mg/kg OC	1.2	0.77 J	0.42 J	0.50 J	0.92	1.8	1.9	0.99	2.6
Phenanthrene	100	480	mg/kg OC	5.8	9.1	2.0	3.1 J	24 J	4.7	3.3	2.1	47
Pyrene	1000	1400	mg/kg OC	8.6	33	5.4	12	33 J	6.8	5.2	4.7	21
Total HPAHs	960	5300	mg/kg OC	42	130	28 J	54 J	140 J	30 J	20 J	21	94 J
Total LPAHs	370	780	mg/kg OC	9.2 J	16 J	3.2 J	5.4 J	36 J	9.0 J	8.5 J	4.4 J	81
Phthalates												
Butyl benzyl phthalate	4.9	64	mg/kg OC	0.67	0.91	0.54 J	0.39	1.7 J	0.64 J	0.80 J	0.90 J	1.2
Dibutyl phthalate	220	1700	mg/kg OC	1.2 U	1.4 U	0.79 U	0.81 U	4.6	1.7 U	0.91 U	0.75 U	0.81 U
Di-n-octyl phthalate	58	4500	mg/kg OC	1.2 U	1.4 U	0.79 U	6.3	0.62 U	1.7 U	0.91 U	0.75 U	0.81 U
Diethyl phthalate	61	110	mg/kg OC	1.2 U	0.70 J	0.79 U	0.81 U	0.62 U	1.7 U	0.91 U	0.75 U	0.81 U
Dimethyl phthalate	53	53	mg/kg OC	0.28 U	0.35 U	0.20 U	0.21 U	0.16 U	0.42 U	0.23 U	0.18 U	0.21 U
Bis(2-ethylhexyl)phthalate	47	78	mg/kg OC	3.2	9.1	5.4 U	5.4 U	23 J	1.4 J	1.0	1.8	6.8

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2013-D	LDW-SS2013-U	LDW-SS2015-D	LDW-SS2018-U	LDW-SS2019-A	LDW-SS2021-A	LDW-SS2021-D	LDW-SS2021-U	LDW-SS2022-A
Phenols												
2,4-Dimethylphenol	29	29	µg/kg dw	4.6 U	5.0 U	2.5 J	2.8 J	6.4 J	4.2 U	4.0 U	3.9 U	4.8
2-Methylphenol	63	63	µg/kg dw	4.6 U	5.0 U	2.8 J	2.8 J	4.8 U	4.2 U	4.2	3.9 U	4.8 U
4-Methylphenol	670	670	µg/kg dw	19 U	20 U	200	29	350	27	33	13 J	58
Pentachlorophenol	360	690	ug/kg dw	23 U	25 U	23 U	19 J	24 UJ	11 J	20 U	20 U	24 U
Phenol	420	1200	ug/kg dw	10 J	13 J	46	16 J	120	10 J	35	25	60
Other SVOCs												
Benzoic Acid	650	650	µg/kg dw	190 U	200 U	180 J	97 J	240	170 U	33 J	29 J	460
Benzyl Alcohol	57	73	µg/kg dw	19	5.3	**120**	50	**190**	20	32	28	**420**
1,2-Dichlorobenzene	2.3	2.3	mg/kg OC	0.28 U	0.35 U	0.20 U	0.21 U	0.16 U	0.42 U	0.23 U	0.18 U	0.21 U
1,4-Dichlorobenzene	3.1	9	mg/kg OC	0.28 U	0.35 U	0.20 U	0.21 U	0.16 U	0.42 U	0.23 U	0.18 U	0.21 U
Hexachlorobenzene	0.38	2.3	mg/kg OC	0.28 U	0.35 U	0.20 U	0.21 U	0.16 U	*0.42 U*	0.23 U	0.18 U	0.21 U
Hexachlorobutadiene	3.9	6.2	mg/kg OC	0.28 U	0.35 U	0.20 U	0.21 U	0.16 U	0.42 U	0.23 U	0.18 U	0.21 U
N-Nitrosodiphenylamine	11	11	mg/kg OC	0.28 U	0.35 U	0.20 U	0.21 U	0.56 J	0.42 U	0.23 U	0.18 U	0.35
1,2,4-Trichlorobenzene	0.81	1.8	mg/kg OC	0.28 U	0.35 U	0.20 U	0.21 U	0.16 U	0.42 U	0.23 U	0.18 U	0.21 U
PCB Aroclors												
Total PCBs	12	65	mg/kg OC	2.9	4.3	0.67	0.54 J	5.2	1.5	1.6	1.7	5.6

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2022-A-2	LDW-SS2022-D	LDW-SS2027-A	LDW-SS2029-A	LDW-SS2029-D	LDW-SS2030-A	LDW-SS2030-U	LDW-SS2032-A
Metals											
Arsenic	57	93	mg/kg dw	20 J	10 J	20 J	15	10	17	30	20
Cadmium	5.1	6.7	mg/kg dw	0.5	0.5	4.0	0.5	0.6	0.7	0.8	0.6
Chromium	260	270	mg/kg dw	31	31	88	32.6 J	33 J	31.1 J	43 J	32 J
Copper	390	390	mg/kg dw	54.7 J	52.3 J	138 J	52.1 J	52.9 J	52.9 J	79.5 J	55.7 J
Lead	450	530	mg/kg dw	20	29	142	19	27	21	105	31
Mercury	0.41	0.59	mg/kg dw	0.13	0.14	**0.42**	0.12	0.19	0.13	0.23	0.13
Silver	6.1	6.1	mg/kg dw	0.6 U	0.6 U	0.8	0.6 U	0.6 U	0.6 U	0.8	0.6 U
Zinc	410	960	mg/kg dw	109 J	107 J	**552 J**	124	199	134	**1180**	240
PAHs											
Acenaphthene	16	57	mg/kg OC	4.2	0.88	2.9	0.94 U	1.4 U	0.73 J	0.95	1.2
Acenaphthylene	66	66	mg/kg OC	0.92 U	0.88 U	1.7	0.94 U	1.4 U	0.87 U	1.1	0.68 J
Anthracene	220	1200	mg/kg OC	4.6	8.8	8.0	1.9	2.0	1.8	2.4	3.1
Benzo(a)anthracene	110	270	mg/kg OC	14	9.2	28	3.3	6.5	5.5	7.5	7.6
Benzofluoranthene	230	450	mg/kg OC	26	15	47	7.5	14	12	15	13
Benzo(g,h,i)perylene	31	78	mg/kg OC	4.8 J	3.7 J	9.3 J	1.7	3.1	2.8	3.0	3.1
Benzo(a)pyrene	99	210	mg/kg OC	9.2	6.0	16	2.8	4.8	4.6	5.2	6.4
Chrysene	110	460	mg/kg OC	21	14	47	5.2	8.7	8.3	13	11
Dibenzo(a,h)anthracene	12	33	mg/kg OC	1.8 J	1.2	3.7	0.66	1.2 J	0.96	1.1	1.2
Dibenzofuran	15	58	mg/kg OC	3.0	1.0	1.7	0.66 J	1.3 J	1.1	1.6	0.85
Fluoranthene	160	1200	mg/kg OC	63	31	67	7.0	14	13	17	17
Fluorene	23	79	mg/kg OC	4.1	1.7	2.7	0.61 J	1.2 J	1.1	1.4	1.3
Indeno(1,2,3-cd)pyrene	34	88	mg/kg OC	4.8 J	3.4 J	8.7 J	1.6	2.8	2.7	2.9	2.8
2-Methylnaphthalene	38	64	mg/kg OC	1.8	0.78 J	3.3	0.94 U	1.1 J	0.73 J	1.4	0.68 J
Naphthalene	99	170	mg/kg OC	1.7	0.88	2.5	0.70 J	1.6	1.1	1.6	1.2
Phenanthrene	100	480	mg/kg OC	20	9.2	14	3.1	6.3	5.5	5.6	11
Pyrene	1000	1400	mg/kg OC	47	25	70 J	6.6	13	13	14	18
Total HPAHs	960	5300	mg/kg OC	190 J	110 J	300 J	37	68 J	64	79	81
Total LPAHs	370	780	mg/kg OC	35	21	32	6.1 J	11 J	10 J	13	19 J
Phthalates											
Butyl benzyl phthalate	4.9	64	mg/kg OC	1.1	0.83	**53**	0.61 J	1.6 J	0.83 J	1.3 J	1.0 J
Dibutyl phthalate	220	1700	mg/kg OC	0.92 U	1.8	8.7	0.94 U	1.4 U	0.87 U	0.91	0.81 U
Di-n-octyl phthalate	58	4500	mg/kg OC	0.97	0.88 U	25	0.94 U	1.4 U	0.87 U	0.79 U	0.81 U
Diethyl phthalate	61	110	mg/kg OC	0.92 U	0.88 U	0.63 U	0.94 U	1.4 U	1.2	0.79 U	0.81 U
Dimethyl phthalate	53	53	mg/kg OC	0.23 U	0.22 U	24	0.23 U	0.41	0.22 U	0.39	0.21
Bis(2-ethylhexyl)phthalate	47	78	mg/kg OC	20	7.8	**1200**	3.8 U	10	6.4	7.9	7.2

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2022-A-2	LDW-SS2022-D	LDW-SS2027-A	LDW-SS2029-A	LDW-SS2029-D	LDW-SS2030-A	LDW-SS2030-U	LDW-SS2032-A
Phenols											
2,4-Dimethylphenol	29	29	µg/kg dw	4.8 U	4.8 U	17	3.6 J	6.8 J	4.8 J	10 J	6.0 J
2-Methylphenol	63	63	µg/kg dw	4.8 U	4.8 U	14	4.9 U	4.8 U	4.8 U	10	7.2
4-Methylphenol	670	670	µg/kg dw	48	36	140	26	40	32	38	31
Pentachlorophenol	360	690	ug/kg dw	5.8 J	7.3 J	86	25 UJ	24 UJ	24 UJ	28 J	24 UJ
Phenol	420	1200	ug/kg dw	64	42	370	71	120	89	120	87
Other SVOCs											
Benzoic Acid	650	650	µg/kg dw	560	290	**1200**	480	**660**	600	**680**	600
Benzyl Alcohol	57	73	µg/kg dw	**390**	**240**	**320**	**340**	**460**	**420**	**430**	**450**
1,2-Dichlorobenzene	2.3	2.3	mg/kg OC	0.23 U	0.22 U	0.97	0.23 U	0.35 U	0.22 U	0.15 J	0.20 U
1,4-Dichlorobenzene	3.1	9	mg/kg OC	0.23 U	0.22 U	0.40	0.23 U	0.35 U	0.22 U	0.28	0.20 U
Hexachlorobenzene	0.38	2.3	mg/kg OC	0.23 U	0.22 U	0.16 U	0.23 U	0.35 U	0.22 U	**0.52 J**	0.20 U
Hexachlorobutadiene	3.9	6.2	mg/kg OC	0.23 U	0.22 U	0.16 U	0.23 U	0.35 U	0.22 U	0.13 J	0.20 U
N-Nitrosodiphenylamine	11	11	mg/kg OC	0.28	0.22 U	0.63	0.23 U	0.35 U	0.22 U	0.19 U	0.20 U
1,2,4-Trichlorobenzene	0.81	1.8	mg/kg OC	0.23 U	0.22 U	0.16 U	0.23 U	0.35 U	0.22 U	0.60 J	0.20 U
PCB Aroclors											
Total PCBs	12	65	mg/kg OC	4.6	**17**	**30**	5.6	10	5.5	11	5.5

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2034-D	LDW-SS2034-U	LDW-SS2034-U-2	LDW-SS2035-A	LDW-SS2035-D	LDW-SS2035-U	LDW-SS2036-A	LDW-SS2036-D
Metals											
Arsenic	57	93	mg/kg dw	**61 J**	20 J	20 J	20	10	10	10	20
Cadmium	5.1	6.7	mg/kg dw	0.5	0.4 U	0.4	0.5	0.5	0.4	0.5	0.4
Chromium	260	270	mg/kg dw	28.5	30	31	30	29	28	30	34
Copper	390	390	mg/kg dw	57.6 J	43.5 J	46.2 J	48.7	46.0	46.2	46.2	49.8
Lead	450	530	mg/kg dw	50	18	18	19	18	19	19	20
Mercury	0.41	0.59	mg/kg dw	0.08	0.15	0.10	0.17	0.16	0.12	0.11	0.17
Silver	6.1	6.1	mg/kg dw	0.6 U	0.6 U	0.6 U	0.7 U	0.6 U	0.6 U	0.6 U	0.6 U
Zinc	410	960	mg/kg dw	215 J	95 J	104 J	102	104	112	100	109
PAHs											
Acenaphthene	16	57	mg/kg OC	3.6	1.2	1.1	1.5	1.7	**21**	2.5	0.87 J
Acenaphthylene	66	66	mg/kg OC	2.0	0.71 U	0.74 U	0.67 U	0.75 U	0.81 U	0.87 U	0.91 U
Anthracene	220	1200	mg/kg OC	14	3.7	5.1	2.2	2.3	24	2.2	3.2
Benzo(a)anthracene	110	270	mg/kg OC	59 J	8.2	5.5	3.5	3.8	28	5.0	9.1
Benzofluoranthene	230	450	mg/kg OC	70 J	12	7.8	6.4	6.8	33	8.7	15
Benzo(g,h,i)perylene	31	78	mg/kg OC	12 J	3.1 J	1.9 J	1.5	1.8	4.0	2.3	3.7
Benzo(a)pyrene	99	210	mg/kg OC	29 J	5.2	3.0	2.2	2.8	11	3.5	6.3
Chrysene	110	460	mg/kg OC	86 J	10	7.0	6.4	5.3	32	6.4	16
Dibenzo(a,h)anthracene	12	33	mg/kg OC	4.5	1.2 J	0.66 J	0.50	0.60	1.9	0.73	1.4 J
Dibenzofuran	15	58	mg/kg OC	1.3	1.2	1.1	0.67 U	1.4	**16**	1.7	0.77 J
Fluoranthene	160	1200	mg/kg OC	52 J	22	14	8.9	11	110	16	20
Fluorene	23	79	mg/kg OC	4.1	1.8	1.9	1.2	2.0	21	2.0	1.2
Indeno(1,2,3-cd)pyrene	34	88	mg/kg OC	12 J	2.8 J	1.8 J	1.3	1.6	4.0	2.2	3.3
2-Methylnaphthalene	38	64	mg/kg OC	1.0	0.64 J	0.63 J	0.64 J	0.83	3.6	1.0	0.91 U
Naphthalene	99	170	mg/kg OC	1.3	0.75	0.70 J	0.82	0.75	3.6	0.87	0.67 J
Phenanthrene	100	480	mg/kg OC	32 J	10	7.8	5.3	7.2	93	8.7	7.2
Pyrene	1000	1400	mg/kg OC	70 J	16	11	7.8	8.7	73	11	17
Total HPAHs	960	5300	mg/kg OC	390 J	82 J	51 J	39	42	300	55	91 J
Total LPAHs	370	780	mg/kg OC	59 J	18	16 J	11	14	160	16	13 J
Phthalates											
Butyl benzyl phthalate	4.9	64	mg/kg OC	1.0	0.56	0.47	0.96	1.2	0.93	1.1 J	2.9 J
Dibutyl phthalate	220	1700	mg/kg OC	1.0 U	0.71 U	0.74 U	0.67 U	0.75 U	0.81 U	0.87 U	0.91 U
Di-n-octyl phthalate	58	4500	mg/kg OC	1.0 U	0.71 U	0.74 U	0.35 J	0.75 U	0.81 U	0.87 U	1.4
Diethyl phthalate	61	110	mg/kg OC	1.0 U	0.71 U	0.74 U	0.67 U	0.75 U	0.56 J	0.87 U	0.91 U
Dimethyl phthalate	53	53	mg/kg OC	0.46	0.18 U	0.18 U	0.17 U	0.18 U	0.20 U	0.22 U	0.23 U
Bis(2-ethylhexyl)phthalate	47	78	mg/kg OC	9.7	5.6	6.3	3.0	6.8	7.7	5.5	5.3

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2034-D	LDW-SS2034-U	LDW-SS2034-U-2	LDW-SS2035-A	LDW-SS2035-D	LDW-SS2035-U	LDW-SS2036-A	LDW-SS2036-D
Phenols											
2,4-Dimethylphenol	29	29	µg/kg dw	4.8 U	5.8	4.7 U	4.7 U	4.9 U	4.9 U	4.8 U	4.8 U
2-Methylphenol	63	63	µg/kg dw	4.8 U	4.7 U	4.7 U	4.7 U	4.9 U	4.9 U	4.8 U	4.8 U
4-Methylphenol	670	670	µg/kg dw	18 J	25	20	45	100	95	200	280
Pentachlorophenol	360	690	ug/kg dw	24 U	24 U	23 U	23 U	24 U	5.3 J	24 U	24 U
Phenol	420	1200	ug/kg dw	25	52	48	51	45	58	44	45
Other SVOCs											
Benzoic Acid	650	650	µg/kg dw	170 J	500	410	530	260	490	230	190
Benzyl Alcohol	57	73	µg/kg dw	**130**	**340**	**340**	**400**	**200 J**	**350**	**150 J**	**140 J**
1,2-Dichlorobenzene	2.3	2.3	mg/kg OC	0.26 U	0.18 U	0.18 U	0.17 U	0.18 U	0.20 U	0.22 U	0.23 U
1,4-Dichlorobenzene	3.1	9	mg/kg OC	0.26 U	0.18 U	0.18 U	0.17 U	0.18 U	0.20 U	0.22 U	0.23 U
Hexachlorobenzene	0.38	2.3	mg/kg OC	0.26 U	0.18 U	0.18 U	0.17 U	0.18 U	0.20 U	0.22 U	0.23 U
Hexachlorobutadiene	3.9	6.2	mg/kg OC	0.26 U	0.18 U	0.18 U	0.17 U	0.18 U	0.20 U	0.22 U	0.23 U
N-Nitrosodiphenylamine	11	11	mg/kg OC	0.28	0.18 U	0.18 U	0.17 U	0.18 U	0.20 U	0.22 U	0.23 U
1,2,4-Trichlorobenzene	0.81	1.8	mg/kg OC	0.26 U	0.18 U	0.18 U	0.17 U	0.18 U	0.20 U	0.22 U	0.23 U
PCB Aroclors											
Total PCBs	12	65	mg/kg OC	**13 J**	2.5	4.3	6.7	7.2	2.4 J	5.0	6.3

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2037-A	LDW-SS2037-D	LDW-SS2037-U	LDW-SS2038-A	LDW-SS2038-D	LDW-SS2039-A	LDW-SS2039-D	LDW-SS2040-D	LDW-SS2040-U
Metals												
Arsenic	57	93	mg/kg dw	10	10	14	15	44	18	23	7 U	7
Cadmium	5.1	6.7	mg/kg dw	0.4 U	0.4	0.4 U	0.4	0.5	0.4	0.5	0.3 U	0.3 U
Chromium	260	270	mg/kg dw	30	30	50.0	23.6	22.3	25.7	25.5	13.1	11.7
Copper	390	390	mg/kg dw	45.1	45.2	37.9	30.8 J	51.9 J	35.7 J	52.2 J	14.3	15.6
Lead	450	530	mg/kg dw	19	19	30	22 J	38 J	25 J	30 J	8	9
Mercury	0.41	0.59	mg/kg dw	0.28	0.11	0.05	0.07	0.03	0.07	0.05	0.03 U	0.03 U
Silver	6.1	6.1	mg/kg dw	0.7 U	0.6 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.4 U	0.4 U
Zinc	410	960	mg/kg dw	98	97	107	87 J	211 J	80 J	193 J	50	55
PAHs												
Acenaphthene	16	57	mg/kg OC	1.3	1.6	1.3 U	0.72 U	0.50 J	1.1 J	1.2 U	2.8 U	2.4 U
Acenaphthylene	66	66	mg/kg OC	1.0 U	0.83 U	1.3 U	0.72 U	1.0 U	1.3 U	1.2 U	2.8 U	2.4 U
Anthracene	220	1200	mg/kg OC	2.4	4.2	1.3	0.36 J	4.8	4.7	0.94 J	2.8 U	2.4 U
Benzo(a)anthracene	110	270	mg/kg OC	6.8	7.0	4.6	1.3	19	17	4.0	2.8 U	1.7 J
Benzofluoranthene	230	450	mg/kg OC	13	15	10	2.7	24	28	8.2	1.8 J	3.1
Benzo(g,h,i)perylene	31	78	mg/kg OC	2.3	2.8	2.2	0.80	4.3	6.4	2.5	2.8 U	2.4 U
Benzo(a)pyrene	99	210	mg/kg OC	4.5	5.2	4.0	0.98	10	11	3.1	2.8 U	1.4 J
Chrysene	110	460	mg/kg OC	9.5	10	7.6	3.0	22	26	5.8	2.8 U	2.4
Dibenzo(a,h)anthracene	12	33	mg/kg OC	0.95	1.1	0.82	0.29	2.4	2.4	0.99	0.72 U	0.59 U
Dibenzofuran	15	58	mg/kg OC	1.0 U	0.83 U	1.3 U	0.72 U	1.0 U	1.0 J	1.2 U	2.8 U	2.4 U
Fluoranthene	160	1200	mg/kg OC	19	23	8.2	3.1	29	38	11	1.9 J	2.6
Fluorene	23	79	mg/kg OC	1.1	1.9	1.3 U	0.72 U	1.4	1.7	1.2 U	2.8 U	2.4 U
Indeno(1,2,3-cd)pyrene	34	88	mg/kg OC	2.2	2.8	1.8	0.64 J	4.2	6.0	2.0	2.8 U	2.4 U
2-Methylnaphthalene	38	64	mg/kg OC	0.95 J	0.96	1.3 U	0.72 U	1.0 U	0.74 J	0.64 J	2.8 U	2.4 U
Naphthalene	99	170	mg/kg OC	1.5	1.7	0.63 J	0.72 U	1.0 U	0.87 J	0.99 J	2.8 U	2.4 U
Phenanthrene	100	480	mg/kg OC	5.8	8.7	3.4	1.6	14	19	3.7	2.8 U	2.4 U
Pyrene	1000	1400	mg/kg OC	16	19	7.6	3.0	25	34	11	1.8 J	3.1
Total HPAHs	960	5300	mg/kg OC	74	87	47	16 J	140	170	48	5.5 J	14 J
Total LPAHs	370	780	mg/kg OC	12	18	5.3 J	2.0 J	21 J	27 J	5.7 J	2.8 U	2.4 U
Phthalates												
Butyl benzyl phthalate	4.9	64	mg/kg OC	1.2	1.1	2.8	2.0	1.0	1.4	1.3 J	0.72 U	0.64 J
Dibutyl phthalate	220	1700	mg/kg OC	1.0 U	0.83 U	1.3 U	0.72 U	1.0 U	1.3 U	1.2 U	2.8 U	8.3
Di-n-octyl phthalate	58	4500	mg/kg OC	1.0 U	0.83 U	1.3 U	0.72 U	1.0 U	1.3 U	1.2 U	2.8 U	2.4 U
Diethyl phthalate	61	110	mg/kg OC	1.0 U	0.52 J	0.63 J	0.45 J	0.50 J	0.67 J	0.88 J	2.8 U	2.4 U
Dimethyl phthalate	53	53	mg/kg OC	0.26 U	0.21 U	0.32 U	0.21	0.25	0.44	0.23 J	0.72 U	0.59 U
Bis(2-ethylhexyl)phthalate	47	78	mg/kg OC	6.8	8.7	6.3	3.8 U	2.5 U	4.8 U	5.1 U	3.1 U	4.8 U

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2037-A	LDW-SS2037-D	LDW-SS2037-U	LDW-SS2038-A	LDW-SS2038-D	LDW-SS2039-A	LDW-SS2039-D	LDW-SS2040-D	LDW-SS2040-U
Phenols												
2,4-Dimethylphenol	29	29	µg/kg dw	4.9 U	4.8 U	5.0 U	4.8 U	4.7 U	4.6 U	4.9 U	4.8 U	4.9 U
2-Methylphenol	63	63	µg/kg dw	4.9 U	4.8 U	5.0 U	4.8 U	4.7 U	4.6 U	4.9 U	4.8 U	4.9 U
4-Methylphenol	670	670	µg/kg dw	81	180	34	19 U	19 U	19 U	20 U	19 U	58
Pentachlorophenol	360	690	ug/kg dw	5.3 J	8.7 J	25 U	24 UJ	23 UJ	23 UJ	19 J	24 U	24 U
Phenol	420	1200	ug/kg dw	120	100	25	38 J	19 U	19 J	42 J	19 U	20 U
Other SVOCs												
Benzoic Acid	650	650	µg/kg dw	**940**	**990**	180 J	110 J	190 U	120 J	200	190 U	45 J
Benzyl Alcohol	57	73	µg/kg dw	**550**	**550**	**100**	**63 J**	22	48	**110**	4.8 U	13 J
1,2-Dichlorobenzene	2.3	2.3	mg/kg OC	0.26 U	0.21 U	0.32 U	0.18 U	0.25 U	0.31 U	0.29 U	0.72 U	0.59 U
1,4-Dichlorobenzene	3.1	9	mg/kg OC	0.26 U	0.21 U	0.32 U	0.18 U	0.25 U	0.31 U	0.29 U	0.72 U	0.59 U
Hexachlorobenzene	0.38	2.3	mg/kg OC	0.26 U	0.21 U	0.32 U	0.18 U	0.25 U	0.31 U	0.29 U	*0.72 U*	*0.59 U*
Hexachlorobutadiene	3.9	6.2	mg/kg OC	0.26 U	0.21 U	0.32 U	0.18 U	0.25 U	0.31 U	0.29 U	0.72 U	0.59 U
N-Nitrosodiphenylamine	11	11	mg/kg OC	0.26 U	0.21 U	0.32 U	0.18 U	0.25 U	0.31 U	0.15 J	0.72 U	0.59 U
1,2,4-Trichlorobenzene	0.81	1.8	mg/kg OC	0.26 U	0.21 U	0.32 U	0.18 U	0.25 U	0.31 U	0.29 U	0.72 U	0.59 U
PCB Aroclors												
Total PCBs	12	65	mg/kg OC	5.3	4.8	4.0 J	2.4	1.4	4.0	**13**	6.6	2.3

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2078-A	LDW-SS2078-D	LDW-SS2078-U	LDW-SS2082-U	LDW-SS2083-A	LDW-SS2085-A	LDW-SS2089-A	LDW-SS2089-D	LDW-SS2090-A
Metals												
Arsenic	57	93	mg/kg dw	10	10	20	20	20	10	20	10	10
Cadmium	5.1	6.7	mg/kg dw	0.5	0.5 U	0.5 U	0.6	0.6	0.4	0.5	0.5	0.5
Chromium	260	270	mg/kg dw	32	31	32	34	32	28	30	29	30
Copper	390	390	mg/kg dw	61.7	59.9	60.5	58.4	56.7	37.2	46.6	44.1	42.3
Lead	450	530	mg/kg dw	20	18	21	20	19	11	15	14	15
Mercury	0.41	0.59	mg/kg dw	0.15	0.10	0.14	0.13	0.17	0.11	0.15	0.13	0.17
Silver	6.1	6.1	mg/kg dw	0.7 U	0.7 U	0.8 U	0.8 U	0.8 U	0.6 U	0.7 U	0.7 U	0.7 U
Zinc	410	960	mg/kg dw	119	100	120	115	111	81	96	88	95
PAHs												
Acenaphthene	16	57	mg/kg OC	0.19 J	0.26 J	0.30 J	0.50 U	0.56 J	0.81 U	0.57 U	0.57 U	0.57 U
Acenaphthylene	66	66	mg/kg OC	0.61 U	0.58 U	0.85 U	0.50 U	0.71 U	0.81 U	0.57 U	0.57 U	0.57 U
Anthracene	220	1200	mg/kg OC	0.51 J	0.61	0.54 J	0.65	2.0	0.81 U	0.74	0.57	0.57 U
Benzo(a)anthracene	110	270	mg/kg OC	3.5	4.3	3.8	3.5	12	1.0	5.4	3.9	1.1
Benzofluoranthene	230	450	mg/kg OC	9.9	11	12	9.3	32	2.8	17	13	2.6
Benzo(g,h,i)perylene	31	78	mg/kg OC	3.5	3.7	3.7	3.0	11	1.2	5.4	4.5	1.0
Benzo(a)pyrene	99	210	mg/kg OC	3.8	4.6	4.5	3.5	12	1.1	5.9	4.5	1.1
Chrysene	110	460	mg/kg OC	6.1	6.7	6.3	5.5	20	1.8	8.8	6.6	1.6
Dibenzo(a,h)anthracene	12	33	mg/kg OC	1.3	1.3	1.5	0.93	3.2	0.26	1.4	1.1	0.23
Dibenzofuran	15	58	mg/kg OC	0.22 J	0.26 J	0.30 J	0.35 J	0.75	0.81 U	0.34 J	0.33 J	0.57 U
Fluoranthene	160	1200	mg/kg OC	9.6	12	12	9.8	37	3.0	16	13	2.9
Fluorene	23	79	mg/kg OC	0.28 J	0.34 J	0.39 J	0.35 J	0.86	0.81 U	0.31 J	0.33 J	0.57 U
Indeno(1,2,3-cd)pyrene	34	88	mg/kg OC	3.1	3.4	3.5	2.5	9.8	0.94	5.1	4.2	0.87
2-Methylnaphthalene	38	64	mg/kg OC	0.61 U	0.14 J	0.85 U	0.50 U	0.71 U	0.81 U	0.57 U	0.57 U	0.57 U
Naphthalene	99	170	mg/kg OC	0.19 J	0.20 J	0.85 U	0.35 J	0.60 J	0.43 J	0.40 J	0.39 J	0.57 U
Phenanthrene	100	480	mg/kg OC	4.5	6.1	5.4	4.0	15	1.9	7.4	5.7	1.2
Pyrene	1000	1400	mg/kg OC	10	14	13	8.8	33	2.7	15	12	2.8
Total HPAHs	960	5300	mg/kg OC	51	61	58	48	170	15	82	63	14
Total LPAHs	370	780	mg/kg OC	5.8 J	7.6 J	6.7 J	5.3 J	20 J	2.3 J	8.8 J	6.9 J	1.2
Phthalates												
Butyl benzyl phthalate	4.9	64	mg/kg OC	0.64 J	0.58 J	0.67 J	0.53	0.68	0.26	0.42 J	0.33 J	0.25
Dibutyl phthalate	220	1700	mg/kg OC	0.25 J	0.58 U	0.43 J	0.50 U	0.71 U	0.81 U	0.57 U	0.57 U	0.36 J
Di-n-octyl phthalate	58	4500	mg/kg OC	0.61 U	0.37 J	0.85 U	0.50 U	0.71 U	0.81 U	0.31 J	0.57 U	0.57 U
Diethyl phthalate	61	110	mg/kg OC	0.61 U	0.58 U	0.85 U	0.50 U	0.71 U	0.81 U	0.34 J	0.57 U	0.57 U
Dimethyl phthalate	53	53	mg/kg OC	1.1	3.7	1.4	0.11 J	0.17 J	0.20 U	0.14 U	0.076 J	0.087 J
Bis(2-ethylhexyl)phthalate	47	78	mg/kg OC	3.5	4.0	5.8	4.5	6.4	3.6	4.0	4.8	3.9

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2078-A	LDW-SS2078-D	LDW-SS2078-U	LDW-SS2082-U	LDW-SS2083-A	LDW-SS2085-A	LDW-SS2089-A	LDW-SS2089-D	LDW-SS2090-A
Phenols												
2,4-Dimethylphenol	29	29	µg/kg dw	4.8 UJ	4.7 UJ	4.8 UJ	2.8 J	2.4 J	2.7 J	4.9 U	4.9 U	4.8 U
2-Methylphenol	63	63	µg/kg dw	4.8 U	4.7 U	4.8 U	4.0 J	4.7 J	3.2 J	3.7 J	2.9 J	4.8 U
4-Methylphenol	670	670	µg/kg dw	14 J	9.5 J	10 J	20	21	16 J	20	18 J	9.6 J
Pentachlorophenol	360	690	ug/kg dw	24 UJ	24 UJ	24 UJ	25 UJ	24 UJ	24 UJ	25 UJ	24 UJ	24 UJ
Phenol	420	1200	ug/kg dw	16 J	16 J	14 J	34	30	32	31	24	14 J
Other SVOCs												
Benzoic Acid	650	650	µg/kg dw	140 J	140 J	100 J	370	380	420	550	400	210
Benzyl Alcohol	57	73	µg/kg dw	**120 J**	**120 J**	**93 J**	**280**	**290**	**360**	**360**	**300**	**130**
1,2-Dichlorobenzene	2.3	2.3	mg/kg OC	0.15 U	0.14 U	0.22 U	0.13 U	0.18 U	0.20 U	0.14 U	0.15 U	0.14 U
1,4-Dichlorobenzene	3.1	9	mg/kg OC	0.15 U	0.14 U	0.22 U	0.13 U	0.18 U	0.20 U	0.14 U	0.15 U	0.14 U
Hexachlorobenzene	0.38	2.3	mg/kg OC	0.15 U	0.14 U	0.22 U	0.13 U	0.18 U	0.20 U	0.14 U	0.15 U	0.14 U
Hexachlorobutadiene	3.9	6.2	mg/kg OC	0.15 U	0.14 U	0.22 U	0.13 U	0.18 U	0.20 U	0.14 U	0.15 U	0.14 U
N-Nitrosodiphenylamine	11	11	mg/kg OC	0.15 U	0.14 U	0.22 U	0.13 U	0.18 U	0.20 U	0.14 U	0.15 U	0.14 U
1,2,4-Trichlorobenzene	0.81	1.8	mg/kg OC	0.15 U	0.14 U	0.22 U	0.13 U	0.18 U	0.20 U	0.14 U	0.15 U	0.14 U
PCB Aroclors												
Total PCBs	12	65	mg/kg OC	2.6	1.3	3.8	0.58	0.64	0.24	0.74	0.12 U	0.42

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2090-D	LDW-SS2091-U	LDW-SS2092-A	LDW-SS2093-D	LDW-SS2094-D	LDW-SS2096-A	LDW-SS2096-U	LDW-SS2097-A	LDW-SS2097-D
Metals												
Arsenic	57	93	mg/kg dw	20	9	10	7	10	9	10	10	10
Cadmium	5.1	6.7	mg/kg dw	0.5	0.4	0.4 U	0.3 U	0.4 U	0.3 U	0.3 U	0.4 U	0.4
Chromium	260	270	mg/kg dw	31	21.4	27	15.1	25	20.2	18.9	24.8	28
Copper	390	390	mg/kg dw	42.9	29.4	34.0	16.2	34.2	22.8	21.2	30.1	39.0
Lead	450	530	mg/kg dw	17	10	11	6	13	12	11	12	20
Mercury	0.41	0.59	mg/kg dw	0.11	0.06	0.07	0.03 U	0.10	0.06	0.04	0.06	0.11
Silver	6.1	6.1	mg/kg dw	0.7 U	0.5 U	0.6 U	0.4 U	0.6 U	0.4 U	0.4 U	0.5 U	0.6 U
Zinc	410	960	mg/kg dw	98	66	79	53	80	63	69	69	90
PAHs												
Acenaphthene	16	57	mg/kg OC	1.9	0.73 J	0.95 U	1.5 U	0.81 U	0.73 U	0.68 U	0.92 U	0.92 U
Acenaphthylene	66	66	mg/kg OC	0.59 U	0.98 U	0.95 U	1.5 U	0.81 U	0.73 U	0.68 U	0.92 U	0.92 U
Anthracene	220	1200	mg/kg OC	3.7	0.98 U	0.95 U	1.5 U	0.81 U	0.69 J	0.47 J	0.92 U	0.65 J
Benzo(a)anthracene	110	270	mg/kg OC	7.4	0.88 J	1.9	1.5 U	1.2	4.6	4.3	1.4	3.1
Benzofluoranthene	230	450	mg/kg OC	11	2.7	4.7	1.5	3.1	11	11	2.9	6.0
Benzo(g,h,i)perylene	31	78	mg/kg OC	3.4	0.98	1.8	1.5 U	1.3	4.2	4.0	1.2	2.4
Benzo(a)pyrene	99	210	mg/kg OC	6.2	0.98	2.1	1.5 U	1.3	4.6	4.3	1.2	2.8
Chrysene	110	460	mg/kg OC	8.3	1.6	2.8	1.1 J	2.1	6.9	6.1	1.9	3.9
Dibenzo(a,h)anthracene	12	33	mg/kg OC	1.1	0.22 J	0.48 J	0.38 U	0.37	1.3	1.2	0.28	0.74 J
Dibenzofuran	15	58	mg/kg OC	0.83	0.98 U	0.95 U	1.5 U	0.81 U	0.73 U	0.68 U	0.92 U	0.92 U
Fluoranthene	160	1200	mg/kg OC	17	2.6	5.5	1.8	3.4	14	12	3.9	7.8
Fluorene	23	79	mg/kg OC	1.8	0.98 U	0.95 U	1.5 U	0.81 U	0.73 U	0.68 U	0.92 U	0.92 U
Indeno(1,2,3-cd)pyrene	34	88	mg/kg OC	3.4	0.83 J	1.6	1.5 U	1.0	3.8	3.6	1.0	2.2
2-Methylnaphthalene	38	64	mg/kg OC	0.34 J	0.98 U	0.95 U	0.77 J	0.81 U	0.73 U	0.68 U	0.92 U	0.92 U
Naphthalene	99	170	mg/kg OC	0.52 J	0.98 U	0.95 U	1.5 U	0.81 U	0.73 U	0.68 U	0.46 J	0.92 U
Phenanthrene	100	480	mg/kg OC	16	1.3	2.5	1.3 J	1.8	6.1	4.3	2.3	4.0
Pyrene	1000	1400	mg/kg OC	19	2.2	5.0	1.7	3.2	11	10	3.4	6.9
Total HPAHs	960	5300	mg/kg OC	77	13 J	26 J	6.1 J	17	61	58	17	36 J
Total LPAHs	370	780	mg/kg OC	24 J	2.1 J	2.5	1.3 J	1.8	6.9 J	4.7 J	2.8 J	4.6 J
Phthalates												
Butyl benzyl phthalate	4.9	64	mg/kg OC	0.37	0.42	0.27 J	0.38 U	0.37 J	0.12 J	0.14 J	0.30 J	0.51 J
Dibutyl phthalate	220	1700	mg/kg OC	0.59 U	0.98 U	0.95 U	1.5 U	0.81 U	0.73 U	0.68 U	0.92 U	0.92 U
Di-n-octyl phthalate	58	4500	mg/kg OC	0.59 U	0.98 U	0.95 U	1.5 U	0.81 U	0.73 U	0.68 U	0.92 U	0.92 U
Diethyl phthalate	61	110	mg/kg OC	1.4	0.98 U	2.6 U	1.5 U	0.81 U	0.73 U	0.68 U	0.92 U	0.92 U
Dimethyl phthalate	53	53	mg/kg OC	0.15 U	0.25 U	0.24 U	0.38 U	0.12 J	0.18 U	0.17 U	0.23 U	0.23 U
Bis(2-ethylhexyl)phthalate	47	78	mg/kg OC	4.0	3.5	3.3 U	3.2 U	5.7	1.9 U	0.79 U	3.5 U	5.5

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2090-D	LDW-SS2091-U	LDW-SS2092-A	LDW-SS2093-D	LDW-SS2094-D	LDW-SS2096-A	LDW-SS2096-U	LDW-SS2097-A	LDW-SS2097-D
Phenols												
2,4-Dimethylphenol	29	29	µg/kg dw	4.7 U	4.8 U	4.8 U	4.6 U	2.7 J	4.7 U	4.8 U	4.8 U	4.9 U
2-Methylphenol	63	63	µg/kg dw	4.7 U	4.8 U	4.8 U	4.6 U	5.0 U	4.7 U	4.8 U	4.8 U	4.9 U
4-Methylphenol	670	670	µg/kg dw	11 J	19 U	14 J	18 U	25	19 U	19 U	12 J	22
Pentachlorophenol	360	690	ug/kg dw	23 UJ	24 UJ	24 UJ	23 UJ	25 UJ	24 UJ	24 UJ	24 UJ	24 UJ
Phenol	420	1200	ug/kg dw	17 J	19 U	26	18 U	26	12 J	19 U	9.6 J	23
Other SVOCs												
Benzoic Acid	650	650	µg/kg dw	250	190 U	280	180 U	310	140 J	68 J	120 J	300
Benzyl Alcohol	57	73	µg/kg dw	**150**	31	**250**	6.5	**220**	**68**	17	**76**	**220**
1,2-Dichlorobenzene	2.3	2.3	mg/kg OC	0.15 U	0.25 U	0.24 U	0.38 U	0.20 U	0.18 U	0.17 U	0.23 U	0.23 U
1,4-Dichlorobenzene	3.1	9	mg/kg OC	0.15 U	0.25 U	0.24 U	0.38 U	0.20 U	0.18 U	0.17 U	0.23 U	0.23 U
Hexachlorobenzene	0.38	2.3	mg/kg OC	0.15 U	0.25 U	0.24 U	0.38 U	0.20 U	0.18 U	0.17 U	0.23 U	0.23 U
Hexachlorobutadiene	3.9	6.2	mg/kg OC	0.15 U	0.25 U	0.24 U	0.38 U	0.20 U	0.18 U	0.17 U	0.23 U	0.23 U
N-Nitrosodiphenylamine	11	11	mg/kg OC	0.15 U	0.25 U	0.24 U	0.38 U	0.20 U	0.18 U	0.17 U	0.23 U	0.23 U
1,2,4-Trichlorobenzene	0.81	1.8	mg/kg OC	0.15 U	0.25 U	0.24 U	0.38 U	0.20 U	0.18 U	0.17 U	0.23 U	0.23 U
PCB Aroclors												
Total PCBs	12	65	mg/kg OC	1.9 JN	1.2	3.4	2.9 J	1.7	3.8	1.2	2.9	2.4

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2098-A	LDW-SS2098-D	LDW-SS2098-U	LDW-SS2099-A	LDW-SS2099-U	LDW-SS2103-A	LDW-SS2103-D	LDW-SS2103-U	LDW-SS2106-A
Metals												
Arsenic	57	93	mg/kg dw	7	7	6 U	7	8	9	12	7 U	10
Cadmium	5.1	6.7	mg/kg dw	0.3	0.3 U	0.3 U	0.3	0.3 U	0.3 U	0.3 U	0.3 U	0.5
Chromium	260	270	mg/kg dw	17.8	17.3	14.2	13.1	14.1	16.5	16.8	15.6	30
Copper	390	390	mg/kg dw	15.0	17.2	12.2	19.3 J	15.9 J	21.6	21.8	14.5	46.5
Lead	450	530	mg/kg dw	6	5	3	6 J	4 J	10	9	5	15
Mercury	0.41	0.59	mg/kg dw	0.03 U	0.03	0.03 U	0.02 U	0.03 U	0.04	0.03	0.03 U	0.08
Silver	6.1	6.1	mg/kg dw	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.5 U	0.4 U	0.4 U	0.7 U
Zinc	410	960	mg/kg dw	52	52	45	52 J	47 J	57	59	38	99
PAHs												
Acenaphthene	16	57	mg/kg OC	1.5 U	1.6 U	2.3 U	0.91 U	1.0 U	2.0 U	1.8 U	3.7 U	0.92
Acenaphthylene	66	66	mg/kg OC	1.5 U	1.6 U	2.3 U	0.91 U	1.0 U	2.0 U	1.8 U	3.7 U	0.77 U
Anthracene	220	1200	mg/kg OC	1.5 U	1.6 U	2.3 U	0.91 U	1.0 U	2.0 U	1.0 J	3.7 U	0.73 J
Benzo(a)anthracene	110	270	mg/kg OC	1.5 U	3.3	2.3 U	0.59 J	1.0 U	2.0	4.1	2.4 J	1.9
Benzofluoranthene	230	450	mg/kg OC	1.5 U	3.2	2.3 U	1.2	0.41 J	3.9	5.5	3.5 J	2.5
Benzo(g,h,i)perylene	31	78	mg/kg OC	1.5 U	1.1 J	2.3 U	0.50 J	1.0 U	1.5 J	1.4 J	3.7 U	0.80
Benzo(a)pyrene	99	210	mg/kg OC	1.5 U	1.6 J	2.3 U	0.50 J	1.0 U	1.7 J	1.8	2.2 J	1.1
Chrysene	110	460	mg/kg OC	1.5 U	3.2	2.3 U	0.73 J	0.31 J	2.8	7.6	3.1 J	2.3
Dibenzo(a,h)anthracene	12	33	mg/kg OC	0.38 U	0.86	0.57 U	0.22 U	0.26 U	0.52 U	0.46 U	0.94 U	0.19 U
Dibenzofuran	15	58	mg/kg OC	1.5 U	1.6 U	2.3 U	0.91 U	1.0 U	2.0 U	1.8 U	3.7 U	0.92
Fluoranthene	160	1200	mg/kg OC	1.4 J	5.5	1.7 J	1.2	0.52 J	5.7	5.3	6.3	5.4
Fluorene	23	79	mg/kg OC	1.5 U	1.6 U	2.3 U	0.91 U	1.0 U	2.0 U	1.8 U	3.7 U	1.0
Indeno(1,2,3-cd)pyrene	34	88	mg/kg OC	1.5 U	0.86 J	2.3 U	0.91 U	1.0 U	1.3 J	1.0 J	3.7 U	0.65 J
2-Methylnaphthalene	38	64	mg/kg OC	1.5 U	1.6 U	2.3 U	0.91 U	1.0 U	2.0 U	1.8 U	3.7 U	0.54 J
Naphthalene	99	170	mg/kg OC	1.5 U	1.6 U	2.3 U	0.91 U	1.0 U	2.0 U	1.8 U	3.7 U	0.42 J
Phenanthrene	100	480	mg/kg OC	0.80 J	3.3	2.3 U	0.95	0.41 J	2.7	1.6 J	3.5 J	3.7
Pyrene	1000	1400	mg/kg OC	1.4 J	5.9	1.7 J	1.5	0.52 J	5.2	4.9	6.3	4.2
Total HPAHs	960	5300	mg/kg OC	2.8 J	26 J	3.3 J	6.4 J	1.8 J	24 J	31 J	24 J	19 J
Total LPAHs	370	780	mg/kg OC	0.80 J	3.3	2.3 U	0.95	0.41 J	2.7	2.7 J	3.5 J	6.9 J
Phthalates												
Butyl benzyl phthalate	4.9	64	mg/kg OC	0.38 U	0.63 J	0.57 U	0.22 U	0.26 U	2.4 J	1.0 J	1.4 J	0.73 J
Dibutyl phthalate	220	1700	mg/kg OC	1.5 U	1.6 U	2.3 U	0.91 U	1.0 U	2.0 U	1.8 U	3.7 U	0.77 U
Di-n-octyl phthalate	58	4500	mg/kg OC	1.5 U	1.6 U	2.3 U	0.91 U	1.0 U	2.0 U	1.8 U	3.7 U	0.77 U
Diethyl phthalate	61	110	mg/kg OC	6.5	1.6 U	2.3 U	0.91 U	0.26 J	2.0 U	1.8 U	3.7 U	0.77 U
Dimethyl phthalate	53	53	mg/kg OC	0.38 U	0.41 U	0.57 U	0.30	0.26 U	0.52 U	0.46 U	0.94 U	0.31
Bis(2-ethylhexyl)phthalate	47	78	mg/kg OC	2.8 U	3.7 U	3.3 U	1.1 U	1.7 U	4.7 U	4.6 U	3.7 U	3.4 U

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2098-A	LDW-SS2098-D	LDW-SS2098-U	LDW-SS2099-A	LDW-SS2099-U	LDW-SS2103-A	LDW-SS2103-D	LDW-SS2103-U	LDW-SS2106-A
Phenols												
2,4-Dimethylphenol	29	29	µg/kg dw	4.7 U	4.8 U	4.8 U	4.9 U	4.8 U	4.8 U	4.8 U	4.8 U	4.9 U
2-Methylphenol	63	63	µg/kg dw	4.7 U	4.8 U	4.8 U	4.9 U	4.8 U	4.8 U	4.8 U	4.8 U	4.9 U
4-Methylphenol	670	670	µg/kg dw	19 U	19 U	19 U	22	19 U	260	300	64	160
Pentachlorophenol	360	690	ug/kg dw	24 U	24 U	24 U	24 UJ	24 U	24 U	24 U	24 U	24 U
Phenol	420	1200	ug/kg dw	19 U	12 J	19 U	20 U	19 U	17 J	55	19 U	38
Other SVOCs												
Benzoic Acid	650	650	µg/kg dw	35 J	48 J	190 U	200 U	190 U	68 J	88 J	190 U	380
Benzyl Alcohol	57	73	µg/kg dw	10	10 J	5.4	15 J	6.7 J	37	**110**	7.0	**350**
1,2-Dichlorobenzene	2.3	2.3	mg/kg OC	0.38 U	0.41 U	0.57 U	0.22 U	0.26 U	0.52 U	0.46 U	0.94 U	0.19 U
1,4-Dichlorobenzene	3.1	9	mg/kg OC	0.38 U	0.41 U	0.57 U	0.22 U	0.26 U	0.52 U	0.46 U	0.94 U	0.19 U
Hexachlorobenzene	0.38	2.3	mg/kg OC	0.38 U	*0.41 U*	*0.57 U*	0.22 U	0.26 U	*0.52 U*	*0.46 U*	*0.94 U*	0.19 U
Hexachlorobutadiene	3.9	6.2	mg/kg OC	0.38 U	0.41 U	0.57 U	0.22 U	0.26 U	0.52 U	0.46 U	0.94 U	0.19 U
N-Nitrosodiphenylamine	11	11	mg/kg OC	0.38 U	0.41 U	0.57 U	0.22 U	0.26 U	0.52 U	0.46 U	0.94 U	0.19 U
1,2,4-Trichlorobenzene	0.81	1.8	mg/kg OC	0.38 U	0.41 U	0.57 U	0.22 U	0.26 U	0.52 U	0.46 U	*0.94 U*	0.19 U
PCB Aroclors												
Total PCBs	12	65	mg/kg OC	0.38 U	0.78	0.46 U	0.55	0.39	4.0	3.5	4.1	**46**

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2106-D	LDW-SS2106-U	LDW-SS2108-A	LDW-SS2108-U	LDW-SS2113-A	LDW-SS2113-A-2	LDW-SS2113-U	LDW-SS2115-A
Metals											
Arsenic	57	93	mg/kg dw	13	20	10	20	10	10	8 U	10
Cadmium	5.1	6.7	mg/kg dw	0.4	0.5	0.5	0.5	0.4	0.4 U	0.3 U	0.3 U
Chromium	260	270	mg/kg dw	24.8	28	28	27	23.6	24.1	17.5	22.2 J
Copper	390	390	mg/kg dw	40.1	53.4	58.8	63.0	38.5	39.4	27.0	40.9 J
Lead	450	530	mg/kg dw	18	20	24	24	26	26	28	34
Mercury	0.41	0.59	mg/kg dw	0.09	0.12	0.09	0.13	0.10	0.09	0.05	0.04
Silver	6.1	6.1	mg/kg dw	0.6 U	0.7 U	0.6 U	0.7 U	0.6 U	0.6 U	0.5 U	0.4 U
Zinc	410	960	mg/kg dw	79	107	106	121	81	85	59	90
PAHs											
Acenaphthene	16	57	mg/kg OC	0.84 U	0.65	0.51 J	0.43 J	1.3 U	1.1 U	1.0 U	1.2 J
Acenaphthylene	66	66	mg/kg OC	0.84 U	0.54 U	0.81 U	0.71 U	0.69 J	1.1 U	1.0 U	1.8 U
Anthracene	220	1200	mg/kg OC	0.71 J	0.68	0.81	0.78	1.7	1.5	1.0 U	14
Benzo(a)anthracene	110	270	mg/kg OC	2.1	1.7	2.3	2.0	5.7	3.8	1.8	20
Benzofluoranthene	230	450	mg/kg OC	3.9	3.4	5.1	3.9	11	8.3	4.2	35
Benzo(g,h,i)perylene	31	78	mg/kg OC	1.5	1.0	1.8	1.3	3.4	2.7	1.4	13
Benzo(a)pyrene	99	210	mg/kg OC	1.9	1.3	2.0	1.6	4.5	3.1	1.6	12 J
Chrysene	110	460	mg/kg OC	3.2	2.3	3.4	3.4	8.2	5.5	2.8	29
Dibenzo(a,h)anthracene	12	33	mg/kg OC	0.31	0.31 J	0.51 J	0.39	0.94	0.72 J	0.34	5.5
Dibenzofuran	15	58	mg/kg OC	0.84 U	0.62	0.64 J	0.50 J	0.82 J	0.66 J	1.0 U	0.89 J
Fluoranthene	160	1200	mg/kg OC	4.9	5.1	6.0	5.0	13	12	4.3	43
Fluorene	23	79	mg/kg OC	0.84 U	0.73	0.64 J	0.53 J	0.88 J	0.72 J	1.0 U	1.7 J
Indeno(1,2,3-cd)pyrene	34	88	mg/kg OC	1.1	0.85	1.5	1.1	2.9	2.2	1.1	13
2-Methylnaphthalene	38	64	mg/kg OC	0.84 U	0.37 J	0.47 J	0.39 J	0.75 J	1.1 U	1.0 U	1.8 U
Naphthalene	99	170	mg/kg OC	0.75 J	0.34 J	0.64 J	0.46 J	1.4	0.88 J	0.92 J	1.3 J
Phenanthrene	100	480	mg/kg OC	2.4	3.1	3.3	2.5	4.7	4.6	1.5	23
Pyrene	1000	1400	mg/kg OC	4.4	3.9	5.5	3.9	11	9.9	4.4	38
Total HPAHs	960	5300	mg/kg OC	23	20 J	28 J	23	62	49 J	22	210 J
Total LPAHs	370	780	mg/kg OC	3.8 J	5.6 J	6.0 J	4.6 J	9.4 J	7.7 J	2.4 J	42 J
Phthalates											
Butyl benzyl phthalate	4.9	64	mg/kg OC	0.58 J	0.48 J	0.68 J	0.46 J	0.82 J	0.66 J	1.3 J	0.67 J
Dibutyl phthalate	220	1700	mg/kg OC	0.84 U	0.54 U	0.81 U	0.71 U	1.3 U	1.1 U	1.0 U	1.5 J
Di-n-octyl phthalate	58	4500	mg/kg OC	0.84 U	0.54 U	0.81 U	0.71 U	1.3 U	1.1 U	1.0 U	1.8 U
Diethyl phthalate	61	110	mg/kg OC	0.84 U	0.54 U	0.81 U	0.71 U	1.3 U	1.1 U	1.0 U	4.6
Dimethyl phthalate	53	53	mg/kg OC	0.21 U	0.13 U	0.20 U	0.17 U	0.31 U	0.27 U	0.25 U	0.45 U
Bis(2-ethylhexyl)phthalate	47	78	mg/kg OC	3.8 U	3.4	5.1	4.3	4.9	4.8	4.3	5.9 U

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2106-D	LDW-SS2106-U	LDW-SS2108-A	LDW-SS2108-U	LDW-SS2113-A	LDW-SS2113-A-2	LDW-SS2113-U	LDW-SS2115-A
Phenols											
2,4-Dimethylphenol	29	29	µg/kg dw	4.8 U	4.7 U	4.8 U	4.9 U	4.9 U	4.9 U	4.9 U	4.8 UJ
2-Methylphenol	63	63	µg/kg dw	4.8 U	4.7 U	4.8 U	4.9 U	4.9 U	4.9 U	4.9 U	4.8 U
4-Methylphenol	670	670	µg/kg dw	200	220	73	460	53	60	270	19 U
Pentachlorophenol	360	690	ug/kg dw	24 U	24 U	24 U	24 U	24 U	24 U	24 U	20 J
Phenol	420	1200	ug/kg dw	34	46	36	87	33	30	19 J	21
Other SVOCs											
Benzoic Acid	650	650	µg/kg dw	290	340	330	480	250	250	130 J	55 J
Benzyl Alcohol	57	73	µg/kg dw	**210**	**650**	**170**	**330 J**	**120 J**	**100**	46 J	33
1,2-Dichlorobenzene	2.3	2.3	mg/kg OC	0.21 U	0.13 U	0.20 U	0.17 U	0.31 U	0.27 U	0.25 U	0.45 U
1,4-Dichlorobenzene	3.1	9	mg/kg OC	**6.6**	0.13 U	0.20 U	0.17 U	0.31 U	0.27 U	0.25 U	0.45 U
Hexachlorobenzene	0.38	2.3	mg/kg OC	0.21 U	0.13 U	0.20 U	0.17 U	0.31 U	0.27 U	0.25 U	*0.45 U*
Hexachlorobutadiene	3.9	6.2	mg/kg OC	0.21 U	0.13 U	0.20 U	0.17 U	0.31 U	0.27 U	0.25 U	0.45 U
N-Nitrosodiphenylamine	11	11	mg/kg OC	0.21 U	0.13 U	0.20 U	0.17 U	0.31 U	0.27 U	0.25 U	0.45 U
1,2,4-Trichlorobenzene	0.81	1.8	mg/kg OC	0.31	0.13 U	0.20 U	0.17 U	0.31 U	0.27 U	0.25 U	0.45 U
PCB Aroclors											
Total PCBs	12	65	mg/kg OC	6.2	5.6	4.3	2.3	5.8	6.1	2.4	5.6

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2115-D	LDW-SS2115-U	LDW-SS2122-A	LDW-SS2122-D	LDW-SS2122-U	LDW-SS2139-A	LDW-SS2144-A	LDW-SS2146-A	LDW-SS2147-D
Metals												
Arsenic	57	93	mg/kg dw	9	42	20	20	20	15 J	20	14	10
Cadmium	5.1	6.7	mg/kg dw	0.3 U	0.3 U	0.5	0.5	0.5	0.4	0.4	0.4	0.5
Chromium	260	270	mg/kg dw	25.0 J	21.9 J	30	31	30	25.6	34.7	38.4	43.9
Copper	390	390	mg/kg dw	36.5 J	68.1 J	45.0	51.0	51.3	55.6 J	30.4	40.4	39.6
Lead	450	530	mg/kg dw	29	30	18	23	30	25 J	28	15	18
Mercury	0.41	0.59	mg/kg dw	0.04	0.05	0.10	0.13	0.23	0.10	0.04	0.04	0.05
Silver	6.1	6.1	mg/kg dw	0.4 U	0.4 U	0.6 U	0.6 U	0.6 U	0.5 U	0.5 U	0.5 U	0.5 U
Zinc	410	960	mg/kg dw	85	86	99	136	112	102 J	87	91	93
PAHs												
Acenaphthene	16	57	mg/kg OC	0.96 J	1.3 J	7.0	5.3	4.8	1.4	2.1 U	1.9 U	2.4 U
Acenaphthylene	66	66	mg/kg OC	1.2 U	0.87 J	0.93 J	1.1	0.80 J	2.1 J	2.1 U	1.9 U	2.4 U
Anthracene	220	1200	mg/kg OC	5.2	4.0	4.3	6.7	5.6	10	1.4 J	1.9 U	1.7 J
Benzo(a)anthracene	110	270	mg/kg OC	21	15	8.1	20	14	39	14	4.3	8.2
Benzofluoranthene	230	450	mg/kg OC	39	29	15	42	25	65	38	19	33
Benzo(g,h,i)perylene	31	78	mg/kg OC	12	11	3.8	7.4	5.4	13	20	7.8	15
Benzo(a)pyrene	99	210	mg/kg OC	22	13 J	5.8	12	9.8	26	14	4.9	9.7
Chrysene	110	460	mg/kg OC	25	21	12	39	19	40	33	8.0	17
Dibenzo(a,h)anthracene	12	33	mg/kg OC	4.9	4.9	1.2	2.5	1.7	4.8	9.5	1.6 J	3.8
Dibenzofuran	15	58	mg/kg OC	1.2 J	1.1 J	5.8	3.5	2.9	1.8	2.1 U	1.9 U	2.4 U
Fluoranthene	160	1200	mg/kg OC	48	33	41	84	50	65	14	9.9	17
Fluorene	23	79	mg/kg OC	1.4	1.7	7.6	3.9	2.9	2.6	2.1 U	1.9 U	2.4 U
Indeno(1,2,3-cd)pyrene	34	88	mg/kg OC	12	10	3.5	7.7	4.9	13	14	6.4	13
2-Methylnaphthalene	38	64	mg/kg OC	1.2 U	0.73 J	2.4	1.1	1.5	1.0 J	2.1 U	1.9 U	2.4 U
Naphthalene	99	170	mg/kg OC	1.2 U	0.87 J	2.6	1.8	2.3	2.2	2.1 U	1.9 U	2.4 U
Phenanthrene	100	480	mg/kg OC	21	13	47	27	15	14	6.1	4.8	10
Pyrene	1000	1400	mg/kg OC	40	29	28	56	34	77	16	9.0	18
Total HPAHs	960	5300	mg/kg OC	230	170 J	120	270	170	340	180	70 J	130
Total LPAHs	370	780	mg/kg OC	28 J	22 J	70 J	46	32 J	33 J	7.5 J	4.8	12 J
Phthalates												
Butyl benzyl phthalate	4.9	64	mg/kg OC	0.68 J	1.7 J	0.31	1.1	**5.5**	1.3	0.73	1.2	3.8
Dibutyl phthalate	220	1700	mg/kg OC	2.1	6.4	1.1 U	1.6	1.1 U	1.2 U	2.9	1.9 U	2.4 U
Di-n-octyl phthalate	58	4500	mg/kg OC	1.2 U	1.3 U	1.1 U	0.63 U	1.1 U	1.2 U	2.1 U	1.9 U	2.4 U
Diethyl phthalate	61	110	mg/kg OC	1.2 U	1.3 U	1.1 U	0.63 U	1.1 U	1.2 U	2.1 U	1.4 J	2.4 U
Dimethyl phthalate	53	53	mg/kg OC	0.32 U	0.33 U	0.28 U	0.091 J	0.63	0.31 U	0.54 U	0.68	0.61 U
Bis(2-ethylhexyl)phthalate	47	78	mg/kg OC	3.2 U	8.7	9.9 U	20	15 U	6.5	16	8.7	19

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2115-D	LDW-SS2115-U	LDW-SS2122-A	LDW-SS2122-D	LDW-SS2122-U	LDW-SS2139-A	LDW-SS2144-A	LDW-SS2146-A	LDW-SS2147-D
Phenols												
2,4-Dimethylphenol	29	29	µg/kg dw	4.6 UJ	4.9 UJ	3.8 J	4.2 J	4.6 J	3.6 J	4.6 U	4.7 U	4.8 U
2-Methylphenol	63	63	µg/kg dw	4.6 U	4.9 U	5.6	4.6	6.2	3.6 J	4.6 U	4.7 U	4.8 U
4-Methylphenol	670	670	µg/kg dw	18 U	20 U	210	250	220	17 J	18 U	19 U	19 U
Pentachlorophenol	360	690	ug/kg dw	36 J	19 J	24 U	12 J	24 U	24 U	23 UJ	23 UJ	24 UJ
Phenol	420	1200	ug/kg dw	19	26	110	95	78	33	18 U	19 U	19 U
Other SVOCs												
Benzoic Acid	650	650	µg/kg dw	57 J	88 J	620	220	580	190 U	180 U	190 U	190 U
Benzyl Alcohol	57	73	µg/kg dw	**61**	53	**360**	**210**	**320**	55	21	46	15
1,2-Dichlorobenzene	2.3	2.3	mg/kg OC	0.32 U	0.33 U	0.28 U	0.16 U	0.27 U	0.31 U	0.54 U	0.47 U	0.61 U
1,4-Dichlorobenzene	3.1	9	mg/kg OC	0.32 U	0.33 U	0.28 U	0.16 U	0.27 U	0.31 U	0.54 U	0.47 U	0.61 U
Hexachlorobenzene	0.38	2.3	mg/kg OC	0.32 U	0.33 U	0.28 U	0.16 U	0.27 U	0.31 U	*0.54 U*	*0.47 U*	*0.61 U*
Hexachlorobutadiene	3.9	6.2	mg/kg OC	0.32 U	0.33 U	0.28 U	0.16 U	0.27 U	0.31 U	0.54 U	0.47 U	0.61 U
N-Nitrosodiphenylamine	11	11	mg/kg OC	0.32 U	0.33 U	0.28 U	0.20 J	0.27 U	0.31 U	0.54 U	0.47 U	0.61 U
1,2,4-Trichlorobenzene	0.81	1.8	mg/kg OC	0.32 U	0.33 U	0.28 U	0.16 U	0.27 U	0.31 U	0.54 U	0.47 U	0.61 U
PCB Aroclors												
Total PCBs	12	65	mg/kg OC	3.0	5.1	1.2	1.6	2.4	5.7	2.6	2.3	3.6

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2157-A	LDW-SS2200-A	LDW-SS2200-D	LDW-SS2201-A	LDW-SS2201-D	LDW-SS2201-U	LDW-SS2214-A	LDW-SS2214-D	LDW-SS2214-U
Metals												
Arsenic	57	93	mg/kg dw	20 J	12	10	10	10	11	20	20	20
Cadmium	5.1	6.7	mg/kg dw	0.5	0.4 U	0.4 U	0.4 U	0.4 U	0.4 U	0.6	0.5	0.6
Chromium	260	270	mg/kg dw	32	26.4	27	27	28	26.5	34	34	33
Copper	390	390	mg/kg dw	68.8 J	31.5	33.3	33.2	36.7	32.4	66.7	67.2	64.0
Lead	450	530	mg/kg dw	30	9	9	10	12	13	22	22	24
Mercury	0.41	0.59	mg/kg dw	0.27	0.07	0.12	0.09	0.08	0.07	0.11	0.12	0.12
Silver	6.1	6.1	mg/kg dw	0.7 U	0.6 U	0.6 U	0.6 U	0.6 U	0.6 U	0.8 U	0.7 U	0.7 U
Zinc	410	960	mg/kg dw	120 J	71	71	75	79	74	119	115	117
PAHs												
Acenaphthene	16	57	mg/kg OC	2.6	0.82 U	0.80 U	1.2 U	0.74 U	2.2	0.70 U	0.34 J	0.74 U
Acenaphthylene	66	66	mg/kg OC	1.0 U	0.82 U	0.80 U	1.2 U	0.74 U	1.1 U	0.70 U	0.53 U	0.74 U
Anthracene	220	1200	mg/kg OC	5.5	0.82 U	0.80 U	1.2 U	0.74 U	1.1 U	0.96	1.0	0.97
Benzo(a)anthracene	110	270	mg/kg OC	14	0.56 J	1.1	0.76 J	0.74 U	1.0 J	3.0	2.8	3.2
Benzofluoranthene	230	450	mg/kg OC	31	1.3	2.1	1.8	1.1	2.7	8.5	6.5	7.4
Benzo(g,h,i)perylene	31	78	mg/kg OC	8.8	0.56 J	0.80	0.88 J	0.47 J	0.89 J	2.6	2.1	2.0
Benzo(a)pyrene	99	210	mg/kg OC	12	0.56 J	0.97	0.71 J	0.47 J	0.95 J	3.1	2.6	2.8
Chrysene	110	460	mg/kg OC	26	0.86	1.6	1.1 J	0.74	2.6	6.3	4.5	5.6
Dibenzo(a,h)anthracene	12	33	mg/kg OC	2.5	0.16 J	0.20	0.19 J	0.14 J	0.22 J	0.78	0.67	0.67
Dibenzofuran	15	58	mg/kg OC	2.7	0.82 U	0.80 U	1.2 U	0.74 U	1.1 U	0.56 J	0.39 J	0.74 U
Fluoranthene	160	1200	mg/kg OC	35	1.5	3.0	1.8	1.2	3.6	10	7.6	8.6
Fluorene	23	79	mg/kg OC	3.0	0.82 U	0.80 U	1.2 U	0.74 U	1.1 U	0.48 J	0.51 J	0.41 J
Indeno(1,2,3-cd)pyrene	34	88	mg/kg OC	7.7	0.43 J	0.63 J	0.65 J	0.43 J	0.83 J	2.1	1.8	1.9
2-Methylnaphthalene	38	64	mg/kg OC	2.3	0.82 U	0.80 U	1.2 U	0.74 U	1.1 U	0.37 J	0.53 U	0.74 U
Naphthalene	99	170	mg/kg OC	3.7	0.82 U	0.80 U	1.2 U	0.74 U	1.3	0.52 J	0.39 J	0.45 J
Phenanthrene	100	480	mg/kg OC	15	1.1	2.4	1.3	0.66 J	1.8	3.1	3.4	3.2
Pyrene	1000	1400	mg/kg OC	32 J	1.5	3.1	1.6	1.1	3.0	7.8	5.9	6.3
Total HPAHs	960	5300	mg/kg OC	170 J	7.3 J	13 J	9.4 J	5.4 J	16 J	44	34	37
Total LPAHs	370	780	mg/kg OC	30	1.1	2.4	1.3	0.66 J	5.4	5.2 J	5.6 J	4.8 J
Phthalates												
Butyl benzyl phthalate	4.9	64	mg/kg OC	2.5	0.19 J	0.16 J	0.22 J	0.15 J	0.20 J	0.89 J	1.3 J	1.0
Dibutyl phthalate	220	1700	mg/kg OC	0.54 J	0.82 U	0.80 U	1.2 U	0.74 U	1.1 U	0.37 J	0.53 U	0.74 U
Di-n-octyl phthalate	58	4500	mg/kg OC	1.0 U	0.82 U	0.80 U	1.2 U	0.74 U	1.1 U	0.70 U	0.53 U	0.74 U
Diethyl phthalate	61	110	mg/kg OC	1.0 U	0.82 U	0.80 U	1.2 U	0.74 U	3.0 U	0.70 U	0.53 U	0.74 U
Dimethyl phthalate	53	53	mg/kg OC	0.27 U	0.20 U	0.20 U	0.29 U	0.19 U	0.28 U	1.0	0.76	0.36
Bis(2-ethylhexyl)phthalate	47	78	mg/kg OC	15	1.8 U	2.9 U	2.7 U	2.2 U	1.7 U	6.3	3.9	3.5

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2157-A	LDW-SS2200-A	LDW-SS2200-D	LDW-SS2201-A	LDW-SS2201-D	LDW-SS2201-U	LDW-SS2214-A	LDW-SS2214-D	LDW-SS2214-U
Phenols												
2,4-Dimethylphenol	29	29	µg/kg dw	5.7	4.7 U	4.8 U	4.9 U	4.8 U	4.7 U	4.8 U	4.8 U	5.0 U
2-Methylphenol	63	63	µg/kg dw	4.8 U	4.7 U	4.8 U	4.9 U	4.8 U	4.7 U	4.8 U	4.8 U	5.0 U
4-Methylphenol	670	670	µg/kg dw	24	16 J	12 J	14 J	15 J	19 U	160	400	**4900**
Pentachlorophenol	360	690	ug/kg dw	8.1 J	23 UJ	24 UJ	24 UJ	24 UJ	24 UJ	15 J	24 U	25 U
Phenol	420	1200	ug/kg dw	42	12 J	14 J	32	12 J	25	48	79	**480**
Other SVOCs												
Benzoic Acid	650	650	µg/kg dw	310	140 J	180 J	170 J	190 J	110 J	480	490	440
Benzyl Alcohol	57	73	µg/kg dw	**290**	**140**	**150**	**140**	**130**	**69**	**280 J**	**280 J**	**190 J**
1,2-Dichlorobenzene	2.3	2.3	mg/kg OC	0.27 U	0.20 U	0.20 U	0.29 U	0.19 U	0.28 U	0.18 U	0.13 U	0.19 U
1,4-Dichlorobenzene	3.1	9	mg/kg OC	0.27 U	0.20 U	0.20 U	0.29 U	0.19 U	0.28 U	0.18 U	0.13 U	0.19 U
Hexachlorobenzene	0.38	2.3	mg/kg OC	0.27 U	0.20 U	0.20 U	0.29 U	0.19 U	0.28 U	0.18 U	0.13 U	0.19 U
Hexachlorobutadiene	3.9	6.2	mg/kg OC	0.27 U	0.20 U	0.20 U	0.29 U	0.19 U	0.28 U	0.18 U	0.13 U	0.19 U
N-Nitrosodiphenylamine	11	11	mg/kg OC	0.27 U	0.20 U	0.20 U	0.29 U	0.19 U	0.28 U	0.18 U	0.13 U	0.19 U
1,2,4-Trichlorobenzene	0.81	1.8	mg/kg OC	0.27 U	0.20 U	0.20 U	0.29 U	0.19 U	0.28 U	0.18 U	0.13 U	0.19 U
PCB Aroclors												
Total PCBs	12	65	mg/kg OC	3.3	0.69 J	0.50	0.50 J	0.31 J	2.0	11	8.7	**15**

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2223-A	LDW-SS2232-A	LDW-SS2232-D	LDW-SS2232-U	LDW-SS2233-D	LDW-SS2244-A	LDW-SS2244-D	LDW-SS2246-A	LDW-SS2246-U
Metals												
Arsenic	57	93	mg/kg dw	15	13	8	12	22	20	20	20	20
Cadmium	5.1	6.7	mg/kg dw	0.6	0.3 U	0.3 U	0.3 U	0.2 U	0.6	0.5	0.7	0.5
Chromium	260	270	mg/kg dw	37.5	21.7 J	13.3 J	16.7 J	14.0 J	34	32	37	35
Copper	390	390	mg/kg dw	62.8	38.7 J	17.3 J	37.9 J	27.6 J	67.2	57.9	87.5	76.5
Lead	450	530	mg/kg dw	37	17	10	27	52	27	21	43	34
Mercury	0.41	0.59	mg/kg dw	0.15	0.07	0.03 U	0.04	0.05	0.16	0.14	0.32	0.19
Silver	6.1	6.1	mg/kg dw	0.7	0.5 U	0.4 U	0.4 U	0.4 U	0.6 U	0.6 U	0.6 U	0.6 U
Zinc	410	960	mg/kg dw	154	57 J	46 J	73 J	128 J	126	112	161	142
PAHs												
Acenaphthene	16	57	mg/kg OC	1.2	1.1 J	2.3 U	1.2 U	1.8 J	0.39 J	**31**	1.9	2.8
Acenaphthylene	66	66	mg/kg OC	0.67 J	3.7	2.3 U	0.61 J	2.9 U	0.62 U	1.4	2.1	0.57 J
Anthracene	220	1200	mg/kg OC	3.7	2.1	2.3 U	1.2	3.7	1.2	54	3.3	5.0
Benzo(a)anthracene	110	270	mg/kg OC	11	2.9	2.3 U	5.8	21	3.2	13	8.2	15
Benzofluoranthene	230	450	mg/kg OC	21	5.2	3.0	21	39	6.6	12	32	25
Benzo(g,h,i)perylene	31	78	mg/kg OC	6.1	3.1	2.3 U	6.7	13	1.8	2.5	5.8	7.5
Benzo(a)pyrene	99	210	mg/kg OC	9.2	3.0	2.3 U	8.0	19	2.7	5.1	8.2	12
Chrysene	110	460	mg/kg OC	15	2.9	1.9 J	13	28	4.9	16	30	20
Dibenzo(a,h)anthracene	12	33	mg/kg OC	2.1	0.44	0.59 U	2.3	5.3	0.75	0.95	2.2	3.1
Dibenzofuran	15	58	mg/kg OC	1.2	1.6 J	2.3 U	1.2 U	2.9 U	0.52 J	**20**	2.7	1.4
Fluoranthene	160	1200	mg/kg OC	28	13	1.8 J	23	42	6.6	78	82	33
Fluorene	23	79	mg/kg OC	1.7	1.6	2.3 U	1.2 U	1.9 J	0.69	**37**	2.3	2.9
Indeno(1,2,3-cd)pyrene	34	88	mg/kg OC	5.5	2.1	2.3 U	5.3	13	1.7	2.3	5.5	7.1
2-Methylnaphthalene	38	64	mg/kg OC	0.98 J	1.4 J	2.3 U	1.2 U	2.9 U	0.46 J	7.1	1.6	0.96
Naphthalene	99	170	mg/kg OC	1.2	7.4	2.3 U	1.2 U	2.9 U	0.46 J	2.7	2.0	1.4
Phenanthrene	100	480	mg/kg OC	13	6.7	1.4 J	2.5	19	3.0	**180**	44	27
Pyrene	1000	1400	mg/kg OC	26	14	3.2	20	44	6.6	65	82	35
Total HPAHs	960	5300	mg/kg OC	120	46	9.9 J	100	230	36	190	260	160
Total LPAHs	370	780	mg/kg OC	21 J	23 J	1.4 J	4.4 J	28 J	5.9 J	300	55	39 J
Phthalates												
Butyl benzyl phthalate	4.9	64	mg/kg OC	3.1 J	0.41 U	0.54 J	0.29 J	0.73 J	0.66 J	0.48 J	0.78 J	0.60 J
Dibutyl phthalate	220	1700	mg/kg OC	1.0 J	1.6 U	2.3 U	1.2 U	2.9 U	0.19 J	0.16 J	0.65 U	0.68 U
Di-n-octyl phthalate	58	4500	mg/kg OC	1.1 U	1.6 U	2.3 U	1.2 U	2.9 U	0.62 U	0.65 U	0.65 U	0.68 U
Diethyl phthalate	61	110	mg/kg OC	1.1 U	0.99 J	2.3 U	1.2 U	2.9 U	0.62 U	0.65 U	0.65 U	0.68 U
Dimethyl phthalate	53	53	mg/kg OC	2.1	0.41 U	0.59 U	0.28 U	0.73 U	1.7	1.5	0.22	0.16 J
Bis(2-ethylhexyl)phthalate	47	78	mg/kg OC	19	11	4.6	7.4	8.9	4.6	4.1	7.2	4.6

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2223-A	LDW-SS2232-A	LDW-SS2232-D	LDW-SS2232-U	LDW-SS2233-D	LDW-SS2244-A	LDW-SS2244-D	LDW-SS2246-A	LDW-SS2246-U
Phenols												
2,4-Dimethylphenol	29	29	µg/kg dw	4.6 UJ	4.6 U	4.6 U	4.6 U	4.5 U	2.5 J	3.6 J	4.1 J	3.2 J
2-Methylphenol	63	63	µg/kg dw	4.6 U	4.6 U	4.6 U	4.6 U	4.5 U	4.8 U	4.8 U	4.2 J	4.7 U
4-Methylphenol	670	670	µg/kg dw	27	13 J	18 U	20	18 U	26	34	19	16 J
Pentachlorophenol	360	690	ug/kg dw	23 UJ	23 UJ	23 UJ	23 UJ	22 UJ	24 UJ	24 UJ	24 UJ	23 UJ
Phenol	420	1200	ug/kg dw	29 J	16 J	18 U	20	18 U	49 J	51 J	29 J	23 J
Other SVOCs												
Benzoic Acid	650	650	µg/kg dw	160 J	43 J	180 U	190 U	180 U	330	420	150 J	150 J
Benzyl Alcohol	57	73	µg/kg dw	**120 J**	6.2 U	5.8 U	6.0 U	6.7 U	**280 J**	**370 J**	**130 J**	**130 J**
1,2-Dichlorobenzene	2.3	2.3	mg/kg OC	0.28 U	0.41 U	0.59 U	0.28 U	0.73 U	0.16 U	0.16 U	0.16 U	0.17 U
1,4-Dichlorobenzene	3.1	9	mg/kg OC	0.56 J	0.41 U	0.59 U	0.28 U	0.73 U	0.082 J	0.16 U	0.11 J	0.17 U
Hexachlorobenzene	0.38	2.3	mg/kg OC	0.28 U	*0.41 U*	*0.59 U*	0.28 U	*0.73 U*	0.16 U	0.16 U	0.16 U	0.17 U
Hexachlorobutadiene	3.9	6.2	mg/kg OC	0.28 U	0.41 U	0.59 U	0.28 U	0.73 U	0.16 U	0.16 U	0.16 U	0.17 U
N-Nitrosodiphenylamine	11	11	mg/kg OC	0.28 U	0.41 U	0.59 U	0.28 U	0.73 U	0.16 U	0.16 U	0.16 U	0.17 U
1,2,4-Trichlorobenzene	0.81	1.8	mg/kg OC	0.28 U	0.41 U	0.59 U	0.28 U	0.73 U	0.16 U	0.16 U	0.16 U	0.17 U
PCB Aroclors												
Total PCBs	12	65	mg/kg OC	8.0	1.5	1.4	1.0	11	3.6	3.1	8.5	6.0

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2246-U-2	LDW-SS2247-A	LDW-SS2247-U	LDW-SS2503-A	LDW-SS2506-A	LDW-SS2506-D	LDW-SS3037-A	LDW-SS3037-D
Metals											
Arsenic	57	93	mg/kg dw	20	20	20	7 UJ	15	16	10	13
Cadmium	5.1	6.7	mg/kg dw	0.6	0.6	0.7	0.3	0.6	0.3 U	0.3 U	0.4
Chromium	260	270	mg/kg dw	38	33	35	19.6	32.2	21.3	20.1	23.3
Copper	390	390	mg/kg dw	79.6	68.9	75.4	49.5 J	43.8	33.3	31.5 J	34.2 J
Lead	450	530	mg/kg dw	36	26	30	23	64	23	11 J	16 J
Mercury	0.41	0.59	mg/kg dw	0.19	0.20	0.17	0.04	0.14	0.06	0.04	0.07
Silver	6.1	6.1	mg/kg dw	0.6 U	0.7 U	0.7 U	0.4 U	0.5 U	0.5 U	0.4 U	0.5 U
Zinc	410	960	mg/kg dw	144	129	137	167 J	130	80	65 J	71 J
PAHs											
Acenaphthene	16	57	mg/kg OC	7.7	1.9	0.92	1.2 U	0.82 J	1.5	1.1 U	1.0 U
Acenaphthylene	66	66	mg/kg OC	0.81	0.72 J	0.48 J	1.2 U	1.0 U	1.5 U	1.1 U	1.0 U
Anthracene	220	1200	mg/kg OC	8.1	4.0	3.8	0.63 J	2.9	1.9	1.1 U	0.31 J
Benzo(a)anthracene	110	270	mg/kg OC	19	9.4	7.5	2.5	7.2	5.0	0.96 J	1.3
Benzofluoranthene	230	450	mg/kg OC	33	19	12	7.0	17	13	2.3	3.9
Benzo(g,h,i)perylene	31	78	mg/kg OC	11	4.8	3.1	5.4 J	5.1	2.4	1.4	1.9
Benzo(a)pyrene	99	210	mg/kg OC	17	7.2	4.8	3.7	5.6	5.0	1.0 J	1.4
Chrysene	110	460	mg/kg OC	26	14	17 J	4.1	13	7.8	2.0	3.3
Dibenzo(a,h)anthracene	12	33	mg/kg OC	3.6	1.7	1.2	1.1 J	1.4	0.97	0.51	0.40
Dibenzofuran	15	58	mg/kg OC	4.0	1.7	0.99	1.2 U	1.0 U	1.5 U	1.1 U	1.0 U
Fluoranthene	160	1200	mg/kg OC	37	28	13	5.9	19	13	2.2	5.0
Fluorene	23	79	mg/kg OC	6.5	1.9	1.4	1.2 U	1.3	1.4 J	1.1 U	1.0 U
Indeno(1,2,3-cd)pyrene	34	88	mg/kg OC	10	4.4	2.7	3.4 J	3.2	2.3	0.96 J	1.4
2-Methylnaphthalene	38	64	mg/kg OC	2.8	1.0	0.65	1.2 U	0.77 J	0.77 J	1.1 U	1.0 U
Naphthalene	99	170	mg/kg OC	6.5	1.5	0.92	0.82 J	1.2	1.4 J	1.1 U	0.26 J
Phenanthrene	100	480	mg/kg OC	38	10	6.2	2.7	11	5.6	1.3	1.7
Pyrene	1000	1400	mg/kg OC	40	23	11	5.8	18	11	2.4	5.2
Total HPAHs	960	5300	mg/kg OC	200	110	72 J	39 J	92	60	14 J	24
Total LPAHs	370	780	mg/kg OC	69	20 J	14 J	4.2 J	17 J	12 J	1.3	2.3 J
Phthalates											
Butyl benzyl phthalate	4.9	64	mg/kg OC	1.0 J	0.83 J	0.55 J	1.8	**7.2**	1.0	0.56	0.65
Dibutyl phthalate	220	1700	mg/kg OC	0.27 J	0.47 J	0.20 J	1.2 U	1.5	1.5 U	1.1 U	1.0 U
Di-n-octyl phthalate	58	4500	mg/kg OC	0.77 U	1.0 U	0.65 U	1.2 U	1.0 U	1.5 U	1.1 U	1.0 U
Diethyl phthalate	61	110	mg/kg OC	0.77 U	1.0 U	0.65 U	1.2 U	1.0 U	1.5 U	0.49 J	0.31 J
Dimethyl phthalate	53	53	mg/kg OC	0.30 J	0.21 J	0.15 J	0.30 U	0.25 U	0.39 U	0.28 U	0.32
Bis(2-ethylhexyl)phthalate	47	78	mg/kg OC	6.5	7.2	5.5	15	**130**	**400**	3.2 U	3.9 U

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS2246-U-2	LDW-SS2247-A	LDW-SS2247-U	LDW-SS2503-A	LDW-SS2506-A	LDW-SS2506-D	LDW-SS3037-A	LDW-SS3037-D
Phenols											
2,4-Dimethylphenol	29	29	µg/kg dw	4.5 J	2.9 J	4.2 J	4.7 U	4.9 U	4.8 U	4.6 U	4.8 U
2-Methylphenol	63	63	µg/kg dw	5.8	4.7 U	4.8 U	4.7 U	4.9 U	4.8 U	4.6 U	4.8 U
4-Methylphenol	670	670	µg/kg dw	22	16 J	30	19 U	130	36	4.6 J	4.8 J
Pentachlorophenol	360	690	ug/kg dw	23 U	24 UJ	24 UJ	5.7 J	30 J	24 U	23 U	24 U
Phenol	420	1200	ug/kg dw	36 J	25 J	52 J	15 J	60	26	10 J	9.5 J
Other SVOCs											
Benzoic Acid	650	650	µg/kg dw	150 J	190	250	50 J	240 J	180 J	95 J	94 J
Benzyl Alcohol	57	73	µg/kg dw	**130 J**	**180 J**	**240 J**	11 J	**120**	56	42	34
1,2-Dichlorobenzene	2.3	2.3	mg/kg OC	0.19 U	0.26 U	0.16 U	0.30 U	0.25 U	0.39 U	0.28 U	0.26 U
1,4-Dichlorobenzene	3.1	9	mg/kg OC	0.19 U	0.26 U	0.099 J	0.30 U	**3.5**	0.97	0.28 U	0.26 U
Hexachlorobenzene	0.38	2.3	mg/kg OC	0.19 U	0.26 U	0.16 U	0.30 U	0.25 U	*0.39 U*	0.28 U	0.26 U
Hexachlorobutadiene	3.9	6.2	mg/kg OC	0.19 U	0.26 U	0.16 U	0.30 U	0.25 U	0.39 U	0.28 U	0.26 U
N-Nitrosodiphenylamine	11	11	mg/kg OC	0.19 U	0.26 U	0.16 U	0.32	0.25 U	0.39 U	0.28 U	0.26 U
1,2,4-Trichlorobenzene	0.81	1.8	mg/kg OC	0.19 U	0.26 U	0.16 U	0.30 U	0.25 UJ	0.39 U	0.28 U	0.26 U
PCB Aroclors											
Total PCBs	12	65	mg/kg OC	7.7	7.7	5.5	1.5	2.9	3.2	1.4	3.0

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS3037-D-2	LDW-SS3037-U	LDW-SS5000-A	LDW-SS5000-D	LDW-SS5000-U	LDW-SS5002-A	LDW-SS5002-D	LDW-SS5003-A
Metals											
Arsenic	57	93	mg/kg dw	13	10	20 J	20 J	20 J	**86**	20	**67**
Cadmium	5.1	6.7	mg/kg dw	0.4	0.3 U	0.7	0.7	0.7	1.1	0.6	1.0
Chromium	260	270	mg/kg dw	22.6	18.6	33	33	34	28.9	35	33.9
Copper	390	390	mg/kg dw	33.8 J	29.5 J	85.1 J	77.5 J	79.7 J	133	78.2	124
Lead	450	530	mg/kg dw	16 J	17 J	29 J	31 J	31 J	166	35	127
Mercury	0.41	0.59	mg/kg dw	0.05	0.03 U	0.22	0.20	0.20	0.22	0.21	0.32
Silver	6.1	6.1	mg/kg dw	0.5 U	0.4 U	0.7 U	0.7 U	0.7 U	0.8	0.6 U	0.8
Zinc	410	960	mg/kg dw	72 J	69 J	132 J	134 J	137 J	299	143	261
PAHs											
Acenaphthene	16	57	mg/kg OC	1.2 U	1.2 U	0.72 J	0.59 J	0.85 J	5.9	0.93	2.6
Acenaphthylene	66	66	mg/kg OC	1.2 U	0.30 J	0.97 U	0.66 U	1.1 U	1.3 U	0.75 U	1.7 U
Anthracene	220	1200	mg/kg OC	0.88 J	0.42 J	4.0	2.2	2.9	11	3.1	6.5
Benzo(a)anthracene	110	270	mg/kg OC	5.6	1.1 J	7.2	5.6	6.9	45	9.3	22
Benzofluoranthene	230	450	mg/kg OC	15	3.5	15	12	14	50	18	41
Benzo(g,h,i)perylene	31	78	mg/kg OC	3.0	1.7	3.8	2.9	3.4	11	3.8	11
Benzo(a)pyrene	99	210	mg/kg OC	3.8	1.4	6.2	4.5	5.8	28	8.4	19
Chrysene	110	460	mg/kg OC	14	2.4	13	9.8	11	52	12	24
Dibenzo(a,h)anthracene	12	33	mg/kg OC	1.1	0.37	1.3	1.0	1.2	3.6	0.33	4.2
Dibenzofuran	15	58	mg/kg OC	1.2 U	1.2 U	0.92 J	0.63 J	0.79 J	1.3 U	1.3	2.4
Fluoranthene	160	1200	mg/kg OC	24	4.6	13	14	13	140	14	61
Fluorene	23	79	mg/kg OC	1.2 U	1.2 U	1.2	0.91	1.1	5.9	1.4	3.3
Indeno(1,2,3-cd)pyrene	34	88	mg/kg OC	2.9	1.1 J	3.6	2.7	3.2	9.8	3.4	10
2-Methylnaphthalene	38	64	mg/kg OC	1.4	1.2 U	0.72 J	0.49 J	0.58 J	3.9	0.93	3.3
Naphthalene	99	170	mg/kg OC	0.69 J	1.2 U	1.3	0.70	1.1	4.6	1.2	5.6
Phenanthrene	100	480	mg/kg OC	6.9	2.5	5.1	5.9	5.3	21	6.5	14
Pyrene	1000	1400	mg/kg OC	22	4.2	14	13	13	110	17	58
Total HPAHs	960	5300	mg/kg OC	94	20 J	77	66	69	440	89	250
Total LPAHs	370	780	mg/kg OC	8.8 J	3.3 J	12 J	10 J	11 J	48	13	31
Phthalates											
Butyl benzyl phthalate	4.9	64	mg/kg OC	0.55	0.23 J	1.1	0.94	0.85	1.2 J	1.4 J	1.5
Dibutyl phthalate	220	1700	mg/kg OC	1.2 U	1.2 U	0.97 U	0.66 U	1.1 U	1.3 U	0.42 J	0.93 J
Di-n-octyl phthalate	58	4500	mg/kg OC	1.2 U	1.2 U	0.97 U	0.66 U	1.1 U	1.1 J	0.75 U	1.7 U
Diethyl phthalate	61	110	mg/kg OC	0.58 J	0.37 J	0.97 U	0.38 J	1.1 U	1.3 U	0.75 U	1.7 U
Dimethyl phthalate	53	53	mg/kg OC	0.38	0.19 J	0.18 J	0.13 J	0.23 J	0.33 U	0.19 U	0.43 U
Bis(2-ethylhexyl)phthalate	47	78	mg/kg OC	2.1 U	2.1 U	8.2	5.9	9.0	32	9.8	23

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS3037-D-2	LDW-SS3037-U	LDW-SS5000-A	LDW-SS5000-D	LDW-SS5000-U	LDW-SS5002-A	LDW-SS5002-D	LDW-SS5003-A
Phenols											
2,4-Dimethylphenol	29	29	µg/kg dw	4.6 U	4.8 U	4.9	3.7 J	3.8 J	6.5	5.1	5.0
2-Methylphenol	63	63	µg/kg dw	4.6 U	4.8 U	5.2	4.2 J	4.2 J	5.4	4.1 U	4.5
4-Methylphenol	670	670	µg/kg dw	19 U	19 U	20	17 J	21	23	30	45
Pentachlorophenol	360	690	ug/kg dw	23 UJ	24 U	24 U	24 U	25 U	21 J	11 J	14 J
Phenol	420	1200	ug/kg dw	10 J	12 J	37	24	32	58	16 U	47
Other SVOCs											
Benzoic Acid	650	650	µg/kg dw	130 J	130 J	300	160 J	180 J	60 J	260	65 J
Benzyl Alcohol	57	73	µg/kg dw	39	18	**220**	**130**	**150**	**69**	**280**	**110**
1,2-Dichlorobenzene	2.3	2.3	mg/kg OC	0.29 U	0.30 U	0.25 U	0.17 U	0.26 U	0.54	0.19 U	0.43 U
1,4-Dichlorobenzene	3.1	9	mg/kg OC	0.29 U	0.30 U	0.25 U	0.17 U	0.26 U	0.44	0.19 U	0.51
Hexachlorobenzene	0.38	2.3	mg/kg OC	0.29 U	0.30 U	0.25 U	0.17 U	0.26 U	0.33 U	0.19 U	*0.43 U*
Hexachlorobutadiene	3.9	6.2	mg/kg OC	0.29 U	0.30 U	0.25 U	0.17 U	0.26 U	0.33 U	0.19 U	0.43 U
N-Nitrosodiphenylamine	11	11	mg/kg OC	0.29 U	0.30 U	0.25 U	0.17 U	0.26 U	0.33 U	0.19 U	0.43 U
1,2,4-Trichlorobenzene	0.81	1.8	mg/kg OC	0.29 U	0.30 U	0.25 U	0.17 U	0.26 U	0.33 U	0.19 U	0.43 U
PCB Aroclors											
Total PCBs	12	65	mg/kg OC	1.9	1.8	7.2	4.5	7.4	**55**	6.5	**78**

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS5005-A	LDW-SS6146-A	LDW-SS6146-D	LDW-SS6146-U	LDW-SSBDC2-A	LDW-SSBDC2-A-2	LDW-SSBDC2-D	LDW-SSBDC2-U
Metals											
Arsenic	57	93	mg/kg dw	50	10	10	20	13	13	10	11
Cadmium	5.1	6.7	mg/kg dw	0.6	0.5	0.5	0.6	0.4	0.4	0.4	0.4
Chromium	260	270	mg/kg dw	38.3	29	28	29	23.0	23.8	25	23.3
Copper	390	390	mg/kg dw	169	46.4	44.4	46.8	29.6	29.5	32.1	31.0
Lead	450	530	mg/kg dw	105	14	15	16	11	11	11	10
Mercury	0.41	0.59	mg/kg dw	0.13	0.36	0.16	0.11	0.07	0.07	0.07	0.09
Silver	6.1	6.1	mg/kg dw	0.4	0.7 U	0.6 U	0.6 U	0.5 U	0.5 U	0.6 U	0.6 U
Zinc	410	960	mg/kg dw	305	93	89	100	71	71	72	69
PAHs											
Acenaphthene	16	57	mg/kg OC	0.94	0.55 U	0.65 U	0.28 J	1.5 U	1.1 U	0.85 U	0.81 U
Acenaphthylene	66	66	mg/kg OC	0.54 U	0.55 U	0.65 U	0.72 U	1.5 U	1.1 U	0.85 U	0.81 U
Anthracene	220	1200	mg/kg OC	2.4	0.32 J	0.54 J	0.72	0.73 J	1.1 U	0.85 U	0.47 J
Benzo(a)anthracene	110	270	mg/kg OC	5.7	1.1	1.6	1.3	4.4	2.7	1.2	2.2
Benzofluoranthene	230	450	mg/kg OC	16	2.1	3.7	3.0	9.4	6.2	2.8	6.0
Benzo(g,h,i)perylene	31	78	mg/kg OC	3.7	0.67	1.2	1.0	3.3	2.4	1.1	1.9
Benzo(a)pyrene	99	210	mg/kg OC	6.0	0.87	1.6	1.2	4.0	2.7	1.1	2.1
Chrysene	110	460	mg/kg OC	8.7	1.6	2.6	2.1	7.0	3.9	1.8	3.2
Dibenzo(a,h)anthracene	12	33	mg/kg OC	1.3	0.32	0.34	0.43	1.1	0.62 J	0.26	0.51 J
Dibenzofuran	15	58	mg/kg OC	0.94	0.14 J	0.41 J	0.35 J	1.5 U	1.1 U	0.85 U	0.81 U
Fluoranthene	160	1200	mg/kg OC	12	2.0	4.1	3.3	12	7.3	3.1	6.0
Fluorene	23	79	mg/kg OC	1.2	0.19 J	0.37 J	0.47 J	1.5 U	1.1 U	0.85 U	0.81 U
Indeno(1,2,3-cd)pyrene	34	88	mg/kg OC	3.3	0.58	1.0	0.79	3.0	2.0	0.85	1.6
2-Methylnaphthalene	38	64	mg/kg OC	0.77	0.22 J	0.41 J	0.35 J	1.5 U	1.1 U	0.85 U	0.81 U
Naphthalene	99	170	mg/kg OC	0.91	0.19 J	0.44 J	0.35 J	1.5 U	1.1 U	0.85 U	0.81 U
Phenanthrene	100	480	mg/kg OC	5.4	1.3	2.1	2.3	6.0	3.4	2.0	3.1
Pyrene	1000	1400	mg/kg OC	17	2.4	3.4	3.6	12	6.2	3.0	6.0
Total HPAHs	960	5300	mg/kg OC	74	12	20	17	55	34 J	15	29 J
Total LPAHs	370	780	mg/kg OC	11	2.0 J	3.4 J	4.0 J	6.7 J	3.4	2.0	3.6 J
Phthalates											
Butyl benzyl phthalate	4.9	64	mg/kg OC	0.64	0.24 J	0.48 J	0.43 J	0.34 J	0.34	0.20 J	0.16 J
Dibutyl phthalate	220	1700	mg/kg OC	0.54 U	0.55 U	0.65 U	0.72 U	1.5 U	1.1 U	0.85 U	0.81 U
Di-n-octyl phthalate	58	4500	mg/kg OC	0.54 U	0.55 U	0.65 U	0.72 U	1.5 U	1.1 U	0.85 U	0.81 U
Diethyl phthalate	61	110	mg/kg OC	0.54 U	0.55 U	0.65 U	0.72 U	1.5 U	1.1 U	0.85 U	0.81 U
Dimethyl phthalate	53	53	mg/kg OC	0.13 U	0.76	0.16 U	2.6	0.37 U	0.27 U	0.22 U	0.20 U
Bis(2-ethylhexyl)phthalate	47	78	mg/kg OC	9.4	4.4	6.5 U	3.3 U	5.7	4.4	3.1	3.8

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SS5005-A	LDW-SS6146-A	LDW-SS6146-D	LDW-SS6146-U	LDW-SSBDC2-A	LDW-SSBDC2-A-2	LDW-SSBDC2-D	LDW-SSBDC2-U
Phenols											
2,4-Dimethylphenol	29	29	µg/kg dw	4.0 U	4.7 UJ	3.1 J	4.9 UJ	4.7 U	4.8 U	4.8 U	4.8 U
2-Methylphenol	63	63	µg/kg dw	4.0 U	4.7 U	3.6 J	4.9 U	4.7 U	4.8 U	4.8 U	4.8 U
4-Methylphenol	670	670	µg/kg dw	16	83	180	21	10 J	12 J	19 U	9.5 J
Pentachlorophenol	360	690	ug/kg dw	12 J	23 UJ	24 U	24 UJ	24 UJ	24 UJ	24 UJ	24 UJ
Phenol	420	1200	ug/kg dw	56	35	130	24	16 J	17 J	15 J	23
Other SVOCs											
Benzoic Acid	650	650	µg/kg dw	140 J	150 J	370	180 J	220	240	240	280
Benzyl Alcohol	57	73	µg/kg dw	**110**	**160 J**	**240**	**170 J**	**140**	**150**	**200**	**230**
1,2-Dichlorobenzene	2.3	2.3	mg/kg OC	0.13 U	0.14 U	0.16 U	0.18 U	0.37 U	0.27 U	0.22 U	0.20 U
1,4-Dichlorobenzene	3.1	9	mg/kg OC	0.13 U	0.14 U	0.16 U	0.18 U	0.37 U	0.27 U	0.22 U	0.20 U
Hexachlorobenzene	0.38	2.3	mg/kg OC	0.13 U	0.14 U	0.16 U	0.18 U	0.37 U	0.27 U	0.22 U	0.20 U
Hexachlorobutadiene	3.9	6.2	mg/kg OC	0.13 U	0.14 U	0.16 U	0.18 U	0.37 U	0.27 U	0.22 U	0.20 U
N-Nitrosodiphenylamine	11	11	mg/kg OC	0.13 U	0.14 U	0.16 U	0.18 U	0.37 U	0.27 U	0.22 U	0.20 U
1,2,4-Trichlorobenzene	0.81	1.8	mg/kg OC	0.13 U	0.14 U	0.16 U	0.18 U	0.37 U	0.27 U	0.22 U	0.20 U
PCB Aroclors											
Total PCBs	12	65	mg/kg OC	3.2	1.6	0.48	2.2	2.0	1.1	0.17 U	0.55

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SSBDC3-D	LDW-SSBDC3-U	LDW-SSBDC4-A	LDW-SSBRSTSD-A	LDW-SSBRSTSD-D	LDW-SSBRSTSD-U	LDW-SSPSF-A
Metals										
Arsenic	57	93	mg/kg dw	11	13	11	20	20	20	20
Cadmium	5.1	6.7	mg/kg dw	0.4	0.4	0.4	0.6	0.6	0.6	0.4 U
Chromium	260	270	mg/kg dw	25.1	24.4	23.8	33	31	32	27
Copper	390	390	mg/kg dw	31.1	29.3	28.8	56.1	66.1	112	53.7
Lead	450	530	mg/kg dw	10	12	13	22	39	19	27
Mercury	0.41	0.59	mg/kg dw	0.07	0.06	0.06	0.14	0.16	0.10	0.12
Silver	6.1	6.1	mg/kg dw	0.5 U	0.6 U	0.5 U	0.6 U	0.6 U	0.7 U	0.7 U
Zinc	410	960	mg/kg dw	72	73	72	117	131	135	106
PAHs										
Acenaphthene	16	57	mg/kg OC	0.90 J	0.80 J	6.3	1.3	7.7	2.1	6.8
Acenaphthylene	66	66	mg/kg OC	1.2 U	1.2 U	1.2 U	0.76 U	0.97 U	2.0	0.89 J
Anthracene	220	1200	mg/kg OC	2.0	0.98 J	8.1	1.7	3.5	7.2	5.0
Benzo(a)anthracene	110	270	mg/kg OC	6.6	6.1	20	6.4	7.2	25	21
Benzofluoranthene	230	450	mg/kg OC	8.4	12	30	8.0	13	68	31
Benzo(g,h,i)perylene	31	78	mg/kg OC	2.3	2.4	8.1	6.0	3.2	22	2.9
Benzo(a)pyrene	99	210	mg/kg OC	3.8	3.9	15	7.2	6.3	34	10
Chrysene	110	460	mg/kg OC	9.0	8.0	23	7.6	14	72	29
Dibenzo(a,h)anthracene	12	33	mg/kg OC	0.96 J	0.86 J	2.9	2.4	1.1	8.5	1.4
Dibenzofuran	15	58	mg/kg OC	1.2 U	1.2 U	1.6	1.0	7.7	1.8	4.5
Fluoranthene	160	1200	mg/kg OC	13	15	51	13	35	33	84
Fluorene	23	79	mg/kg OC	0.90 J	1.2 U	4.1	1.2	13	2.9	5.3
Indeno(1,2,3-cd)pyrene	34	88	mg/kg OC	2.2	2.4	8.1	2.4	2.7	20	3.2
2-Methylnaphthalene	38	64	mg/kg OC	1.2 U	1.2 U	1.2 U	1.4	1.4	0.98	0.84 J
Naphthalene	99	170	mg/kg OC	1.2 U	1.2 U	1.2 U	1.2	1.4	1.2	1.3
Phenanthrene	100	480	mg/kg OC	8.4	4.0	34	6.4	37	15	25
Pyrene	1000	1400	mg/kg OC	13	14	50	10	21	19	63
Total HPAHs	960	5300	mg/kg OC	60 J	67 J	210	64	110	300	250
Total LPAHs	370	780	mg/kg OC	12 J	5.8 J	53	12	63	31	45 J
Phthalates										
Butyl benzyl phthalate	4.9	64	mg/kg OC	0.17 J	0.23 J	0.41	0.72 J	0.87 J	1.0	2.1
Dibutyl phthalate	220	1700	mg/kg OC	1.2 U	1.2 U	1.2 U	0.76 U	0.53 J	1.4	1.1 U
Di-n-octyl phthalate	58	4500	mg/kg OC	1.2 U	1.2 U	1.2 U	0.76 U	0.97 U	0.81 U	1.1 U
Diethyl phthalate	61	110	mg/kg OC	1.2 U	1.2 U	1.2 U	0.76 U	0.97 U	0.81 U	0.74 J
Dimethyl phthalate	53	53	mg/kg OC	0.30 U	0.29 U	0.30 U	0.19 U	0.24 U	0.20 U	0.26 U
Bis(2-ethylhexyl)phthalate	47	78	mg/kg OC	4.5	4.0	4.3	6.4 U	7.2 U	25	8.9

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SSBDC3-D	LDW-SSBDC3-U	LDW-SSBDC4-A	LDW-SSBRSTSD-A	LDW-SSBRSTSD-D	LDW-SSBRSTSD-U	LDW-SSPSF-A
Phenols										
2,4-Dimethylphenol	29	29	µg/kg dw	4.9 U	4.8 U	4.8 U	4.8 U	4.9 U	4.8 U	4.9 U
2-Methylphenol	63	63	µg/kg dw	4.9 U	4.8 U	4.8 U	4.8 U	4.9 U	4.8 U	4.9 U
4-Methylphenol	670	670	µg/kg dw	26	19 U	19 U	320	240	270	210
Pentachlorophenol	360	690	ug/kg dw	24 UJ	24 UJ	24 UJ	24 U	24 U	24 U	15 J
Phenol	420	1200	ug/kg dw	26	11 J	12 J	150	99	120	200
Other SVOCs										
Benzoic Acid	650	650	µg/kg dw	180 J	190 U	190 U	350	400	550	140 J
Benzyl Alcohol	57	73	µg/kg dw	**120**	30	28	**320**	**630**	**410**	**150**
1,2-Dichlorobenzene	2.3	2.3	mg/kg OC	0.30 U	0.29 U	0.30 U	0.19 U	0.24 U	0.20 U	0.26 U
1,4-Dichlorobenzene	3.1	9	mg/kg OC	0.30 U	0.29 U	0.30 U	0.19 U	0.24 U	0.20 U	0.26 U
Hexachlorobenzene	0.38	2.3	mg/kg OC	0.30 U	0.29 U	0.30 U	**1.2**	0.32	0.20 U	0.26 U
Hexachlorobutadiene	3.9	6.2	mg/kg OC	0.30 U	0.29 U	0.30 U	0.19 U	0.24 U	0.20 U	0.26 U
N-Nitrosodiphenylamine	11	11	mg/kg OC	0.30 U	0.29 U	0.30 U	0.19 U	0.24 U	0.20 U	0.26 U
1,2,4-Trichlorobenzene	0.81	1.8	mg/kg OC	0.30 U	0.29 U	0.30 U	0.19 U	0.24 U	0.20 U	0.26 U
PCB Aroclors										
Total PCBs	12	65	mg/kg OC	0.47 U	4.0	1.1	4.8	4.1	4.3	4.4

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SSPSF-D	LDW-SSPSF-U	LDW-SSPSF-U-2	LDW-SSRVSTSD-A	LDW-SSRVSTSD-D	LDW-SSSP1-A	LDW-SSSP1-D	LDW-SSSP1-U
Metals											
Arsenic	57	93	mg/kg dw	20	20	10	14	21	8	9	7
Cadmium	5.1	6.7	mg/kg dw	0.4	0.5	0.5	0.3	0.4	0.3 U	0.3 U	0.3
Chromium	260	270	mg/kg dw	28	30	30	23.7	29.4	24.7	15.6	19.7
Copper	390	390	mg/kg dw	47.5	49.5	52.2	56.2	53.1	15.3	19.2	16.6
Lead	450	530	mg/kg dw	18	21	20	33	131	8	10	12
Mercury	0.41	0.59	mg/kg dw	0.11	0.10	0.10	0.08	0.10	0.03 U	0.03 U	0.03
Silver	6.1	6.1	mg/kg dw	0.6 U	0.6 U	0.6 U	0.5 U	0.5 U	0.4 U	0.4 U	0.4 U
Zinc	410	960	mg/kg dw	99	116	106	129	106	56	65	68
PAHs											
Acenaphthene	16	57	mg/kg OC	0.63 J	3.3	**37**	1.3 U	1.1 U	2.4 U	1.8 U	2.9 U
Acenaphthylene	66	66	mg/kg OC	0.66 U	1.0	7.1	0.90 J	1.1 U	2.4 U	1.8 U	2.9 U
Anthracene	220	1200	mg/kg OC	0.76	3.7	25	3.4	1.3	2.4 U	1.8 U	2.9 U
Benzo(a)anthracene	110	270	mg/kg OC	2.3	13	28	25	3.8	2.4 U	2.8	2.9 U
Benzofluoranthene	230	450	mg/kg OC	4.7	20	55	30	7.7	2.4 U	3.2	2.9 U
Benzo(g,h,i)perylene	31	78	mg/kg OC	0.53 J	4.1	7.9	6.3	2.6	2.4 U	1.1 J	2.9 U
Benzo(a)pyrene	99	210	mg/kg OC	1.5	8.0	16	18	3.9	2.4 U	1.8	2.9 U
Chrysene	110	460	mg/kg OC	2.6	23	71	28	5.6	2.4 U	2.7	2.9 U
Dibenzo(a,h)anthracene	12	33	mg/kg OC	0.25	1.5	2.8	2.2	0.59	0.59 U	0.44 U	0.72 U
Dibenzofuran	15	58	mg/kg OC	0.66 U	3.7	**47**	0.75 J	1.1 U	2.4 U	1.8 U	2.9 U
Fluoranthene	160	1200	mg/kg OC	6.6	41	**250**	29	10	1.2 J	3.5	2.9 U
Fluorene	23	79	mg/kg OC	0.56 J	3.5	**43**	1.1 J	1.1 U	2.4 U	1.8 U	2.9 U
Indeno(1,2,3-cd)pyrene	34	88	mg/kg OC	0.60 J	4.0	8.3	5.4	2.0	2.4 U	1.8 U	2.9 U
2-Methylnaphthalene	38	64	mg/kg OC	0.66 U	0.69 J	3.3	1.3	0.65 J	2.4 U	1.8 U	2.9 U
Naphthalene	99	170	mg/kg OC	0.66 U	1.1	0.83	3.1	1.1 U	2.4 U	1.8 U	2.9 U
Phenanthrene	100	480	mg/kg OC	2.4	29	**360**	6.7	2.9	2.4 U	1.8 U	2.9 U
Pyrene	1000	1400	mg/kg OC	5.0	30	190	34	8.9	1.2 J	1.6 J	2.9 U
Total HPAHs	960	5300	mg/kg OC	24 J	140	630	180	45	2.3 J	16 J	2.9 U
Total LPAHs	370	780	mg/kg OC	4.3 J	41	**470**	16 J	4.2	2.4 U	1.8 U	2.9 U
Phthalates											
Butyl benzyl phthalate	4.9	64	mg/kg OC	0.28	1.3 J	0.91 J	1.5 J	1.2 J	0.63 J	1.5 J	1.2 J
Dibutyl phthalate	220	1700	mg/kg OC	0.66 U	1.0 U	0.75 U	2.4	1.1 U	2.4 U	1.8 U	2.9 U
Di-n-octyl phthalate	58	4500	mg/kg OC	0.66 U	1.0 U	0.75 U	1.3 U	1.1 U	2.4 U	1.8 U	2.9 U
Diethyl phthalate	61	110	mg/kg OC	0.66 U	1.0 U	0.75 U	1.3 U	1.1 U	2.4 U	1.8 U	2.9 U
Dimethyl phthalate	53	53	mg/kg OC	0.17 U	1.3	0.23	0.34 U	0.28 U	0.59 U	0.44 U	0.72 U
Bis(2-ethylhexyl)phthalate	47	78	mg/kg OC	2.1	5.9	3.9	19	17	2.3 J	1.7 J	4.2

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SSPSF-D	LDW-SSPSF-U	LDW-SSPSF-U-2	LDW-SSRVSTSD-A	LDW-SSRVSTSD-D	LDW-SSSP1-A	LDW-SSSP1-D	LDW-SSSP1-U
Phenols											
2,4-Dimethylphenol	29	29	µg/kg dw	5.0 U	4.7 U	4.7 U	6.2	4.8 U	3.9 U	4.1 U	4.0 U
2-Methylphenol	63	63	µg/kg dw	5.0 U	4.7 U	4.7 U	4.6 U	4.8 U	3.9 U	4.1 U	4.0 U
4-Methylphenol	670	670	µg/kg dw	110	330	330	120	310	16 U	17 U	16 U
Pentachlorophenol	360	690	ug/kg dw	25 U	24 U	24 U	50 J	24 U	19 U	21 U	20 U
Phenol	420	1200	ug/kg dw	86	60	52	160	210	16 U	17 U	16 U
Other SVOCs											
Benzoic Acid	650	650	µg/kg dw	160 J	210	220	66 J	92 J	160 U	170 U	160 U
Benzyl Alcohol	57	73	µg/kg dw	**170**	**150 J**	**140 J**	**68**	**92**	6.1	2.5 J	4.0 U
1,2-Dichlorobenzene	2.3	2.3	mg/kg OC	0.17 U	0.25 U	0.19 U	0.34 U	0.28 U	0.59 U	0.44 U	0.72 U
1,4-Dichlorobenzene	3.1	9	mg/kg OC	0.17 U	0.25 U	0.19 U	0.34 U	0.28 U	0.59 U	0.44 U	0.72 U
Hexachlorobenzene	0.38	2.3	mg/kg OC	0.17 U	0.25 U	0.19 U	0.34 U	0.28 U	*0.59 U*	*0.44 U*	*0.72 U*
Hexachlorobutadiene	3.9	6.2	mg/kg OC	0.17 U	0.25 U	0.19 U	0.34 U	0.28 U	0.59 U	0.44 U	0.72 U
N-Nitrosodiphenylamine	11	11	mg/kg OC	0.17 U	0.25 U	0.19 U	0.36	0.28 U	0.59 U	0.44 U	0.72 U
1,2,4-Trichlorobenzene	0.81	1.8	mg/kg OC	0.17 U	0.25 U	0.19 U	0.34 U	0.28 U	0.59 U	0.44 U	0.72 U
PCB Aroclors											
Total PCBs	12	65	mg/kg OC	1.5	8.5	3.9	6.3	6.5	1.4	3.1	**36**

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SSSP2-A	LDW-SSSP2-D	LDW-SSSP2-U	LDW-SSSP3-A	LDW-SSSP3-D	LDW-SSSP3-U	LDW-SSSP5-A	LDW-SSSWCSO-A
Metals											
Arsenic	57	93	mg/kg dw	10	9 J	10	30 UJ	10 J	10 J	11	20 J
Cadmium	5.1	6.7	mg/kg dw	0.3 U	0.3 U	0.3 U	1	0.3 U	0.3 U	0.3	0.6
Chromium	260	270	mg/kg dw	14.4	16.3	15.4	160	18.1	17.2	22.1	33
Copper	390	390	mg/kg dw	17.1	17.8 J	19.4	334 J	22.4 J	21.9 J	25.6 J	70.2 J
Lead	450	530	mg/kg dw	7	7	9	110	9	10	21 J	29 J
Mercury	0.41	0.59	mg/kg dw	0.03 U	0.03 U	0.03 U	0.03	0.05	0.04	0.04	0.18
Silver	6.1	6.1	mg/kg dw	0.4 U	0.4 U	0.4 U	2 U	0.4 U	0.4 U	0.5 U	0.6 U
Zinc	410	960	mg/kg dw	58	61 J	64	**1440 J**	64 J	64 J	72 J	119 J
PAHs											
Acenaphthene	16	57	mg/kg OC	1.2 U	1.5 U	1.5 U	1.2 U	3.4 U	1.1 U	1.2 U	0.71 J
Acenaphthylene	66	66	mg/kg OC	1.2 U	1.5 U	1.5 U	1.2 U	3.4 U	1.1 U	1.2 U	0.97 J
Anthracene	220	1200	mg/kg OC	1.2 U	1.5 U	1.5 U	0.90 J	3.4 U	1.1 U	1.2 U	3.4
Benzo(a)anthracene	110	270	mg/kg OC	1.2 U	1.5 U	1.5 U	5.6	3.4 U	0.69 J	1.8	12
Benzofluoranthene	230	450	mg/kg OC	0.74 J	1.6	1.5 U	11	3.9	2.2	3.8	22
Benzo(g,h,i)perylene	31	78	mg/kg OC	1.2 U	1.5 U	1.5 U	4.0 J	3.4 U	0.80 J	1.7	4.5
Benzo(a)pyrene	99	210	mg/kg OC	1.2 U	1.5 U	1.5 U	5.8	1.7 J	0.86 J	1.8	8.6
Chrysene	110	460	mg/kg OC	0.65 J	1.0 J	0.76 J	7.7	2.4 J	1.4	2.7	21
Dibenzo(a,h)anthracene	12	33	mg/kg OC	0.30 U	0.38 U	0.38 U	1.2	0.85 U	0.27 U	0.56	1.7
Dibenzofuran	15	58	mg/kg OC	1.2 U	1.5 U	1.5 U	1.2 U	3.4 U	1.1 U	1.2 U	1.0
Fluoranthene	160	1200	mg/kg OC	0.89 J	1.7	1.0 J	13	5.1	2.4	4.0	29
Fluorene	23	79	mg/kg OC	1.2 U	1.5 U	1.5 U	1.2 U	3.4 U	1.1 U	1.2 U	1.3
Indeno(1,2,3-cd)pyrene	34	88	mg/kg OC	1.2 U	1.5 U	1.5 U	3.7 J	3.4 U	0.69 J	1.3	4.5
2-Methylnaphthalene	38	64	mg/kg OC	1.2 U	1.5 U	1.5 U	1.2 U	3.4 U	1.1 U	1.2 U	0.89
Naphthalene	99	170	mg/kg OC	1.2 U	1.5 U	1.5 U	1.2 U	3.4 U	1.1 U	1.2 U	1.5
Phenanthrene	100	480	mg/kg OC	1.2 U	1.5 U	1.5 U	6.3	2.2 J	1.2	2.1	13
Pyrene	1000	1400	mg/kg OC	0.89 J	1.6 J	1.0 J	12	4.8	2.2	4.0	25
Total HPAHs	960	5300	mg/kg OC	3.2 J	5.9 J	2.9 J	63 J	17 J	11 J	21	130
Total LPAHs	370	780	mg/kg OC	1.2 U	1.5 U	1.5 U	7.1 J	2.2 J	1.2	2.1	21 J
Phthalates											
Butyl benzyl phthalate	4.9	64	mg/kg OC	0.50 J	0.66	1.0 J	4.6	1.3	1.4	0.65 J	0.71
Dibutyl phthalate	220	1700	mg/kg OC	1.2 U	1.5 U	1.5 U	1.2 U	3.4 U	1.1 U	1.2 U	0.74 U
Di-n-octyl phthalate	58	4500	mg/kg OC	1.2 U	0.88 J	1.5 U	7.1	3.4 U	0.80 J	1.2 U	0.74 U
Diethyl phthalate	61	110	mg/kg OC	1.2 U	1.5 U	1.5 U	1.2 U	3.4 U	1.1 U	1.2 U	0.74 U
Dimethyl phthalate	53	53	mg/kg OC	0.30 U	0.38 U	0.38 U	0.31	0.85 U	0.27 U	0.20 J	0.19 U
Bis(2-ethylhexyl)phthalate	47	78	mg/kg OC	1.4	1.4 J	1.5	8.3	6.3	1.8	9.7 U	6.3

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SSSP2-A	LDW-SSSP2-D	LDW-SSSP2-U	LDW-SSSP3-A	LDW-SSSP3-D	LDW-SSSP3-U	LDW-SSSP5-A	LDW-SSSWCSO-A
Phenols											
2,4-Dimethylphenol	29	29	µg/kg dw	4.0 U	4.7 U	4.0 U	4.7 U	5.0 U	4.7 U	4.7 U	6.1
2-Methylphenol	63	63	µg/kg dw	4.0 U	4.7 U	4.0 U	4.7 U	5.0 U	4.7 U	4.7 U	6.9
4-Methylphenol	670	670	µg/kg dw	16 U	19 U	16 U	52	20 U	19 U	19 U	31
Pentachlorophenol	360	690	ug/kg dw	20 U	24 U	20 U	14 J	25 U	24 U	24 U	25 U
Phenol	420	1200	ug/kg dw	12 J	19 U	16 U	26	20 U	12 J	13 J	64
Other SVOCs											
Benzoic Acid	650	650	µg/kg dw	160 U	52 J	160 U	97 J	51 J	55 J	120 J	470
Benzyl Alcohol	57	73	µg/kg dw	31	13	14	**180**	41	**59**	46	**270**
1,2-Dichlorobenzene	2.3	2.3	mg/kg OC	0.30 U	0.38 U	0.38 U	0.30 U	0.85 U	0.27 U	0.31 U	0.19 U
1,4-Dichlorobenzene	3.1	9	mg/kg OC	0.30 U	0.38 U	0.38 U	0.30 U	0.85 U	0.27 U	0.31 U	0.19 U
Hexachlorobenzene	0.38	2.3	mg/kg OC	0.30 U	0.38 U	0.38 U	0.30 U	*0.85 U*	0.27 U	0.31 U	0.19 U
Hexachlorobutadiene	3.9	6.2	mg/kg OC	0.30 U	0.38 U	0.38 U	0.30 U	0.85 U	0.27 U	0.31 U	0.19 U
N-Nitrosodiphenylamine	11	11	mg/kg OC	0.30 U	0.38 U	0.38 U	0.30 U	0.85 U	0.27 U	0.31 U	0.19 U
1,2,4-Trichlorobenzene	0.81	1.8	mg/kg OC	0.30 U	0.38 U	0.38 U	0.30 U	*0.85 U*	0.27 U	0.31 U	0.19 U
PCB Aroclors											
Total PCBs	12	65	mg/kg OC	0.63	1.1	1.6	2.1	2.7	1.4	2.3	4.5

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SSSWCSO-A-2	LDW-SSSWCSO-U	LDW-SSUNK-A
Metals						
Arsenic	57	93	mg/kg dw	20	30 J	12
Cadmium	5.1	6.7	mg/kg dw	0.6	0.6	0.2 U
Chromium	260	270	mg/kg dw	31	34	15.5 J
Copper	390	390	mg/kg dw	68.2 J	79.5 J	35.2 J
Lead	450	530	mg/kg dw	29 J	35 J	24
Mercury	0.41	0.59	mg/kg dw	0.23	0.18	0.04
Silver	6.1	6.1	mg/kg dw	0.6 U	0.6 U	0.4 U
Zinc	410	960	mg/kg dw	119 J	143 J	94
PAHs						
Acenaphthene	16	57	mg/kg OC	0.55 J	13	1.6 U
Acenaphthylene	66	66	mg/kg OC	0.87 U	2.3 J	1.6 U
Anthracene	220	1200	mg/kg OC	2.6	37	1.1 J
Benzo(a)anthracene	110	270	mg/kg OC	9.2	73	5.8
Benzofluoranthene	230	450	mg/kg OC	16	69	11
Benzo(g,h,i)perylene	31	78	mg/kg OC	4.0	11	2.9
Benzo(a)pyrene	99	210	mg/kg OC	6.9	26	5.4
Chrysene	110	460	mg/kg OC	12	82	8.2
Dibenzo(a,h)anthracene	12	33	mg/kg OC	1.2	4.3	1.1
Dibenzofuran	15	58	mg/kg OC	0.64 J	5.5	1.6 U
Fluoranthene	160	1200	mg/kg OC	20	**240**	14
Fluorene	23	79	mg/kg OC	0.92	23	1.6 U
Indeno(1,2,3-cd)pyrene	34	88	mg/kg OC	3.7	11	2.8
2-Methylnaphthalene	38	64	mg/kg OC	0.50 J	1.9	1.6 U
Naphthalene	99	170	mg/kg OC	0.92	4.0	1.6 U
Phenanthrene	100	480	mg/kg OC	5.5	**180**	4.5
Pyrene	1000	1400	mg/kg OC	16	150 J	11
Total HPAHs	960	5300	mg/kg OC	87	670 J	63
Total LPAHs	370	780	mg/kg OC	11 J	270 J	5.7 J
Phthalates						
Butyl benzyl phthalate	4.9	64	mg/kg OC	0.64	1.5	0.25 J
Dibutyl phthalate	220	1700	mg/kg OC	0.87 U	1.0 J	1.6 U
Di-n-octyl phthalate	58	4500	mg/kg OC	0.87 U	1.6 U	1.6 U
Diethyl phthalate	61	110	mg/kg OC	0.87 U	1.6 U	1.6 U
Dimethyl phthalate	53	53	mg/kg OC	0.22 U	0.40 U	0.39 U
Bis(2-ethylhexyl)phthalate	47	78	mg/kg OC	6.4	**55**	1.6 U

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–3. LDW Outfall Surface Sediment Sample Results for Samples with TOC ≥0.5 or ≤4.0% Compared to SMS Criteria

Chemical	SQS	CSL	Unit	LDW-SSSWCSO-A-2	LDW-SSSWCSO-U	LDW-SSUNK-A
Phenols						
2,4-Dimethylphenol	29	29	µg/kg dw	4.1 J	6.7	4.7 UJ
2-Methylphenol	63	63	µg/kg dw	5.0	6.6	4.7 U
4-Methylphenol	670	670	µg/kg dw	18 J	28	19 U
Pentachlorophenol	360	690	ug/kg dw	24 U	24 U	13 J
Phenol	420	1200	ug/kg dw	30	62	13 J
Other SVOCs						
Benzoic Acid	650	650	µg/kg dw	200	300	38 J
Benzyl Alcohol	57	73	µg/kg dw	**170**	**240**	16 J
1,2-Dichlorobenzene	2.3	2.3	mg/kg OC	0.22 U	0.40 U	0.39 U
1,4-Dichlorobenzene	3.1	9	mg/kg OC	0.22 U	0.40 U	0.39 U
Hexachlorobenzene	0.38	2.3	mg/kg OC	0.22 U	*0.40 U*	*0.39 U*
Hexachlorobutadiene	3.9	6.2	mg/kg OC	0.22 U	0.40 U	0.39 U
N-Nitrosodiphenylamine	11	11	mg/kg OC	0.22 U	1.3 J	0.39 U
1,2,4-Trichlorobenzene	0.81	1.8	mg/kg OC	0.22 U	0.40 U	0.39 U
PCB Aroclors						
Total PCBs	12	65	mg/kg OC	4.5	9.2	4.4

Detected results in **bold** exceed the SQS.
Detected results in **bold and shaded gray** exceed the CSL.
Nondetected RLs in *italics* exceed the SQS.

Table A–4. LDW Outfall Surface Sediment Sample Results for Samples with TOC <0.5 or >4.0% Compared to Dry Weight SMS or AET Criteria

Chemical	SQS/ LAET	CSL/ 2LAET	LDW-SS2025-A	LDW-SS2025-A-2	LDW-SS2040-A	LDW-SS2080-A	LDW-SS2099-D	LDW-SS2112-A	LDW-SS2148-A	LDW-SS2148-A-2
Metals (mg/kg dw)										
Arsenic	57	93	**70**	**100**	7 U	20	10 U	20 J	32	34
Cadmium	5.1	6.7	1.0	1.0	0.3 U	0.6	0.6	1.1	0.3 U	0.3 U
Chromium	260	270	62 J	63 J	11.7	35	27	49	19.0 J	22.5 J
Copper	390	390	201 J	209 J	10.6	60.1	39.8 J	109 J	43.4 J	45.9 J
Lead	450	530	119	156	9	24	13 J	72 J	61	66
Mercury	0.41	0.59	0.04	0.09	0.03 U	0.13	0.10	**6.5**	0.04	0.04
Silver	6.1	6.1	1 U	1 U	0.4 U	0.8 U	0.7 U	0.8 U	0.4 U	0.5 U
Zinc	410	960	**919**	**891**	41	135	89 J	348 J	190 J	206 J
PAHs (µg/kg dw)										
Acenaphthene	500	730	31	46	19 U	11 J	19 U	50	18	95
Acenaphthylene	1300	1300	390	410	19 U	20 U	19 U	22 J	18 U	19 U
Anthracene	960	4400	840	930	19 U	50	19 U	110	110	220
Benzo(a)anthracene	1300	1600	530	560	19 U	290	24	240	860	690
Benzofluoranthene	3200	3600	2300	2500	19 U	700	61	480	1100	940
Benzo(g,h,i)perylene	670	720	**3100**	**3200**	19 U	220	25	160	320	320
Benzo(a)pyrene	1600	3000	1100	1200	19 U	280	25	200	620	510
Chrysene	1400	2800	940	1000	9.6 J	470	40	390	920	740
Dibenzo(a,h)anthracene	230	540	**560**	**580**	4.8 U	75	6.8	58	140	110
Dibenzofuran	540	700	28	40	19 U	14 J	19 U	45	10 J	55
Fluoranthene	1700	2500	900	980	19 U	840	63	740	1600	**1800**
Fluorene	540	1000	37	53	19 U	20	19 U	46	16 J	75
Indeno(1,2,3-cd)pyrene	600	690	**2100**	**2200**	19 U	200	21	130	310	280
2-Methylnaphthalene	670	1400	22	28	19 U	20 U	19 U	36	18 U	32
Naphthalene	2100	2400	44	55	19 U	4.9 J	19 U	48	16 J	44
Phenanthrene	1500	5400	370	510	19 U	360	28	350	370	1200
Pyrene	2600	3300	1100	1200	19 U	760	64	820	1700	1600
Total HPAHs	12000	17000	**13000**	**13000**	9.6 J	3800	330	3200	7600	7000
Total LPAHs	5200	13000	1700	2000	19 U	450 J	28	630 J	530 J	1600
Phthalates (µg/kg dw)										
Butyl benzyl phthalate	63	900	57 J	**120 J**	4.8 U	38 J	9.9	**110**	37 J	34 J
Dibutyl phthalate	1400	5100	36	140	19 U	20 U	19 U	33	9.1 J	9.4 J
Di-n-octyl phthalate	6200	--	18 U	19 U	19 U	7.8 J	19 U	31	18 U	19 U
Diethyl phthalate	200	1200	20	19 U	19 U	20 U	9.4 J	22	18 U	10 J
Dimethyl phthalate	71	160	18	23	4.8 U	**970**	5.6	23	4.8	5.2
Bis(2-ethylhexyl)phthalate	1300	1900	380	490	21 U	220	72 U	**1600**	420	430

Detected results in **bold** exceed the SQS/LAET.

Detected results in **bold and shaded gray** exceed the CSL/2LAET.

Non-detected RLs in *italics* exceed the SQS/LAET.

Table A–4. LDW Outfall Surface Sediment Sample Results for Samples with TOC <0.5 or >4.0% Compared to Dry Weight SMS or AET Criteria

Chemical	SQS/ LAET	CSL/ 2LAET	LDW-SS2025-A	LDW-SS2025-A-2	LDW-SS2040-A	LDW-SS2080-A	LDW-SS2099-D	LDW-SS2112-A	LDW-SS2148-A	LDW-SS2148-A-2
Phenols (µg/kg dw)										
2,4-Dimethylphenol	29	29	**37 J**	**40 J**	4.8 U	4.9 UJ	4.7 U	13	4.6 U	4.7 U
2-Methylphenol	63	63	20	25	4.8 U	4.9 U	4.7 U	9.5	4.6 U	4.7 U
4-Methylphenol	670	670	82	78	19 U	13 J	21	34	18 U	19 U
Pentachlorophenol	360	690	94 J	92 J	24 U	24 UJ	24 UJ	17 J	23 UJ	23 UJ
Phenol	420	1200	86	70	19 U	16 J	16 J	120	19	26
Other SVOCs (µg/kg dw)										
Benzoic Acid	650	650	270	230	190 U	98 J	190	640	81 J	92 J
Benzyl Alcohol	57	73	20	15 J	4.8 U	**86 J**	**120 J**	**540**	18 U	19 U
1,2-Dichlorobenzene	35	50	4.6 U	4.8 U	4.8 U	4.9 U	4.7 U	5.0 U	4.6 U	4.7 U
1,4-Dichlorobenzene	110	120	4.6 U	4.8 U	4.8 U	4.9 U	4.7 U	5.0 U	4.6 U	4.7 U
Hexachlorobenzene	22	70	4.6 U	4.8 U	4.8 U	1.0 J	4.7 U	**24 J**	4.6 U	4.7 U
Hexachlorobutadiene	11	120	4.6 U	4.8 U	4.8 U	4.9 U	4.7 U	5.0 U	4.6 U	4.7 U
N-Nitrosodiphenylamine	28	40	5.8	5.3	4.8 U	4.9 U	4.7 U	5.0 U	3.6 J	4.7 U
1,2,4-Trichlorobenzene	31	51	4.6 U	4.8 U	4.8 U	4.9 U	4.7 U	6.1	4.6 U	4.7 U
PCB Aroclors (µg/kg dw)										
Total PCBs	130	1000	63	110	13	68	19	**200**	41	45

Detected results in **bold** exceed the SQS/LAET.

Detected results in **bold and shaded gray** exceed the CSL/2LAET.

Non-detected RLs in *italics* exceed the SQS/LAET.

Table A–4. LDW Outfall Surface Sediment Sample Results for Samples with TOC <0.5 or >4.0% Compared to Dry Weight SMS or AET Criteria

Chemical	SQS/ LAET	CSL/ 2LAET	LDW-SS2149-A	LDW-SS2150-A	LDW-SS2233-U	LDW-SS2505-A	LDW-SS2512-A	LDW-SS2512-U	LDW-SSRWSD-A	LDW-SSRWSD-A-	LDW-SSRWSD-Ab
Metals (mg/kg dw)											
Arsenic	57	93	10	36	10	6 U	8	6	8	7	7 J
Cadmium	5.1	6.7	0.7	0.3 U	0.3	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.3 U
Chromium	260	270	49 J	17.0 J	25.6 J	24.0	14.0	14.2	16.4	12.3	12.7
Copper	390	390	116 J	40.0 J	44.2 J	16.2	19.6	12.7	14.3	13.5	11.9 J
Lead	450	530	92	63	44	9	17	43	5	4	3 J
Mercury	0.41	0.59	0.13	0.03	0.03 U	0.03 U	0.02 U	0.02 U	0.03 U	0.03	0.03 U
Silver	6.1	6.1	0.6 U	0.4 U	0.4 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.4 U
Zinc	410	960	**478 J**	183 J	190 J	44	53	44	51	48	41 J
PAHs (µg/kg dw)											
Acenaphthene	500	730	17 J	19 U	18 U	19 U	20 U	19 U	18 U	19 U	19 U
Acenaphthylene	1300	1300	19	19 U	18 U	68	20 U	19 U	18 U	19 U	19 U
Anthracene	960	4400	44	42	18 U	100	20 U	19 U	18 U	19 U	19 U
Benzo(a)anthracene	1300	1600	190	110	18	190	20 U	12 J	18 U	19 U	19 U
Benzofluoranthene	3200	3600	590	190	40	270	18 J	19	18 U	19 U	19 U
Benzo(g,h,i)perylene	670	720	300	69	18	71	20 U	19 U	18 U	19 U	19 U
Benzo(a)pyrene	1600	3000	300	85	17 J	150	16 J	19 U	18 U	19 U	19 U
Chrysene	1400	2800	350	170	25	170	15 J	13 J	18 U	19 U	19 U
Dibenzo(a,h)anthracene	230	540	100	22	5.9	24	4.9 U	4.8 U	4.5 U	4.8 U	4.6 U
Dibenzofuran	540	700	17 J	19 U	18 U	33	20 U	19 U	18 U	19 U	19 U
Fluoranthene	1700	2500	400	530	29 J	640	30	28	18 U	19 U	19 U
Fluorene	540	1000	18 J	11 J	18 U	76	20 U	19 U	18 U	19 U	19 U
Indeno(1,2,3-cd)pyrene	600	690	220	56	16 J	71	20 U	19 U	18 U	19 U	19 U
2-Methylnaphthalene	670	1400	35	19 U	18 U	12 J	20 U	19 U	18 U	19 U	19 U
Naphthalene	2100	2400	54	19 U	18 U	22	20 U	19 U	18 U	19 U	19 U
Phenanthrene	1500	5400	210	240	18 J	730	16 J	16 J	11 J	33	19 U
Pyrene	2600	3300	400	460	36	500	24	24	18 U	9.7 J	19 U
Total HPAHs	12000	17000	2900	1700	200 J	2100	100 J	96 J	18 U	9.7 J	19 U
Total LPAHs	5200	13000	360 J	290 J	18 J	1000	16 J	16 J	11 J	33	19 U
Phthalates (µg/kg dw)											
Butyl benzyl phthalate	63	900	**220 J**	16 J	2.7 J	4.8 U	**82**	13	4.5 U	4.8 U	4.6 U
Dibutyl phthalate	1400	5100	67 J	19 U	11 J	19 U	20 U	19 U	18 U	19 U	19 U
Di-n-octyl phthalate	6200	--	19 U	19 U	18 U	19 U	20 U	19 U	18 U	19 U	19 U
Diethyl phthalate	200	1200	14 J	19 U	18 U	11 J	20 U	19 U	18 U	19 U	19 U
Dimethyl phthalate	71	160	54	2.9 J	4.6 U	4.8 U	4.9 U	4.8 U	4.5 U	3.1 J	4.6 U
Bis(2-ethylhexyl)phthalate	1300	1900	**1700**	240	16 J	25	44	12 J	18 U	19 U	9.3 J

Detected results in **bold** exceed the SQS/LAET.

Detected results in **bold and shaded gray** exceed the CSL/2LAET.

Non-detected RLs in *italics* exceed the SQS/LAET.

Table A–4. LDW Outfall Surface Sediment Sample Results for Samples with TOC <0.5 or >4.0% Compared to Dry Weight SMS or AET Criteria

Chemical	SQS/ LAET	CSL/ 2LAET	LDW-SS2149-A	LDW-SS2150-A	LDW-SS2233-U	LDW-SS2505-A	LDW-SS2512-A	LDW-SS2512-U	LDW-SSRWSD-A	LDW-SSRWSD-A-	LDW-SSRWSD-Ab
Phenols (µg/kg dw)											
2,4-Dimethylphenol	29	29	7.3	4.7 U		4.8 U	4.9 U	4.8 U	4.5 U	4.8 U	4.6 U
2-Methylphenol	63	63	11	4.7 U	4.6 U	4.8 U	4.9 U	4.8 U	4.5 U	4.8 U	4.6 U
4-Methylphenol	670	670	31	19 U	18 U	19 U	20 U	19 U	18 U	19 U	19 U
Pentachlorophenol	360	690	30 J	24 UJ	23 UJ	24 U	24 U	24 U	23 UJ	24 UJ	23 U
Phenol	420	1200	120	19 U	18 U	19 U	20 U	19 U	18 U	19 U	19 U
Other SVOCs (µg/kg dw)											
Benzoic Acid	650	650	400	54 J	180 U	190 U	200 U	190 U	180 U	190 U	190 U
Benzyl Alcohol	57	73	**100**	14 U	7.0 U	7.3 U	8.4 U	8.1 U	4.5 U	4.8 U	4.6 U
1,2-Dichlorobenzene	35	50	4.8 U	4.7 U	4.6 U	4.8 U	4.9 U	4.8 U	4.5 U	4.8 U	4.6 U
1,4-Dichlorobenzene	110	120	4.8 U	4.7 U	4.6 U	4.8 U	4.9 U	4.8 U	4.5 U	4.8 U	4.6 U
Hexachlorobenzene	22	70	4.8 U	4.7 U	4.6 U	4.8 U	4.9 U	4.8 U	4.5 U	4.8 U	4.6 U
Hexachlorobutadiene	11	120	4.8 U	4.7 U	4.6 U	4.8 U	4.9 U	4.8 U	4.5 U	4.8 U	4.6 U
N-Nitrosodiphenylamine	28	40	9.6	4.7 U	4.6 U	4.8 U	4.9 U	4.8 U	4.5 U	4.8 U	4.6 U
1,2,4-Trichlorobenzene	31	51	4.8 U	4.7 U	4.6 U	4.8 U	4.9 U	4.8 U	4.5 U	4.8 U	4.6 U
PCB Aroclors (µg/kg dw)											
Total PCBs	130	1000	**150**	90	28	3.9 U	4.4	9.9	3.9 U	3.8 U	4.0 U

Detected results in **bold** exceed the SQS/LAET.

Detected results in **bold and shaded gray** exceed the CSL/2LAET.

Non-detected RLs in *italics* exceed the SQS/LAET.

Table A–4. LDW Outfall Surface Sediment Sample Results for Samples with TOC <0.5 or >4.0% Compared to Dry Weight SMS or AET Criteria

Chemical	SQS/ LAET	CSL/ 2LAET	LDW-SSUNK-D
Metals (mg/kg dw)			
Arsenic	57	93	6 U
Cadmium	5.1	6.7	0.3 U
Chromium	260	270	10.9 J
Copper	390	390	10.7 J
Lead	450	530	5
Mercury	0.41	0.59	0.03 U
Silver	6.1	6.1	0.4 U
Zinc	410	960	31
PAHs (µg/kg dw)			
Acenaphthene	500	730	18 U
Acenaphthylene	1300	1300	18 U
Anthracene	960	4400	18 U
Benzo(a)anthracene	1300	1600	18 U
Benzofluoranthene	3200	3600	18 U
Benzo(g,h,i)perylene	670	720	18 U
Benzo(a)pyrene	1600	3000	18 U
Chrysene	1400	2800	18 U
Dibenzo(a,h)anthracene	230	540	4.5 U
Dibenzofuran	540	700	18 U
Fluoranthene	1700	2500	18 U
Fluorene	540	1000	18 U
Indeno(1,2,3-cd)pyrene	600	690	18 U
2-Methylnaphthalene	670	1400	18 U
Naphthalene	2100	2400	18 U
Phenanthrene	1500	5400	18 U
Pyrene	2600	3300	18 U
Total HPAHs	12000	17000	18 U
Total LPAHs	5200	13000	18 U
Phthalates (µg/kg dw)			
Butyl benzyl phthalate	63	900	4.5 U
Dibutyl phthalate	1400	5100	18 U
Di-n-octyl phthalate	6200	--	18 U
Diethyl phthalate	200	1200	18 U
Dimethyl phthalate	71	160	4.5 U
Bis(2-ethylhexyl)phthalate	1300	1900	18 U

Detected results in **bold** exceed the SQS/LAET.

Detected results in **bold and shaded gray** exceed the CSL/2LAET.

Non-detected RLs in *italics* exceed the SQS/LAET.

Table A–4. LDW Outfall Surface Sediment Sample Results for Samples with TOC <0.5 or >4.0% Compared to Dry Weight SMS or AET Criteria

Chemical	SQS/ LAET	CSL/ 2LAET	LDW-SSUNK-D
Phenols (µg/kg dw)			
2,4-Dimethylphenol	29	29	4.5 UJ
2-Methylphenol	63	63	4.5 U
4-Methylphenol	670	670	18 U
Pentachlorophenol	360	690	23 UJ
Phenol	420	1200	18 U
Other SVOCs (µg/kg dw)			
Benzoic Acid	650	650	180 U
Benzyl Alcohol	57	73	8.3 U
1,2-Dichlorobenzene	35	50	4.5 U
1,4-Dichlorobenzene	110	120	4.5 U
Hexachlorobenzene	22	70	4.5 U
Hexachlorobutadiene	11	120	4.5 U
N-Nitrosodiphenylamine	28	40	4.5 U
1,2,4-Trichlorobenzene	31	51	4.5 U
PCB Aroclors (µg/kg dw)			
Total PCBs	130	1000	120

Detected results in **bold** exceed the SQS/LAET.

Detected results in **bold and shaded gray** exceed the CSL/2LAET.

Non-detected RLs in *italics* exceed the SQS/LAET.

Table A–5. LDW Outfall Surface Sediment Sample Results Compared to Natural Background Concentrations for Four LDW RI Risk Driver Chemicals

Sample ID	Arsenic (mg/kg dw)	cPAHs (µg/kg dw)	Total PCBs (µg/kg dw)	Dioxin/Furan TEQ (ng TEQ/kg dw)
LDW-SS2008-A	**20**	**230**	**30**	**7.20 J**
LDW-SS2009-A	**20**	**230**	**27**	na
LDW-SS2009-U	**30**	**230**	**30**	na
LDW-SS2010-A	**14**	**380**	**200**	na
LDW-SS2010-D	**10**	**140**	**190**	na
LDW-SS2010-U	**15**	**170**	**220**	na
LDW-SS2011-A	**13**	**150**	**120**	na
LDW-SS2011-D	**16**	**2500**	**190**	na
LDW-SS2013-A	**21 J**	**90**	**130**	**9.01 J**
LDW-SS2013-D	**14 J**	**84**	**48**	na
LDW-SS2013-U	7 J	**190**	**61**	na
LDW-SS2015-D	**12**	**84 J**	**16**	na
LDW-SS2018-U	**11**	**120**	**12 J**	na
LDW-SS2019-A	**14**	**370**	**160**	na
LDW-SS2021-A	**8**	**32 J**	**15**	0.966 J
LDW-SS2021-D	**9**	**30 J**	**29**	na
LDW-SS2021-U	**9**	**48**	**36**	na
LDW-SS2022-A	**10 J**	**160 J**	**130**	**6.09 J**
LDW-SS2022-A-2	**20 J**	**300 J**	**95**	**4.79 J**
LDW-SS2022-D	**10 J**	**200 J**	**370**	**5.61 J**
LDW-SS2025-A	**70**	**1800**	**63**	na
LDW-SS2025-A-2	**100**	**2000**	**110**	na
LDW-SS2027-A	**20 J**	**800 J**	**890**	na
LDW-SS2029-A	**15**	**92**	**120**	na
LDW-SS2029-D	**10**	**110 J**	**140**	na
LDW-SS2030-A	**17**	**160**	**120**	na
LDW-SS2030-U	**30**	**210**	**280**	na
LDW-SS2032-A	**20**	**220**	**130**	na
LDW-SS2034-D	**61 J**	**850 J**	**250 J**	na
LDW-SS2034-U	**20 J**	**220 J**	**66**	na
LDW-SS2034-U-2	**20 J**	**130 J**	**110**	na
LDW-SS2035-A	**20**	**100**	**190**	**4.51 J**
LDW-SS2035-D	**10**	**110**	**190**	na
LDW-SS2035-U	**10**	**470**	**60 J**	na
LDW-SS2036-A	**10**	**120**	**110**	**4.99 J**
LDW-SS2036-D	**20**	**200 J**	**130**	na
LDW-SS2037-A	**10**	**140**	**100**	na
LDW-SS2037-D	**10**	**190**	**110**	na
LDW-SS2037-U	**14**	**96**	**63 J**	na
LDW-SS2038-A	**15**	**42 J**	**63**	na
LDW-SS2038-D	**44**	**300**	**27**	na
LDW-SS2039-A	**18**	**250**	**60**	na
LDW-SS2039-D	**23**	**85**	**230**	na
LDW-SS2040-A	7 U	**13 J**	**13**	0.563 J
LDW-SS2040-D	7 U	**14 J**	**44**	na
LDW-SS2040-U	7	**18 J**	**19**	na
LDW-SS2078-A	**10**	**190**	**81**	na
LDW-SS2078-D	**10**	**230**	**44**	na
LDW-SS2078-U	**20**	**160**	**85**	na
LDW-SS2080-A	**20**	**430**	**68**	na

Detected sample concentrations in **bold** exceed background levels of 7 mg/kg dw for arsenic, 9 µg/kg dw for cPAHs, 2 µg/kg dw for Total PCBs, and 2 ng TEQ/kg dw for Dioxin/Furan TEQ.

Nondetect sample results in *italics* exceed background levels of 7 mg/kg dw for arsenic, 9 µg/kg dw for cPAHs, 2 µg/kg dw for Total PCBs, and 2 ng TEQ/kg dw for Dioxin/Furan TEQ.

Table A–5. LDW Outfall Surface Sediment Sample Results Compared to Natural Background Concentrations for Four LDW RI Risk Driver Chemicals

Sample ID	Arsenic (mg/kg dw)	cPAHs (µg/kg dw)	Total PCBs (µg/kg dw)	Dioxin/Furan TEQ (ng TEQ/kg dw)
LDW-SS2082-U	**20**	**220**	**23**	**6.76 J**
LDW-SS2083-A	**20**	**510**	**17**	na
LDW-SS2085-A	**10**	**40**	**5.6**	na
LDW-SS2089-A	**20**	**330**	**26**	na
LDW-SS2089-D	**10**	**240**	*4.0 U*	na
LDW-SS2090-A	**10**	**55**	**14**	**3.14 J**
LDW-SS2090-D	**20**	**290**	**62 JN**	na
LDW-SS2091-U	**9**	**30 J**	**24**	1.93 J
LDW-SS2092-A	**10**	**63 J**	**67**	na
LDW-SS2093-D	7	**14 J**	**35 J**	na
LDW-SS2094-D	**10**	**49**	**43**	na
LDW-SS2096-A	**9**	**190**	**99**	na
LDW-SS2096-U	**10**	**190**	**32**	na
LDW-SS2097-A	**10**	**39**	**60**	na
LDW-SS2097-D	**10**	**92 J**	**52**	na
LDW-SS2098-A	7	*13 U*	*4.8 U*	0.294 J
LDW-SS2098-D	7	**31 J**	**9.1**	na
LDW-SS2098-U	6 U	*13 U*	*3.9 U*	na
LDW-SS2099-A	7	**17 J**	**12**	0.800 J
LDW-SS2099-D	*10 U*	**39**	**19**	na
LDW-SS2099-U	**8**	**13 J**	**7.3**	na
LDW-SS2103-A	**9**	**24 J**	**37**	1.07 J
LDW-SS2103-D	**12**	**32 J**	**37**	na
LDW-SS2103-U	7 U	**16 J**	**21**	na
LDW-SS2106-A	**10**	**43 J**	**1200**	**3.19 J**
LDW-SS2106-D	**13**	**62**	**140**	na
LDW-SS2106-U	**20**	**72 J**	**200**	na
LDW-SS2108-A	**10**	**75 J**	**100**	na
LDW-SS2108-U	**20**	**69**	**64**	na
LDW-SS2112-A	**20 J**	**310**	**200**	na
LDW-SS2113-A	**10**	**110**	**92**	na
LDW-SS2113-A-2	**10**	**89 J**	**110**	na
LDW-SS2113-U	*8 U*	**48**	**48**	na
LDW-SS2115-A	**10**	**230 J**	**60**	**5.88 J**
LDW-SS2115-D	**9**	**460**	**44**	na
LDW-SS2115-U	**42**	**300 J**	**77**	na
LDW-SS2122-A	**20**	**160**	**20**	**4.82 J**
LDW-SS2122-D	**20**	**580**	**45**	**8.13 J**
LDW-SS2122-U	**20**	**260**	**42**	na
LDW-SS2139-A	**15 J**	**630**	**89**	**6.40 J**
LDW-SS2144-A	**20**	**210**	**22**	na
LDW-SS2146-A	**14**	**86 J**	**23**	na
LDW-SS2147-D	**10**	**130**	**28**	na
LDW-SS2148-A	**32**	**910**	**41**	na
LDW-SS2148-A-2	**34**	**750**	**45**	na
LDW-SS2149-A	**10**	**440**	**150**	na
LDW-SS2150-A	**36**	**130**	**90**	**2.22 J**
LDW-SS2157-A	**20 J**	**330**	**60**	**8.75 J**
LDW-SS2200-A	**12**	**20 J**	**16 J**	1.22 J
LDW-SS2200-D	**10**	**35 J**	**12**	na

Detected sample concentrations in **bold** exceed background levels of 7 mg/kg dw for arsenic, 9 µg/kg dw for cPAHs, 2 µg/kg dw for Total PCBs, and 2 ng TEQ/kg dw for Dioxin/Furan TEQ.

Nondetect sample results in *italics* exceed background levels of 7 mg/kg dw for arsenic, 9 µg/kg dw for cPAHs, 2 µg/kg dw for Total PCBs, and 2 ng TEQ/kg dw for Dioxin/Furan TEQ.

Table A–5. LDW Outfall Surface Sediment Sample Results Compared to Natural Background Concentrations for Four LDW RI Risk Driver Chemicals

Sample ID	Arsenic (mg/kg dw)	cPAHs (µg/kg dw)	Total PCBs (µg/kg dw)	Dioxin/Furan TEQ (ng TEQ/kg dw)
LDW-SS2201-A	**10**	**19 J**	**8.5 J**	1.57 J
LDW-SS2201-D	**10**	**19 J**	**8.0 J**	na
LDW-SS2201-U	**11**	**26 J**	**34**	na
LDW-SS2214-A	**20**	**130**	**290**	na
LDW-SS2214-D	**20**	**140**	**310**	na
LDW-SS2214-U	**20**	**120**	**410**	na
LDW-SS2223-A	**15**	**230**	**130**	na
LDW-SS2232-A	**13**	**47**	**17**	na
LDW-SS2232-D	**8**	**14 J**	**11**	na
LDW-SS2232-U	**12**	**200**	**17**	na
LDW-SS2233-D	**22**	**180**	**69**	na
LDW-SS2233-U	**10**	**27 J**	**28**	na
LDW-SS2244-A	**20**	**130**	**110**	na
LDW-SS2244-D	**20**	**240**	**91**	na
LDW-SS2246-A	**20**	**410**	**250**	na
LDW-SS2246-U	**20**	**510**	**170**	na
LDW-SS2246-U-2	**20**	**630**	**190**	na
LDW-SS2247-A	**20**	**200**	**140**	na
LDW-SS2247-U	**20**	**220 J**	**160**	na
LDW-SS2503-A	7 UJ	**87 J**	**23**	na
LDW-SS2505-A	6 U	**210**	*3.9 U*	na
LDW-SS2506-A	**15**	**180**	**57**	na
LDW-SS2506-D	**16**	**93**	**40**	na
LDW-SS2512-A	**8**	**21 J**	**4.4**	na
LDW-SS2512-U	6	**15 J**	**9.9**	na
LDW-SS3037-A	**10**	**28 J**	**23**	1.86 J
LDW-SS3037-D	**13**	**41**	**55**	na
LDW-SS3037-D-2	**13**	**110**	**31**	na
LDW-SS3037-U	**10**	**34 J**	**29**	na
LDW-SS5000-A	**20 J**	**180**	**140**	**23.4 J**
LDW-SS5000-D	**20 J**	**200**	**130**	na
LDW-SS5000-U	**20 J**	**170**	**140**	na
LDW-SS5002-A	**86**	**500**	**680**	na
LDW-SS5002-D	**20**	**250**	**140**	na
LDW-SS5003-A	**67**	**270**	**750**	na
LDW-SS5005-A	**50**	**270**	**94**	na
LDW-SS6146-A	**10**	**48**	**54**	**3.17 J**
LDW-SS6146-D	**10**	**70**	**14**	na
LDW-SS6146-U	**20**	**52**	**62**	na
LDW-SSBDC2-A	**13**	**79**	**26**	na
LDW-SSBDC2-A-2	**13**	**72 J**	**20**	na
LDW-SSBDC2-D	**10**	**38**	*3.9 U*	na
LDW-SSBDC2-U	**11**	**78 J**	**13**	na
LDW-SSBDC3-D	**11**	**100 J**	*7.8 U*	na
LDW-SSBDC3-U	**13**	**100 J**	**66**	na
LDW-SSBDC4-A	**11**	**360**	**17**	na
LDW-SSBRSTSD-A	**20**	**250**	**120**	na
LDW-SSBRSTSD-D	**20**	**190**	**84**	na
LDW-SSBRSTSD-U	**20**	**1200**	**100**	na
LDW-SSPSF-A	**20**	**310**	**84**	**8.49 J**

Detected sample concentrations in **bold** exceed background levels of 7 mg/kg dw for arsenic, 9 µg/kg dw for cPAHs, 2 µg/kg dw for Total PCBs, and 2 ng TEQ/kg dw for Dioxin/Furan TEQ.

Nondetect sample results in *italics* exceed background levels of 7 mg/kg dw for arsenic, 9 µg/kg dw for cPAHs, 2 µg/kg dw for Total PCBs, and 2 ng TEQ/kg dw for Dioxin/Furan TEQ.

Table A–5. LDW Outfall Surface Sediment Sample Results Compared to Natural Background Concentrations for Four LDW RI Risk Driver Chemicals

Sample ID	Arsenic (mg/kg dw)	cPAHs (µg/kg dw)	Total PCBs (µg/kg dw)	Dioxin/Furan TEQ (ng TEQ/kg dw)
LDW-SSPSF-D	**20**	**73 J**	**46**	na
LDW-SSPSF-U	**20**	**230**	**160**	**5.85 J**
LDW-SSPSF-U-2	**10**	**690**	**100**	**4.81 J**
LDW-SSRVSTSD-A	**14**	**340**	**85**	na
LDW-SSRVSTSD-D	**21**	**94**	**110**	na
LDW-SSRWSD-A	**8**	*13 U*	*3.9 U*	na
LDW-SSRWSD-A-2	*7*	*13 U*	*3.8 U*	na
LDW-SSRWSD-Ab	7 J	*13 U*	*4.0 U*	na
LDW-SSSP1-A	**8**	*11 U*	**9.0**	na
LDW-SSSP1-D	**9**	**25**	**29**	na
LDW-SSSP1-U	*7*	*11 U*	**200**	na
LDW-SSSP2-A	**10**	**11 J**	**8.5**	na
LDW-SSSP2-D	**9 J**	**14 J**	**14**	na
LDW-SSSP2-U	**10**	**11 J**	**17**	na
LDW-SSSP3-A	*30 UJ*	**130 J**	**32**	na
LDW-SSSP3-D	**10 J**	**15 J**	**16**	1.30 J
LDW-SSSP3-U	**10 J**	**22 J**	**24**	na
LDW-SSSP5-A	**11**	**43**	**36**	na
LDW-SSSWCSO-A	**20 J**	**360**	**120**	na
LDW-SSSWCSO-A-2	**20**	**230**	**98**	na
LDW-SSSWCSO-U	**30 J**	**520**	**110**	na
LDW-SSUNK-A	**12**	**97**	**54**	na
LDW-SSUNK-D	6 U	*13 U*	**120**	0.550 J

Detected sample concentrations in **bold** exceed background levels of 7 mg/kg dw for arsenic, 9 µg/kg dw for cPAHs, 2 µg/kg dw for Total PCBs, and 2 ng TEQ/kg dw for Dioxin/Furan TEQ.

Nondetect sample results in *italics* exceed background levels of 7 mg/kg dw for arsenic, 9 µg/kg dw for cPAHs, 2 µg/kg dw for Total PCBs, and 2 ng TEQ/kg dw for Dioxin/Furan TEQ.

Appendix B
Data Validation Report

EcoChem, INC.
Environmental Data Quality

DATA VALIDATION REPORT

Lower Duwamish Waterway

Outfall Surface Sediment Sampling

Revision 1

Prepared for:

SAIC
18912 North Creek Parkway, Suite 101
Bothell, Washington 98011

Prepared by:

EcoChem, Inc.
710 Second Avenue, Suite 660
Seattle, Washington 98104

EcoChem Project: C4147-1

Date Revised: July 6, 2011

Approved for Release

Christina Mott
Project Manager
EcoChem, Inc.

PROJECT NARRATIVE

Basis for Data Validation

This report summarizes the results of summary (Stage 2B) and full validation (Stage 4) performed on sediment and quality control (QC) sample data for the 2011 Outfall Surface Sediment Sampling in the Lower Duwamish Waterway in Seattle, Washington. A complete list of samples is provided in the **Sample Index**.

Dioxin analyses were performed by Axys Analytical, Sydney, British Columbia. All other analyses were performed by Analytical Resources, Inc., Tukwila, Washington. The analytical methods and EcoChem project chemists are listed in the following table.

Analysis	Method of Analysis	Primary Review	Secondary Review
Semivolatile Organic Compounds	SW8270D, SW8270D-SIM	Glenn Esler & Ben Frans	Christina Mott
PCB Aroclors	SW8082	Glenn Esler	
Dioxin and Furan Compounds	Axys MLA-017 (EPA 1613b)	Melissa Swanson	
Metals and Mercury	SW6010B, 7470A, 7471A, EPA 200.8	Jeremy Maute	
Conventionals	Grain Size (PSEP), Plumb 1981, 160.3	Jeremy Maute	

The data were reviewed using guidance and quality control criteria documented in the analytical method; *Surface Sediment Sampling at Outfalls in the Lower Duwamish Waterway Seattle, WA, SAP/QAPP*, (SAIC 2011); *USEPA Region 10 SOP for Validation of Dioxins & Furans* (Region 10, 1996); *USEPA National Function Guidelines for Chlorinated Dibenzo-p Dioxins (CDD) and Chlorinated Dibenzofurans (CDF) Data Review* (USEPA, 2005); *USEPA National Functional Guidelines for Organic Data Review* (EPA, 1999); and *USEPA National Functional Guidelines for Inorganic Data Review* (EPA, 1994, 2004).

EcoChem's goal in assigning data assessment qualifiers is to assist in proper data interpretation. If values are estimated (J or UJ), data may be used for site evaluation and risk assessment purposes but reasons for data qualification should be taken into consideration when interpreting sample concentrations. If values are assigned an R, the data are to be rejected and should not be used for any site evaluation purposes. If values have no data qualifier assigned, then the data meet the data quality objectives as stated in the documents and methods referenced above.

Data qualifier definitions, reason codes, and validation criteria are included as **Appendix A**. A Qualified Data Summary Table is included in **Appendix B**. Data Validation Worksheets will be kept on file at EcoChem, Inc. Communications are included as **Appendix C.** A qualified laboratory electronic data deliverable (EDD) is also submitted with this report.

SAMPLE INDEX
SAIC - Lower Duwamish Waterway
Outfall Surface Sediment Sampling

SDG	Sample ID	Axys Lab ID	ARI Lab ID	SVOC	SIM	PCB	Metals	Conv	Dioxin
SL76	LDW-SS2039-D		11-4618-SL76A	✓	✓	✓	✓	✓	
SL76	LDW-SS2039-A		11-4619-SL76B	✓	✓	✓	✓	✓	
SL76	LDW-SS2038-A		11-4620-SL76C	✓	✓	✓	✓	✓	
SL76	LDW-SS2038-D		11-4621-SL76D	✓	✓	✓	✓	✓	
SL76	LDW-SS3037-D		11-4622-SL76E	✓	✓	✓	✓	✓	
SL76	LDW-SS3037-D-2		11-4623-SL76F	✓	✓	✓	✓	✓	
SL76	LDW-SS3037-A		11-4624-SL76G	✓	✓	✓	✓	✓	
SL76	LDW-SS3037-U		11-4625-SL76H	✓	✓	✓	✓	✓	
SL76	LDW-SSSP5-A		11-4626-SL76I	✓	✓	✓	✓	✓	
SL76	LDW-SS2099-D		11-4627-SL76J	✓	✓	✓	✓	✓	
SL76	LDW-SS2099-A		11-4628-SL76K	✓	✓	✓	✓	✓	
SL76	LDW-SS2099-U		11-4629-SL76L	✓	✓	✓	✓	✓	
SL77	LDW-SS2098-D		11-4630-SL77A	✓	✓	✓	✓	✓	
SL77	LDW-SS2098-A		11-4631-SL77B	✓	✓	✓	✓	✓	
SL77	LDW-SS2098-U		11-4632-SL77C	✓	✓	✓	✓	✓	
SL77	LDW-SS2103-D		11-4633-SL77D	✓	✓	✓	✓	✓	
SL77	LDW-SS2103-A		11-4634-SL77E	✓	✓	✓	✓	✓	
SL77	LDW-SS2103-U		11-4635-SL77F	✓	✓	✓	✓	✓	
SL77	LDW-SS2106-D		11-4636-SL77G	✓	✓	✓	✓	✓	
SL77	LDW-SS2106-A		11-4637-SL77H	✓	✓	✓	✓	✓	
SL77	LDW-SS2040-D		11-4638-SL77I	✓	✓	✓	✓	✓	
SL77	LDW-SS2040-A		11-4639-SL77J	✓	✓	✓	✓	✓	
SL77	LDW-SS2040-U		11-4640-SL77K	✓	✓	✓	✓	✓	
SL77	LDW-SSBRSTSD-D		11-4641-SL77L	✓	✓	✓	✓	✓	
SL77	LDW-SSBRSTSD-A		11-4642-SL77M	✓	✓	✓	✓	✓	
SL77	LDW-SSBRSTSD-U		11-4643-SL77N	✓	✓	✓	✓	✓	
SL77	LDW-SSRVSTSD-D		11-4644-SL77O	✓	✓	✓	✓	✓	
SL77	LDW-SSRVSTSD-A		11-4645-SL77P	✓	✓	✓	✓	✓	
SM01	LDW-SS2113-A		11-4763-SM01A	✓	✓	✓	✓	✓	
SM01	LDW-SS2113-A-2		11-4764-SM01B	✓	✓	✓	✓	✓	
SM01	LDW-SS2113-U		11-4765-SM01C	✓	✓	✓	✓	✓	
SM01	LDW-SS2106-U		11-4766-SM01D	✓	✓	✓	✓	✓	
SM01	LDW-SS2108-A		11-4767-SM01E	✓	✓	✓	✓	✓	
SM01	LDW-SS2108-U		11-4768-SM01F	✓	✓	✓	✓	✓	
SM01	LDW-SS2214-A		11-4769-SM01G	✓	✓	✓	✓	✓	
SM01	LDW-SS2214-D		11-4770-SM01H	✓	✓	✓	✓	✓	
SM01	LDW-SS2214-U		11-4771-SM01I	✓	✓	✓	✓	✓	
SM01	LDW-SS2036-D		11-4772-SM01J	✓	✓	✓	✓	✓	
SM01	LDW-SS2036-A		11-4773-SM01K	✓	✓	✓	✓	✓	
SM01	LDW-SS2035-D		11-4774-SM01L	✓	✓	✓	✓	✓	
SM01	LDW-SSPSF-U		11-4775-SM01M	✓	✓	✓	✓	✓	
SM01	LDW-SSPSF-U-2		11-4776-SM01N	✓	✓	✓	✓	✓	
SM01	LDW-SS030411-RB		11-4777-SM01O	✓		✓	✓		
SM05	LDW-SS2035-A		11-4784-SM05A	✓	✓	✓	✓	✓	

SAMPLE INDEX
SAIC - Lower Duwamish Waterway
Outfall Surface Sediment Sampling

SDG	Sample ID	Axys Lab ID	ARI Lab ID	SVOC	SIM	PCB	Metals	Conv	Dioxin
SM05	LDW-SS2035-U		11-4785-SM05B	✓	✓	✓	✓	✓	
SM05	LDW-SS2037-D		11-4786-SM05C	✓	✓	✓	✓	✓	
SM05	LDW-SS2037-A		11-4787-SM05D	✓	✓	✓	✓	✓	
SM05	LDW-SS2037-U		11-4788-SM05E	✓	✓	✓	✓	✓	
SM05	LDW-SS2505-A		11-4789-SM05F	✓	✓	✓	✓	✓	
SM05	LDW-SS2512-A		11-4790-SM05G	✓	✓	✓	✓	✓	
SM05	LDW-SS2512-U		11-4791-SM05H	✓	✓	✓	✓	✓	
SM05	LDW-SS2506-D		11-4792-SM05I	✓	✓	✓	✓	✓	
SM05	LDW-SS2506-A		11-4793-SM05J	✓	✓	✓	✓	✓	
SM05	LDW-SSPSF-D		11-4794-SM05K	✓	✓	✓	✓	✓	
SM05	LDW-SSPSF-A		11-4795-SM05L	✓	✓	✓	✓	✓	
SM58	LDW-SS2122-A		11-5099-SM58A	✓	✓	✓	✓	✓	
SM58	LDW-SS2122-D		11-5100-SM58B	✓	✓	✓	✓	✓	
SM58	LDW-SS2122-U		11-5101-SM58C	✓	✓	✓	✓	✓	
SM58	LDW-SS6146-D		11-5102-SM58D	✓	✓	✓	✓	✓	
SM58	LDW-SS2018-U		11-5103-SM58E	✓	✓	✓	✓	✓	
SM58	LDW-SS2015-D		11-5104-SM58F	✓	✓	✓	✓	✓	
SM58	LDW-SS2009-A		11-5105-SM58G	✓	✓	✓	✓	✓	
SM58	LDW-SS2009-U		11-5106-SM58H	✓	✓	✓	✓	✓	
SM58	LDW-SS2008-A		11-5107-SM58I	✓	✓	✓	✓	✓	
SN88	LDW-SS2082-U		11-6147-SN88A	✓	✓	✓	✓	✓	
SN88	LDW-SS2083-A		11-6148-SN88B	✓	✓	✓	✓	✓	
SN88	LDW-SS2089-D		11-6149-SN88C	✓	✓	✓	✓	✓	
SN88	LDW-SS2089-A		11-6150-SN88D	✓	✓	✓	✓	✓	
SN88	LDW-SS2085-A		11-6151-SN88E	✓	✓	✓	✓	✓	
SN88	LDW-SS2090-D		11-6152-SN88F	✓	✓	✓	✓	✓	
SN88	LDW-SS2090-A		11-6153-SN88G	✓	✓	✓	✓	✓	
SN88	LDW-SSBDC2-D		11-6154-SN88H	✓	✓	✓	✓	✓	
SN88	LDW-SSBDC2-A		11-6155-SN88I	✓	✓	✓	✓	✓	
SN88	LDW-SSBDC2-A-2		11-6156-SN88J	✓	✓	✓	✓	✓	
SN88	LDW-SSBDC2-U		11-6157-SN88K	✓	✓	✓	✓	✓	
SN88	LDW-SSBDC3-D		11-6158-SN88L	✓	✓	✓	✓	✓	
SN88	LDW-SSBDC3-U		11-6159-SN88M	✓	✓	✓	✓	✓	
SN88	LDW-SSBDC4-A		11-6160-SN88N	✓	✓	✓	✓	✓	
SN88	LDW-SS2091-U		11-6161-SN88O	✓	✓	✓	✓	✓	
SN88	LDW-SS2147-D		11-6162-SN88P	✓	✓	✓	✓	✓	
SN88	LDW-SS2146-A		11-6163-SN88Q	✓	✓	✓	✓	✓	
SN88	LDW-SS2144-A		11-6164-SN88R	✓	✓	✓	✓	✓	
SN88	LDW-SS031711-RB		11-6165-SN88S	✓		✓	✓		
SO11	LDW-SS2092-A		11-6308-SO11A	✓	✓	✓	✓	✓	
SO11	LDW-SS2097-D		11-6309-SO11B	✓	✓	✓	✓	✓	
SO11	LDW-SS2097-A		11-6310-SO11C	✓	✓	✓	✓	✓	
SO11	LDW-SS2094-D		11-6311-SO11D	✓	✓	✓	✓	✓	
SO11	LDW-SS2093-D		11-6312-SO11E	✓	✓	✓	✓	✓	

SAMPLE INDEX
SAIC - Lower Duwamish Waterway
Outfall Surface Sediment Sampling

SDG	Sample ID	Axys Lab ID	ARI Lab ID	SVOC	SIM	PCB	Metals	Conv	Dioxin
SO11	LDW-SSRWSD-A		11-6313-SO11F	✓	✓	✓	✓	✓	
SO11	LDW-SSRWSD-A-2		11-6314-SO11G	✓	✓	✓	✓	✓	
SO11	LDW-SS2096-A		11-6315-SO11H	✓	✓	✓	✓	✓	
SO11	LDW-SS2096-U		11-6316-SO11I	✓	✓	✓	✓	✓	
SO11	LDW-SS2200-D		11-6317-SO11J	✓	✓	✓	✓	✓	
SO11	LDW-SS2200-A		11-6318-SO11K	✓	✓	✓	✓	✓	
SO11	LDW-SS2201-D		11-6319-SO11L	✓	✓	✓	✓	✓	
SO11	LDW-SS2201-A		11-6320-SO11M	✓	✓	✓	✓	✓	
SO11	LDW-SS2201-U		11-6321-SO11N	✓	✓	✓	✓	✓	
SO23	LDW-SS2246-A		11-6353-SO23A	✓	✓	✓	✓	✓	
SO23	LDW-SS2246-U		11-6354-SO23B	✓	✓	✓	✓	✓	
SO23	LDW-SS2246-U-2		11-6355-SO23C	✓	✓	✓	✓	✓	
SO23	LDW-SS2247-A		11-6356-SO23D	✓	✓	✓	✓	✓	
SO23	LDW-SS2247-U		11-6357-SO23E	✓	✓	✓	✓	✓	
SO23	LDW-SS2244-D		11-6358-SO23F	✓	✓	✓	✓	✓	
SO23	LDW-SS2244-A		11-6359-SO23G	✓	✓	✓	✓	✓	
SO23	LDW-SS2223-A		11-6360-SO23H	✓	✓	✓	✓	✓	
SO23	LDW-SS2010-D		11-6361-SO23I	✓	✓	✓	✓	✓	
SO23	LDW-SS2010-A		11-6362-SO23J	✓	✓	✓	✓	✓	
SO23	LDW-SS2010-U		11-6363-SO23K	✓	✓	✓	✓	✓	
SO23	LDW-SS2011-D		11-6364-SO23L	✓	✓	✓	✓	✓	
SO23	LDW-SS2011-A		11-6365-SO23M	✓	✓	✓	✓	✓	
SO23	LDW-SS6146-A		11-6366-SO23N	✓	✓	✓	✓	✓	
SO23	LDW-SS6146-U		11-6367-SO23O	✓	✓	✓	✓	✓	
SO23	LDW-SS2080-A		11-6368-SO23P	✓	✓	✓	✓	✓	
SO23	LDW-SS2078-U		11-6369-SO23Q	✓	✓	✓	✓	✓	
SO23	LDW-SS2078-A		11-6370-SO23R	✓	✓	✓	✓	✓	
SO23	LDW-SS2078-D		11-6371-SO23S	✓	✓	✓	✓	✓	
SO23	LDW-SS032111-RB		11-6372-SO23T	✓		✓	✓		
SO80	LDW-SSSP2-A		11-6698-SO80A	✓	✓	✓	✓	✓	
SO80	LDW-SSSP2-U		11-6699-SO80B	✓	✓	✓	✓	✓	
SO80	LDW-SSSP1-D		11-6700-SO80C	✓	✓	✓	✓	✓	
SO80	LDW-SSSP1-A		11-6701-SO80D	✓	✓	✓	✓	✓	
SO80	LDW-SSSP1-U		11-6702-SO80E	✓	✓	✓	✓	✓	
SO80	LDW-SS2021-U		11-6703-SO80F	✓	✓	✓	✓	✓	
SO80	LDW-SS2021-A		11-6704-SO80G	✓	✓	✓	✓	✓	
SO80	LDW-SS2021-D		11-6705-SO80H	✓	✓	✓	✓	✓	
SO80	LDW-SS5002-A		11-6706-SO80I	✓	✓	✓	✓	✓	
SO80	LDW-SS5002-D		11-6707-SO80J	✓	✓	✓	✓	✓	
SO80	LDW-SS5005-A		11-6708-SO80K	✓	✓	✓	✓	✓	
SO80	LDW-SS5003-A		11-6709-SO80L	✓	✓	✓	✓	✓	
SO83	LDW-SS2027-A		11-6713-SO83A	✓	✓	✓	✓	✓	
SO83	LDW-SS2034-D		11-6714-SO83B	✓	✓	✓	✓	✓	
SO83	LDW-SS2034-U		11-6715-SO83C	✓	✓	✓	✓	✓	

SAMPLE INDEX
SAIC - Lower Duwamish Waterway
Outfall Surface Sediment Sampling

SDG	Sample ID	Axys Lab ID	ARI Lab ID	SVOC	SIM	PCB	Metals	Conv	Dioxin
SO83	LDW-SS2034-U-2		11-6716-SO83D	✓	✓	✓	✓	✓	
SO83	LDW-SS2503-A		11-6717-SO83E	✓	✓	✓	✓	✓	
SO83	LDW-SS2022-D		11-6718-SO83F	✓	✓	✓	✓	✓	
SO83	LDW-SS2022-A		11-6719-SO83G	✓	✓	✓	✓	✓	
SO83	LDW-SS2022-A-2		11-6720-SO83H	✓	✓	✓	✓	✓	
SO83	LDW-SSSP3-D		11-6721-SO83I	✓	✓	✓	✓	✓	
SO83	LDW-SSSP3-A		11-6722-SO83J	✓	✓	✓	✓	✓	
SO83	LDW-SSSP3-U		11-6723-SO83K	✓	✓	✓	✓	✓	
SO83	LDW-SSSP2-D		11-6724-SO83L	✓	✓	✓	✓	✓	
SO83	LDW-SS2157-A		11-6725-SO83M	✓	✓	✓	✓	✓	
SR19	LDW-SSSWCSO-A		11-7871-SR19A	✓	✓	✓	✓	✓	
SR19	LDW-SSSWCSO-A-2		11-7872-SR19B	✓	✓	✓	✓	✓	
SR19	LDW-SSSWCSO-U		11-7873-SR19C	✓	✓	✓	✓	✓	
SR19	LDW-SS2139-A		11-7874-SR19D	✓	✓	✓	✓	✓	
SR19	LDW-SSRWSD-Ab		11-7875-SR19E	✓	✓	✓	✓	✓	
SR19	LDW-SS2112-A		11-7876-SR19F	✓	✓	✓	✓	✓	
SR19	LDW-SS2013-D		11-7877-SR19G	✓	✓	✓	✓	✓	
SR19	LDW-SS2013-A		11-7878-SR19H	✓	✓	✓	✓	✓	
SR19	LDW-SS2013-U		11-7879-SR19I	✓	✓	✓	✓	✓	
SR19	LDW-SS5000-D		11-7880-SR19J	✓	✓	✓	✓	✓	
SR19	LDW-SS5000-A		11-7881-SR19K	✓	✓	✓	✓	✓	
SR19	LDW-SS5000-U		11-7882-SR19L	✓	✓	✓	✓	✓	
SR19	LDW-SS040811-RB		11-7883-SR19M	✓		✓	✓		
SS31/SW12	LDW-SS2025-A		11-8436-SS31A	✓	✓	✓	✓	✓	
SS31/SW12	LDW-SS2025-A-2		11-8437-SS31B	✓	✓	✓	✓	✓	
SS31/SW12	LDW-SS2019-A		11-8438-SS31C	✓	✓	✓	✓	✓	
SS31/SW12	LDW-SS2029-D		11-8439-SS31D	✓	✓	✓	✓	✓	
SS31/SW12	LDW-SS2029-A		11-8440-SS31E	✓	✓	✓	✓	✓	
SS31/SW12	LDW-SS2030-A		11-8441-SS31F	✓	✓	✓	✓	✓	
SS31/SW12	LDW-SS2030-U		11-8442-SS31G	✓	✓	✓	✓	✓	
SS31/SW12	LDW-SS2032-A		11-8443-SS31H	✓	✓	✓	✓	✓	
SS31/SW12	LDW-SSUNK-D		11-8444-SS31I	✓	✓	✓	✓	✓	
SS31/SW12	LDW-SSUNK-A		11-8445-SS31J	✓	✓	✓	✓	✓	
SS31/SW12	LDW-SS2115-D		11-8446-SS31K	✓	✓	✓	✓	✓	
SS31/SW12	LDW-SS2115-A		11-8447-SS31L	✓	✓	✓	✓	✓	
SS31/SW12	LDW-SS2115-U		11-8448-SS31M	✓	✓	✓	✓	✓	
SS31/SW12	LDW-SS041511-RB		11-8449-SS31N	✓		✓	✓		
ST00	LDW-SS2149-A		11-8867-ST00A	✓	✓	✓	✓	✓	
ST00	LDW-SS2148-A		11-8868-ST00B	✓	✓	✓	✓	✓	
ST00	LDW-SS2148-A-2		11-8869-ST00C	✓	✓	✓	✓	✓	
ST00	LDW-SS2150-A		11-8870-ST00D	✓	✓	✓	✓	✓	
ST00	LDW-SS2233-U		11-8871-ST00E	✓	✓	✓	✓	✓	
ST00	LDW-SS2233-D		11-8872-ST00F	✓	✓	✓	✓	✓	
ST00	LDW-SS2232-D		11-8873-ST00G	✓	✓	✓	✓	✓	

SAMPLE INDEX
SAIC - Lower Duwamish Waterway
Outfall Surface Sediment Sampling

SDG	Sample ID	Axys Lab ID	ARI Lab ID	SVOC	SIM	PCB	Metals	Conv	Dioxin
ST00	LDW-SS2232-A		11-8874-ST00H	✓	✓	✓	✓	✓	
ST00	LDW-SS2232-U		11-8875-ST00I	✓	✓	✓	✓	✓	
WG36100	LDW-SS2200-A	L16285-17 RL							✓
WG36100	LDW-SS2090-A	L16285-15 RL							✓
WG36131	LDW-SS3037-A	L16285-1							✓
WG36131	LDW-SS2099-A	L16285-2							✓
WG36131	LDW-SS2098-A	L16285-3							✓
WG36131	LDW-SS2103-A	L16285-4							✓
WG36131	LDW-SS2106-A	L16285-5							✓
WG36131	LDW-SS2040-A	L16285-6							✓
WG36131	LDW-SS2036-A	L16285-7							✓
WG36131	LDW-SSPSF-U	L16285-8							✓
WG36131	LDW-SSPSF-U	L16285-9							✓
WG36131	LDW-SSPSF-A	L16285-10							✓
WG36131	LDW-SS2122-A	L16285-11							✓
WG36131	LDW-SS2122-D	L16285-12 (A)							✓
WG36131	LDW-SS2008-A	L16285-13							✓
WG36131	LDW-SS2082-U	L16285-14							✓
WG36131	LDW-SS2091-U	L16285-16							✓
WG36131	LDW-SS2201-A	L16285-18							✓
WG36131	LDW-SS6146-A	L16285-19							✓
WG36131	LDW-SS2021-A	L16285-20							✓
WG36417	LDW-SS2150-A	L16394-1 (A)							✓
WG36417	LDW-SSPSF-U-2	L16394-2							✓
WG36417	LDW-SSUNK-D	L16394-3							✓
WG36417	LDW-SS2115-A	L16394-4							✓
WG36417	LDW-SS2022-D	L16394-5							✓
WG36417	LDW-SS2022-A	L16394-6							✓
WG36417	LDW-SS2022-A-2	L16394-7							✓
WG36417	LDW-SSSP3-D	L16394-8							✓
WG36417	LDW-SS2157-A	L16394-9							✓
WG36417	LDW-SS2139-A	L16394-10							✓
WG36417	LDW-SS2013-A	L16394-11							✓
WG36417	LDW-SS5000-A	L16394-12							✓

DATA VALIDATION REPORT
Lower Duwamish Waterway Outfall Surface Sediment Sampling
Semivolatile Organic Compounds by SW846 Method 8270D

This report documents the review of analytical data from the analyses of sediment samples and the associated laboratory and field quality control (QC) samples. Analytical Resources, Inc., Tukwila, Washington, analyzed the samples. See the **Sample Index** for a list of samples that were reviewed.

SDG	Number of Samples	Validation Level
SL76	12 Sediment	Stage 2B
SL77	16 Sediment	Stage 2B
SM01	14 Sediment 1 Rinsate Blank	Stage 2B Stage 2A
SM05	12 Sediment	Stage 2B
SM58	9 Sediment	Stage 2B
SN88	18 Sediment 1 Rinsate Blank	Stage 2B Stage 2A
SO11	14 Sediment	Stage 2B
SO23	19 Sediment 1 Rinsate Blank	Stage 2B Stage 2A
SO80	12 Sediment	Stage 2B
SO83	13 Sediment	Stage 2B
SR19	12 Sediment 1 Rinsate Blank	Stage 2B Stage 2A
SS31	13 Sediment 1 Rinsate Blank	Stage 2B Stage 2A
ST00	9 Sediment	Stage 2B

I. DATA PACKAGE COMPLETENESS

The laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative.

II. EDD TO HARDCOPY VERIFICATION

A complete (100%) verification of the electronic data deliverable (EDD) results was performed by comparison to the hardcopy laboratory data package. Laboratory QC results were also verified (10%). No errors were found.

III. TECHNICAL DATA VALIDATION

The QC requirements that were reviewed are listed below.

1	Sample Receipt, Preservation and Holding Times	1	Standard Reference Material
2	Initial Calibration (ICAL)	1	Field Duplicates
2	Continuing Calibration (CCAL)	2	Matrix Spike/Matrix Spike Duplicate (MS/MSD)
2	Laboratory Blanks	1	Internal Standards
1	Rinsate Blanks		Target Analyte list
1	Surrogate Compounds	2	Reporting Limits
2	Laboratory Control Samples (LCS)	2	Reported Results

[1] ***Quality control results are discussed below, but no data were qualified.***
[2] ***Quality control outliers that impact the reported data were noted. Data qualifiers were issued as discussed below.***

Sample Receipt, Preservation and Holding Times

The validation guidance documents state that the cooler temperatures should be within an advisory temperature range of 2° to 6°C. The laboratory received sample coolers with temperatures less than the lower limit, the lowest at 0.3°C. These outliers did not impact data quality; therefore no qualifiers were assigned.

SDG SL77: Sample LDW-SS030411-RB was listed on the chain of custody (COC) and indicated for semivolatiles analysis. The cooler receipt form in the data package notes that Sample LDW-SS030411-RB was not received with this group of samples. Sample LDW-SS030411-RB was analyzed with the samples in SDG SM01.

SDG SO11: Sample LDW-SSRWSD-A-2 was identified as LDW-SSRWSD-2 on the sample label. The sample was logged as LDW-SSRWSD-A-2 as listed on the COC form.

SDG SS31: Sample IDs were amended by laboratory. The sample listed as LDW-SSBoyer-?-D on the COC form was changed to LDW-SSUNK-D. The sample listed as LDW-SSBoyer-?-A in the COC was changed to LDW-SSUNK-A. A copy of the laboratory email correspondence describing the request for the change in sample names was included in data package.

SDG ST00: The laboratory received sample coolers with temperatures above the advisory limits at 9.3°C and 10.3°C. The samples arrived at the laboratory approximately an hour after the samples were collected and may not have had time to equilibrate with the ice. No qualifiers were assigned.

Initial Calibration

SDG SL77: The percent relative standard deviation value for 2,4-dinitrophenol was high at 70.6% in the initial calibration analyzed on April 5, 2011 on instrument NT8. Additionally, the relative response factor (RRF) value in the lowest initial calibration standard was less than the 0.05 minimum control limit. This compound was not detected; the detection limits in the associated samples were estimated (UJ-5A).

Continuing Calibration

All RRF values were greater than the 0.05 minimum control limit. With the exceptions noted below, all percent difference (%D) values were within the ±25% control limits for all continuing calibrations (CCAL). When the %D outlier indicates a potential high bias, and there were no positive results for these compounds, no qualifiers were required. The compounds associated with %D outliers and the qualifiers issued are summarized below.

SDG SL76: Potential low bias: hexachlorocyclopentadiene, 2,4-dinitrophenol, pentachlorophenol: (UJ-5B)

SDG SL77: Potential low bias: 3-nitroaniline, 2,4-dinitrophenol, 4-nitroaniline: (UJ-5B)

SDG SM01: Potential low bias: 2,4-dinitrophenol (UJ-5B) and 2,4-dinitrophenol <-90%D (R-5B)

SDG SN88: Potential low bias: hexachlorocyclopentadiene, 2,4-dinitrophenol, pentachlorophenol, 2,4-dichlorophenol, 4-chlorophenyl-phenylether, 4-bromophenyl-phenylether, butylbenzylphthalate: (J/UJ-5B)

SDG SO11: Potential low bias: hexachlorocyclopentadiene, 2,4-dinitrophenol, pentachlorophenol, 4-chloroaniline (UJ-5B)

SDG SO23: Potential low bias: hexachlorocyclopentadiene and pentachlorophenol: (UJ-5B). Potential high bias: butylbenzylphthalate: (J-5B).

SDG SO80: Potential low bias: 3-nitroaniline, 2,4-dinitrophenol, 4-nitroaniline: (UJ-5B).

SDG SO83: Potential high bias: dibenz(a,h)anthracene and pyrene: (J-5B).

SDG SR19: Potential low bias: 4-chloroaniline, 4-chlorophenylphenyl ether, 4-bromophenyl-phenylether, pyrene, aniline (J/UJ-5B).

SDG SS31: Potential low bias: 2,4-dinitrophenol, pentachlorophenol, benzo(a)pyrene, aniline, 4-nitroaniline (UJ-5B). Potential high bias: butylbenzylphthalate (J-5B).

SDG ST00: Potential high bias: butylbenzylphthalate (J-5B).

Laboratory Blanks

Laboratory (method) blanks were analyzed at the appropriate frequency. To assess the impact of each blank contaminant on the reported sample results, an action level was established at five times (10x for phthalates) the concentration detected in the blank. If the concentration in the associated field samples were less than the action level, the results were qualified as not detected (U-7) at the reported concentration. No action was taken if the sample results were greater than the action level or for non-detected results.

The following analytes were qualified as not-detected in one or more samples based on method blank contamination:.

SDG SM58: Bis(2-ethylhexyl)phthalate (BEHP) (8 results)

SDG SO11: BEHP (12 results) and diethylphthalate (2 results)

SDG SO23: BEHP (2 results)

SDG SS31: BEHP (3 results)

Rinsate Blanks

To evaluate the effect on the sample data, action levels of 5x the blank concentrations were established (10x for phthalates). If a contaminant is detected in an associated field sample and the concentration is less than the action level, the result is qualified (U-6) at the reported concentration to indicate an elevation of the reporting limit. No action is taken if the sample result is greater than the action level, or for non-detected results.

Laboratory blanks are used to evaluate the field blank. Any remaining positive results in the rinse blank are then used to evaluate all associated samples.

SDG SL76 and SL77: The samples in these SDG were associated with rinsate blank LDW-SS030411-RB, which was submitted in **SDG SM01**. Bis(2-ethylhexyl)phthalate was detected in the rinsate blank. Positive results in the associated samples that were less than the action level were qualified as not-detected (U-6).

SDG SM01: BEHP was detected in rinsate blank LDW-SS030411-RB. This rinsate blank is associated with the samples in **SDG SL76** and **SL77**.

SDG SN88: SVOCs were not detected in rinsate blank LDW-SS031711-RB.

SDG SO23: SVOCs were not detected in rinsate blank LDW-SS032111-RB.

SDG SR19: SVOCs were not detected in rinsate blank LDW-SS040811-RB.

A rinse blank sample was not collected for samples collected during the week of April 18, 2011 because the sampling equipment used was dedicated and pre-decontaminated precluding the potential for cross contamination.

Surrogate Compounds

SDG SO83: All surrogates were not recovered in the 50x dilution of Sample LDW-SS2027-A. Qualification was not required because of the dilution.

SDG SS31: Acid extractable surrogates were not recovered in the method blank associated with Sample LDW-SS041511-RB. Qualification was not required because the surrogate recoveries in the associated sample were within control limits and no target analytes were detected.

Laboratory Control Samples

Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) samples were analyzed at the appropriate frequency. The percent recovery (%R) value outliers are documented in the data validation worksheets. No action is taken unless both the LCS and LCSD %R values are outside the control limits for LCS/LCSD %R outliers. Qualifiers are issued to all samples in the same preparation batch.

When the LCS/LCSD %R values indicate a potential low bias, associated results are estimated (J/UJ-10). If the %R values indicate a potential high bias only the associated positive results are estimated (J-10).

The following analytes were estimated or were rejected in one or more samples based on laboratory control sample outliers.

SDG SM01: The %R values for the following analytes were less than the control limits in aqueous LCS-030911. These compounds were not detected in the associated samples and detection limits for these analytes were estimated (UJ-10).

2-nitrophenol	2-nitroaniline
benzoic acid	4-nitrophenol
2,4-dichlorphenol	2,6-dinitrotoluene
4-chloro-3-methyl-phenol	2,4-dinitrotoluene
hexachlorocyclopentadiene	4-nitroaniline
2,4,6-trichlorophenol	pentachlorophenol
2,4,5-trichlorophenol	n-nitrosodimethylamine

The %R values for benzyl alcohol and aniline were greater than the control limits and were not detected in the associated sample. No action was necessary.

SDG SN88: The %R value for hexachlorocyclopentadiene was less than the lower control limit in sediment LCS-032611. The results in all associated samples were estimated (UJ-10).

SDG SO11: The %R values for hexachlorocyclopentadiene and aniline were less than the lower control limit in sediment LCS-033011. The results in all associated samples were estimated (J/UJ-10).

SDG SO23: The %R values for 2,4-dimethylphenol, hexachlorocyclopentadiene and aniline were less than the lower control limit in sediment LCS-040211. The results in all associated samples were estimated (UJ-10).

SDG SR19: The %R values for 4-chloroaniline and 2,4-dinitrophenol were less than the lower control limit in sediment LCS-042011. The results in all associated samples were estimated (UJ-10).

Benzoic acid and 2,4-dinitrophenol were not recovered in the aqueous LCS-041411 and LCSD-041411. The results in the associated sample were rejected (R-10). The hexachlorocyclopentadiene %R values were less than the control limits. The associated result was estimated (UJ-10). Several RPD values were high. These analytes were not detected in the associated sample and qualification was not required.

SDG SS31: The %R value for 2,4-dimethylphenol was less than the lower control limit and the %R value for 2,4-dinitrophenol was less than 10% in sediment LCS-042711. The results in all associated samples were estimated (J/UJ-10) for 2,4-dimethylphenol and rejected (R-10) for 2,4-dinitrophenol.

SDG ST00: The recovery value for 2,4-dinitrophenol and aniline was less than the lower control limits in sediment LCS-050311. The results in all associated samples were estimated (UJ-10).

Standard Reference Material

The Sequim Bay reference material SQ-1 was analyzed with the samples. The recoveries for several analytes were outside of the reference range. As the SQ-1 values were reference values only and were not certified, no action was taken based on the recovery outliers.

Field Duplicate

The following acceptance criteria were used to evaluate precision: the relative percent difference (RPD) control limit is 50% for results greater than 5x the reporting limit (RL). The absolute difference between the sample and replicate must be less than 2x the RL for results less than 5x the RL. No data were qualified based on field replicate precision outliers. Users of the data should consider the impact of field precision outliers on the reported results.

Precision values greater than 50% RPD or ±2x the RL (for concentrations less than 5x the RL) are listed below (field duplicate pairs with no precision outliers are indicated by "None").

SDG	Parent Sample ID	Duplicate Sample ID	Outliers
SL76	LDW-SS3037-D	LDW-SS3037-D-2	Phenanthrene
			Fluoranthene
			Pyrene
			Benzo(a)anthracene
			bis(2-Ethylhexyl)phthalate)
			Chrysene
			Total Benzofluoranthenes
SM01	LDW-SS2113-A	LDW-SS2113-A-2	NONE
SM01	LDW-SSPSF-U	LDW-SSPSF-U-2	2-Methylnaphthalene
			Acenaphthylene
			Acenaphthene
			Dibenzofuran
			Fluorene
			Phenanthrene

SDG	Parent Sample ID	Duplicate Sample ID	Outliers
SM01	LDW-SSPSF-U	LDW-SSPSF-U-2	Carbazole
			Anthracene
			Fluoranthene
			Pyrene
			Benzo(a)anthracene
			Chrysene
			Total Benzofluoranthenes
			1-Methylnaphthalene
			Benzo(a)pyrene
			Indeno(1,2,3-cd)pyrene
			Dibenz(a,h)anthracene
			Benzo(g,h,i)perylene
SN88	LDW-SSBCD2-A	LDW-SSBCD2-A-2	NONE
SO11	LDW-SSRWSD-A	LDW-SSRWSD-A-2	NONE
SO23	LDW-SS2246-U	LDW-SS2246-U-2	Naphthalene
			2-Methylnaphthalene
			Acenaphthene
			Dibenzofuran
			Fluorene
SO23	LDW-SS2034-U	LDW-SS2034-U-2	Benzo(a)pyrene
SO83	LDW-SS2022-A	LDW-SS2022-A-2	Acenaphthene
			Dibenzofuran
			Fluorene
			Phenanthrene
			Pyrene
			bis(2-Ethylhexyl)phthalate)
			Chrysene
			Total Benzofluoranthenes
			1-Methylnaphthalene
			Indeno(1,2,3-cd)pyrene
			Benzo(g,h,i)perylene
SR19	LDW-SSSWCSO-A	LDW-SSWCSO-A-2	Phenanthrene
			Pyrene
			Chrysene
			Total Benzofluoranthenes
SS31	LDW-SS2025-A	LDW-SS2025-A-2	Di-n-butylphthalate
			Butylbenzylphthalate
ST00	LDW-SS2148-A	LDW-SS2148-A-2	Acenaphthene
			Dibenzofuran
			Fluorene
			Phenanthrene
			Carbazole
			Anthracene

Matrix Spike/Matrix Spike Duplicates

Matrix spike/matrix spike duplicate (MS/MSD) samples were analyzed at the appropriate frequency. No action is taken unless both the MS and MSD %R values are outside the control limits for MS/MSD %R outliers. Precision is evaluated using the RPD values calculated between the MS and MSD results. Any RPD values outside the control limits indicate uncertainty in the measured results for the sample. Qualifiers were only issued to the parent sample.

When the MS/MSD %R values indicate a potential low bias, associated results are estimated (J/UJ-8). Only the associated positive results are estimated (J-8) if the %R values indicate a potential high bias. Associated positive results are estimated (J-9) if the RPD values indicate uncertainty.

SDG SL76: MS/MSD analyses were performed on Sample LDW-SS2099-U. The %R values for hexachlorocyclopentadiene were less than the control limits in the MS and MSD. The result in this sample was estimated (UJ-8).

SDG SL77: MS/MSD analyses were performed on Sample LDW-SS2098-D. The %R values for 4-chloroaniline, hexachlorocyclopentadiene, 3,3'-dichlorobenzidine, and aniline were less than the control limits in the MS and MSD. These results in this sample were estimated (UJ-8).

SDG SM01: MS/MSD analyses were performed on Sample LDW-SS2108-U. The %R values for 4-chloroaniline, hexachlorocyclopentadiene, 2,4-dinitrophenol, 3,3'-dichlorobenzidine, and aniline were less than 10% in the MS and MSD. These results in this sample were rejected (R-8). The %R values for 4-nitroaniline were less than the control limits in the MS and MSD. The result in this sample was estimated (UJ-8). The RPD value for n-nitrosodimethylamine was above the control limit. This analyte was not detected in the sample and qualification was not required.

SDG SM05: MS/MSD analyses were performed using Sample LDW-SS2506-A. The compounds 4-chloroaniline, hexachlorocyclopentadiene, 3-nitroaniline, aniline, 2,4-dinitrophenol, 4-nitroaniline, and 3,3'-dichlorobenzidine were either not recovered or recovery values were very low (<10%) in the MS and/or MSD. These results in the parent sample were rejected (R-8). Several analyte recoveries were outside control limits in the MS or MSD but acceptable in the associated MSD or MS and qualification was not required. BEHP was not recovered in the MS/MSD. Since the BEHP concentration in the sample was greater than four times the spike added concentration, no action was necessary. The 4,6-dinitro-2-methylphenol RPD value was high. This analyte was not detected in the sample and qualification was not required.

SDG SM58: MS/MSD analyses were performed on Sample LDW-SS2018-U. The %R values for 4-chloroaniline were less than the control limits. The result in this sample was estimated (UJ-8). The %R values for hexachlorocyclopentadiene, 3,3'-dichlorobenzidine, and aniline were not recovered or less than 10% in the MS/MSD. The hexachlorocyclopentadiene, aniline, and 3,3'-dichlorobenzidine results in this sample were rejected (R-8). The RPD value for 3;3'-dichlorobenzidine was greater than the control limit; this analyte was not detected and further qualification was not required. The RPD values for phenanthrene and fluoranthene were greater than the control limit. The results in the sample were estimated (J-9).

SDG SN88: MS/MSD analyses were performed on Sample LDW-SS2082-U. The compounds 4-chloroaniline, hexachlorocyclopentadiene, 3-nitroaniline, 2,4-dinitrophenol, 4-nitroaniline, 4,6-dinitro-2-methylphenol, 3,3'-dichlorobenzidine, and aniline were either not recovered or %R values were less than 10% in the MS and/or MSD. These results in this sample were rejected (R-8). The hexachloroethane %R value was less than the control limit in the MS; no qualifier was applied for this single outlier. The RPD values for 2-nitroaniline, hexachloroethane, and 3-nitroaniline were greater than the control limit. These analytes were not detected in the sample and qualification was not required.

MS/MSD analyses were performed on Sample LDW-SSBDC3-D. Hexachlorocyclopentadiene, 3,3'-dichlorobenzidine, and aniline %R values were less than 10% in the MS and/or MSD. These results in this sample were rejected (R-8). The 4-chloroaniline %R values were less than the control limit in the MS/MSD. The non-detected 4-chloroaniline result was estimated (UJ-8). The RPD value for 4-nitroaniline was greater than the control limit; this analyte was not detected in the sample and qualification was not required

SDG SO11: MS/MSD analyses were performed on Sample LDW-SS2093-D. The RPD value for 3,3'-dichlorobenzidine was greater than the control limit. This analyte was not detected in the sample and qualification was not required. The hexachlorocyclopentadiene and aniline %R values were less than the control limit in the MS and MSD and these results were estimated (UJ-8).

SDG SO23: MS/MSD analyses were performed on Sample LDW-SS2247-U. 4-Chloroaniline, hexachlorocyclopentadiene, aniline, 3,3'-dichlorobenzidine, and 3-nitroaniline were not recovered in the MS/MSD. These results in this sample were rejected (R-8). Chrysene and 2,4-dinitrophenol %R values were below the control limits in the MS/MSD. The results for these analytes were estimated (J/UJ-8). The 4,6-dinitro-2-methylphenol recovery value was less than the control limit in the MSD but acceptable in the MS and qualification was not required. Additionally, the RPD for 2,4-dinitrophenol and 4,6-dinitro-2-methylphenol were above the control limit. These analytes were not detected in the sample and qualification was not required.

SDG SO80: MS/MSD analyses were performed on Sample LDW-SSSP1-D. The %R values for hexachlorocyclopentadiene in the MS and MSD were below the control limits. The result in this sample was estimated (UJ-8). Additionally, the RPD for hexachlorocyclopentadiene was above the control limit. This analyte was not detected in the sample and qualification was not required.

SDG SO83: MS/MSD analyses were performed on Sample LDW-SS2034-D. 4-Chloroaniline, hexachlorocyclopentadiene, 2,4-dinitrophenol, 3,3'-dichlorobenzidine, and aniline were not recovered or the %R values were less than 10% in the MS/MSD. These results in this sample were rejected (R-8). The %R values for 4-nitroaniline, phenanthrene, fluoranthene, pyrene, benzo(a)anthracene, chrysene, benzo(a)pyrene, and total benzofluoranthenes were outside the control limits in the MS/MSD. The results for these analytes were estimated (J/UJ-8). Several analyte %R values were above the control limits. These analytes were not detected in the sample and qualification was not required. The 4,6-dinitro-2-methylphenol RPD value was above the control limit. This analyte was not detected in the sample and qualification was not required.

SDG SR19: MS/MSD analyses were performed on Sample LDW-SS2013-A. Hexachlorocyclopentadiene, 3,3'-dichlorobenzidine, and aniline were either not recovered in the

MS/MSD or %R values were less than 10% in the MS and MSD. These results in Sample LDW-SS2013-A were rejected (R-8). The 4-chloroaniline and 2,4-dinitrophenol %R values were less than the control limits in the MS and MSD. These results were estimated (UJ-8). The RPD values for hexachlorocyclopentadiene and 3,3'-dichlorbenzidine were above the control limit for the MS/MSD. These analytes were not detected in the sample and qualification was not required.

SDG SS31: MS/MSD analyses were performed on Sample LDW-SS2019-A. The %R values for 4-chloroaniline, hexachlorocyclopentadiene, 3-nitroaniline, 2,4-dinitrophenol, 4-nitroaniline, 4,6-dinitro-4-methylphenol, 3,3'-dichlorobenzidine, and aniline were not recovered or were less than 10% in the MS/MSD. These results in this sample were rejected (R-8). Phenanthrene, fluoranthene, and pyrene %R values were outside the control limits in the MS/MSD. The results for these analytes were estimated (J/UJ-8). Several analyte recovery values were above the control limits. These analytes were not detected in the sample and qualification was not required. The pyrene, butylbenzylphthalate, and bis(2-ethylhexyl)phthalate RPD values were above the control limit. The results for these analytes were estimated (J-9).

SDG ST00: MS/MSD analyses were performed on Sample LDW-SS2233-U. 2,4-Dimethylphenol, 4-Chloroaniline, 3,3'-dichlorobenzidine, and aniline were not recovered or the %R values were less than 10% in the MS and/or MSD. These results in this sample were rejected (R-8). The %R values for hexachlorocyclopentadiene, 2,4-dinitrophenol were less than the control limits in the MS/MSD. The results for these analytes were estimated (UJ-8). The RPD values for phenanthrene and fluoranthene were greater than the control limit and the results were estimated (J-9).

Internal Standards

***SDGs SL76*:** Phenanthrene-d10 response was low in SRM SQ-1. Qualification was not required.

Reporting Limits

SDG SM01: The n-nitrosodiphenylamine result from Sample LDW-SSPSF-U-2 was flagged "Y" by the laboratory indicating an elevated reporting limit due to chromatographic interference. The result was qualified (U-22) to indicate that the analyte was not-detected at the elevated RL.

Reported Results

In several samples some of the reported concentrations were greater than the calibrated linear range of the instrument; the laboratory flagged these results with an "E". Affected sample extracts were diluted and re-analyzed; both sets of data were reported and reviewed. The results which were greater than the calibration range were flagged as do-not-report (DNR-20). The results for all other analytes in the dilutions were flagged DNR-11; the results from the original analyses should be used. Affected samples are listed below:

SDG SM58: Fluoranthene should be reported from the 5x dilution of Sample LDW-SS2122-D. All other analytes from this dilution were flagged DNR-11. The fluoranthene concentration in the

undiluted analysis of Sample LDW-SS2122-D exceeded the calibration range of the instrument and was flagged DNR-11 from this analysis.

SDG SO23: Samples LDW-SS2246-A, LDW-SS2244-D, and LDW-SS2011-D were reanalyzed at dilutions because several analyte concentrations exceeded the calibration range of the instrument. Only these analytes should be reported from the dilution analyses. All other analytes were flagged DNR-11.

SDG SO83: Samples LDW-SS2027-A was reanalyzed at a 50x dilution because several analyte concentrations exceeded the calibration range of the instrument. Only these analytes should be reported from the dilution analyses. All other analytes were flagged DNR-11.

SDG SR19: Samples LDW-SSSWCSO-U was reanalyzed at a 5x dilution because several analyte concentrations exceeded the calibration range of the instrument. Only these analytes should be reported from the dilution analyses. All other analytes were flagged DNR-11.

The laboratory "M" flagged several detected results because of low spectral matches. These results were estimated (J-2).

SDGs SM01, SM05, and SS31: Several samples were reanalyzed at dilutions because a few analyte concentrations exceeded the calibration range of the instrument. Only these analytes should be reported from the dilution analyses. All other analytes were flagged DNR-11.

SDG ST00: The laboratory "M" flagged two detected results because of low spectral matches. These results were tentatively identified (J-2).

IV. OVERALL ASSESSMENT

As was determined by this evaluation, the laboratory followed the specified analytical method. with the exceptions noted above, accuracy was acceptable as demonstrated by the surrogate, MS/MSD, and LCS %R values; and precision was acceptable as demonstrated by the MS/MSD and field duplicate RPD values.

Data have been labeled as DNR to indicate a more appropriate result for the sample should be used.

Data were estimated because of calibration issues, LCS/LCSD accuracy, MS/MSD accuracy and precision and low spectral match. Data were also qualified as not detected based on method blank and rinsate blank contamination.

Data were rejected based on MS and/or MSD and LCS/LCSD recoveries that were less than 10%, and a very high %D in a CCAL.

Data that have been rejected or labeled as DNR should not be used for any purpose. All other data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
Lower Duwamish Waterway Outfall Surface Sediment Sampling
Semivolatile Organic Compounds by SW846 Method 8270D SIM

This report documents the review of analytical data from the analyses of sediment samples and the associated laboratory and field quality control (QC) samples. Analytical Resources, Inc., Tukwila, Washington, analyzed the samples. See the **Sample Index** for a list of samples that were reviewed.

SDG	Number of Samples	Validation Level
SL76	12 Sediment	Stage 2B
SL77	16 Sediment	Stage 2B
SM01	14 Sediment	Stage 2B
SM05	12 Sediment	Stage 2B
SM58	9 Sediment	Stage 2B
SN88	18 Sediment	Stage 2B
SO11	14 Sediment	Stage 2B
SO23	19 Sediment	Stage 2B
SO80	12 Sediment	Stage 2B
SO83	13 Sediment	Stage 2B
SR19	12 Sediment	Stage 2B
SS13	13 Sediment	Stage 2B
ST00	9 Sediment	Stage 2B

I. DATA PACKAGE COMPLETENESS

The laboratory submitted all required deliverables, with exceptions listed below. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative.

SDG: SM01: The incorrect form 6B and 7B were submitted for the ICAL and CCV, respectively, analyzed on 4/19/11. The laboratory was contacted and resubmitted the correct forms.

SDG: SS31: The case narrative did not discuss the matrix spike/matrix spike duplicate (MS/MSD) outliers for the percent recovery (%R) and relative percent difference (RPD) of N-nitrosodiphenylamine and RPD outliers for butylbenzylphthalate. The laboratory was contacted and submitted a corrected case narrative.

II. EDD TO HARDCOPY VERIFICATION

A complete (100%) verification of the electronic data deliverable (EDD) results was performed by comparison to the hardcopy laboratory data package. Laboratory QC results were also verified (10%). No errors were found.

III. TECHNICAL DATA VALIDATION

The QC requirements that were reviewed are listed below.

1	Sample Receipt, Preservation and Holding Times	1	Field Duplicates
	Initial Calibration (ICAL)	2	Matrix Spike/Matrix Spike Duplicate (MS/MSD)
2	Continuing Calibration (CCAL)	1	Internal Standards
2	Laboratory Blanks		Target Analyte list
	Surrogate Compounds	2	Reporting Limits
2	Laboratory Control Samples (LCS)	2	Reported Results
1	Standard Reference Material		

[1] ***Quality control results are discussed below, but no data were qualified.***
[2] ***Quality control outliers that impact the reported data were noted. Data qualifiers were issued as discussed below.***

Sample Receipt, Preservation and Holding Times

The validation guidance documents state that the cooler temperatures should be within an advisory temperature range of 2° to 6°C. The laboratory received sample coolers with temperatures less than the lower limit, the lowest at 0.3°C. These outliers did not impact data quality; therefore no qualifiers were assigned.

SDG SO11: Sample LDW-SSRWSD-A-2 was identified as LDW-SSRWSD-2 on the sample label. The sample was logged as LDW-SSRWSD-A-2 as listed on the chain of custody (COC).

SDG SS31: Sample IDs were amended by laboratory. The sample listed as LDW-SSBoyer-?-D in the COC was changed to LDW-SSUNK-D. The sample listed as LDW-SSBoyer-?-A in the COC was changed to LDW-SSUNK-A. A copy of the laboratory email correspondence describing the request for the change in sample names was included in data package.

SDG ST00: The laboratory received sample coolers with temperatures above the advisory limits at 9.3°C and 10.3°C. The samples arrived at the laboratory approximately an hour after the samples were collected and likely did not have time to equilibrate with the ice. No qualifiers were assigned.

Continuing Calibration

All relative response factor (RRF) values were greater than the 0.05 minimum control limit. All percent difference (%D) values were within the ±25% control limit for all continuing calibrations (CCAL), with the exceptions noted below. When the percent difference (%D) outlier indicates a potential high bias, and there were no positive results for these compounds, no qualifiers were required.

SDG SN88: The %D values for pentachlorophenol were outside of control limits of ±25% in both CCVs and represented a decrease in response. The associated results were estimated (UJ-5B).

SDG SO11: The %D values for pentachlorophenol were outside of control limits of ±25% in both CCVs and represented a decrease in response. The associated results were estimated (UJ-5B). The

butylbenzylphthalate %D value was high with an increase in response in one CCV. Positive results in the associated samples were estimated (J-5B).

***SDG SL76*:** The %D values for pentachlorophenol analyzed 4/14/11 and 4/15/11 on instrument NT10 were less than the control limit of 25%, indicating a low bias. The associated results were estimated (UJ-5B).

***SDG SL77*:** The %D values for butylbenzylphthalate and pentachlorophenol analyzed 4/11/11 on instrument NT10 were greater than the control limit of 25%, indicating a high bias. Positive results are estimated (J-5B).

***SDG SO80*:** The %D values for butylbenzylphthalate and pentachlorophenol analyzed 4/11/11 on instrument NT10 were greater than the control limit of 25%, indicating a high bias. Positive results are estimated (J-5B).

***SDG SO23*:** The %D values for butylbenzylphthalate and benzyl alcohol analyzed 4/15/11 on instrument NT10 were greater than the upper control limit of 25% indicating a high bias. Positive results are estimated (J-5B). The %D value for pentachlorophenol analyzed 4/15/11 on instrument NT10 were less than the control limit indicating a low bias; results are estimated (UJ-5B).

The %D value for butylbenzylphthalate analyzed on 4/16/11 on instrument NT10 was greater than the control limit of 25% indicating a high bias. Positive results are estimated (J-5B). The %D value for pentachlorophenol analyzed 4/16/11 on instrument NT10 was less than the control limit indicating a low bias; results are estimated (UJ-5B).

***SDG SM01*:** The %D value for the surrogate terphenyl-d14 analyzed 4/20/11 on instrument NT10 was greater than the control limit of 25% indicating a high bias. The analyte is a surrogate; no qualification is necessary.

***SDG SM05*:** The %D value for 1,2,4-trichlorobenzene analyzed 4/22/11 on instrument NT 8 were less than 25%, indicating a low bias. The associated result was estimated (UJ-5B).

***SDG SS31*:** The %D values for pentachlorophenol analyzed 5/4/11 and 5/5/11 on instrument NT 10 were less 25%, indicating a low bias. The associated results were estimated (J/UJ-5B).

SDG ST00: The %D value for pentachlorophenol analyzed 5/10/11 on instrument NT10 was less than the control limit of 25% indicating a low bias. The associated results were estimated (J/UJ-5B). The %D value for butylbenzylphthalate analyzed on 5/10/11 on instrument NT10 was greater than the control limit. The associated positive results were estimated (J-5B)

Laboratory Blanks

Laboratory (method) blanks were analyzed at the appropriate frequency. In order to determine the effect of method blank contamination on the associated field sample data, action levels were established at five times the blank concentration. If the concentration in the associated field samples were less than the action level, the results were qualified as not detected (U-7) at the reported concentration. No action was taken if the sample results were greater than the action level or for non-detected results.

The following analytes were qualified in one or more samples based on method blank contamination:

SDG SM05: Benzyl alcohol (3 results)

SDG SS31: Benzyl alcohol (6 results)

SDG ST00: Benzyl alcohol (8 results)

Laboratory Control Samples

Laboratory control samples (LCS) were analyzed at the proper frequency. For LCS/LCSD %R that were less than the lower control limit, positive results and/or non-detects in the parent sample only were estimated (J/UJ-10) to indicate a potential low bias. For recoveries greater than the upper control limit, positive results only in the parent sample were estimated (J-10) to indicate a potential high bias. No action was taken if only one of the LCS or LCSD recoveries was outside of the control limit.

The following outliers resulted in qualification of data.

SDG SO23: The %R value for 2,4-dimethylphenol was less than the control limit; associated results were estimated (J/UJ-10).

SDG SM01: The %R value for benzyl alcohol was less than the control limit; associated results were estimated (J-10).

SDG SS31: The %R value for 2,4-dimethylphenol was less than the control limit; associated results were estimated (J/UJ-10).

Standard Reference Material

The Sequim Bay reference material SQ-1 was analyzed with the samples for all SDGs. The recoveries for several analytes were outside of the reference range. As the SQ-1 values are reference values only and are not certified, no action was taken based on the recovery outliers.

Field Duplicates

The following acceptance criteria were used to evaluate precision: the RPD control limit is 50% for results greater than 5x the reporting limit (RL). The absolute difference between the sample and replicate must be less than 2x the RL for results less than 5x the RL. No data were qualified based on field replicate precision outliers. Users of the data should consider the impact of field precision outliers on the reported results.

With the exceptions summarized in the following table, precision values of 50% RPD or ±2x the RL (for concentrations less than 5x the RL) were met (field duplicate pairs with no precision outliers are indicated by "None").

SDG	Parent Sample ID	Duplicate Sample ID	Outliers
SL76	LDW-SS3037-D	LDW- SS3037-D-2	Dibenz(a,h)anthracene
SM01	LDW-SS2113-A	LDW- SS2113-A-2	None
	LDW-SSPSF-U	LDW- SSPSF-U-2	Dibenz(a,h)anthracene Dimethylphthalate
SN88	LDW-SSBCD2-A	LDW-SSBCD2-A-2	None
SO11	LDW-SSRWSD-A	LDW- SSRWSD-A-2	None
SO23	LDW-SS2246-U	LDW-SS2246-U-2	Butylbenzylphthalate
SO83	LDW-SS2034-U	LDW-SS2034-U-2	Dibenz(a,h)anthracene
	LDW-SS2022-A	LDW- SS2022-A-2	Dibenz(a,h)anthracene
SR19	LDW-SSSWCSO-A	LDW-SSWCSO-A-2	None
SS31	LDW-SS2025-A	LDW-SS2025-A-2	Butylbenzylphthalate
ST00	LDW-SS2148-A	LDW- SS2148-A-2	None

Matrix Spike/Matrix Spike Duplicate

Matrix spike/matrix spike duplicate samples were analyzed at the appropriate frequency. No action is taken unless both the MS and MSD %R values are outside the control limits for MS/MSD %R outliers. Precision is indicated by the RPD between the MS and MSD values. RPD values outside the control limits indicate uncertainty in the measured results for the sample. Qualifiers were only issued to the parent sample.

When the MS/MSD %R values indicate a potential low bias, associated results are estimated (J/UJ-8). Only the associated positive results are estimated (J-8) if the %R values indicate a potential high bias. Associated positive results are estimated (J-9) if the RPD values indicate uncertainty.

SDG SM01: MS/MSD analyses were performed on sample LDW-SS2108-U. The benzyl alcohol recovery value was less than the lower control limit in the MS, however the MSD recovery was within limits; no qualification was necessary.

SDG SM05: MS/MSD analyses were performed on sample LDW-SS2506-A. Pentachlorophenol was not recovered in the MS and MSD. The result in the parent sample was estimated (J-8).

SDG SS31: MS/MSD analyses were performed on sample LDW-SS2019-A. Butylbenzylphthalate was greater than the upper control limit in the MS and was within limits on the MSD; however the RPD value was greater than the control limit; the parent sample result was estimated (J-9). The n-nitrosodiphenylamine recovery value was greater than the upper control limit for both the MS and MSD. The RPD value was also greater than the control limit. The parent sample was estimated (J-9) for the RPD outlier and (J-8) for %R outliers.

SDG ST00: MS/MSD analyses were performed on sample LDW-SS2233-U. The recoveries for 2,4-dimethylphenol were less than 10% in the MS and MSD. This analytes was not detected in the parent sample, the detection limit was rejected (R-8).

Internal Standards

SDG SL76: For the internal standard phenanthrene-d10, the area recovery in the SRM sample was less than the lower control limit. The sample was QC; qualification was unnecessary.

Reporting Limits

SDG SO23 and SDG SM05: The concentrations of several analytes (dimethylphthalate, butylbenzylphthalate, and benzyl alcohol) were reported by the laboratory with "E" flags to indicate the concentrations are above the calibration range. These results are qualified as estimated (J-20). The samples were also analyzed by full scan GC/MS and the results were reported without laboratory flags from the full scan analyses.

Reported Results

SDG SM58: The laboratory reported the detected n-nitrosodiphenylamine result in Sample LDW-SS2122-D with an "M" flag because of low spectral match. The result was estimated (J-2).

SDG SR19: The laboratory reported the detected n-nitrosodiphenylamine result in Sample LDW-SSSWCSO-U with an "M" flag because of low spectral match. The result was estimated (J-2).

SDG ST00: The laboratory reported the detected n-nitrosodi-n-propylamine result in Sample LDW-SS2149-A with an "M" flag because of low spectral match. The result was estimated (J-2).

IV. OVERALL ASSESSMENT

As was determined by this evaluation, the laboratory followed the specified analytical method. With the exception noted above, accuracy was acceptable as demonstrated by the surrogate and LCS percent recovery values; and precision was acceptable as demonstrated by the MS/MSD relative percent difference values.

Data were estimated based on CCAL %D, LCS %R, matrix spike %R and RPD outliers as well as concentrations that exceeded the linear calibration range. Data were also qualified as not detected based on method blank contamination.

Data were rejected based on MS and/or MSD recoveries that were less than 10%.

Data that have been rejected are not useable for any purpose. All other data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
Lower Duwamish Waterway Outfall Surface Sediment Sampling
PCB Aroclors by SW846 Method 8082

This report documents the review of analytical data from the analyses of sediment samples and the associated laboratory and field quality control (QC) samples. Samples were analyzed by Analytical Resources, Inc., Tukwila, Washington. See the **Sample Index** for a list of samples.

SDG	Number of Samples	Validation Level
SL76	12 Sediment	Stage 2B
SL77	16 Sediment	Stage 2B
SM01	14 Sediment 1 Rinsate Blank	Stage 2B Stage 2A
SM05	12 Sediment	Stage 2B
SM58	9 Sediment	Stage 2B
SN88	18 Sediment 1 Rinsate Blank	Stage 2B Stage 2A
SO11	14 Sediment	Stage 2B
SO23	19 Sediment 1 Rinsate Blank	Stage 2B Stage 2A
SO80	12 Sediment	Stage 2B
SO83	13 Sediment	Stage 2B
SR19	12 Sediment 1 Rinsate Blank	Stage 2B Stage 2A
SS31	13 Sediment 1 Rinsate Blank	Stage 2B Stage 2A
ST00	9 Sediment	Stage 2B

I. DATA PACKAGE COMPLETENESS

The laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative.

II. EDD TO HARDCOPY VERIFICATION

A complete (100%) verification of the electronic data deliverable (EDD) results was performed by comparison to the hardcopy laboratory data package. Laboratory QC results were also verified (10%).

III. TECHNICAL DATA VALIDATION

The QC requirements that were reviewed are listed below.

1	Sample Receipt, Preservation and Holding Times	1	Standard Reference Material
	Initial Calibration (ICAL)	1	Field Duplicate
1	Continuing Calibration (CCAL)	2	Matrix Spikes/Matrix Spike Duplicate (MS/MSD)
	Laboratory Blanks	2	Internal Standards
1	Rinsate Blanks		Target Analyte list
1	Surrogate Compounds	2	Reporting Limits
	Laboratory Control Samples (LCS)	2	Reported Results

[1] ***Quality control results are discussed below, but no data were qualified.***
[2] ***Quality control outliers that impact the reported data were noted. Data qualifiers were issued as discussed below.***

Sample Receipt, Preservation and Holding Times

The validation guidance documents state that the cooler temperatures should be within an advisory temperature range of 2° to 6°C. The laboratory received sample coolers with temperatures less than the lower limit, the lowest at 0.3°C. These outliers did not impact data quality; therefore no qualifiers were assigned.

SDG SL77: Sample LDW-SS030411-RB was listed on the chain of custody (COC) with PCB analysis requested, but the sample receipt form in the data package notes that Sample LDW-SS030411-RB was not received with this group of samples. Sample LDW-SS030411-RB was analyzed with the samples in **SDG SM01**.

SDG SS31: Sample IDs were amended by laboratory. The sample listed as LDW-SSBoyer-?-D in the COC was changed to LDW-SSUNK-D. The sample listed as LDW-SSBoyer-?-A in the COC was changed to LDW-SSUNK-A. A copy of the laboratory email correspondence describing the request for the change in sample names was included in data package.

SDG ST00: The laboratory received sample coolers with temperatures above the advisory limits at 9.3°C and 10.3°C. The samples arrived at the laboratory approximately an hour after the samples were collected and likely did not have time to equilibrate with the ice. No qualifiers were assigned.

Continuing Calibration

SDG SM58: The percent difference (%D) values for Aroclor 1260 were above the control limit of 25% (high bias) on column ZB5 in the CCVs which bracketed the method blank analysis. The %D values were acceptable on column Z35 and Aroclors were not detected in the method blank. Qualifiers were not required.

Rinsate Blanks

To evaluate the effect on the sample data, action levels of 5x the blank concentrations were established. If a contaminant is detected in an associated field sample and the concentration is less

than the action level, the result is qualified (U-6) at the reported concentration to indicate an elevation of the reporting limit. No action is taken if the sample result is greater than the action level, or for non-detected results.

Laboratory blanks are used to evaluate the field blank. Any remaining positive results in the rinse blank are then used to evaluate all associated samples.

SDG SM01: Aroclors were not detected in rinsate blank LDW-SS030411-RB.

SDG SN88: Aroclors were not detected in rinsate blank LDW-SS031711-RB.

SDG SO23: Aroclors were not detected in rinsate blank LDW-SS032111-RB.

SDG SR19: Aroclors were not detected in rinsate blank LDW-SS040811-RB.

SDG SS31: Aroclor 1254 was detected in rinsate blank LDW-SS041511-RB. The detected Aroclor 1254 results in the associated samples were greater than the action level and qualification was not required.

A rinse blank sample was not collected for samples collected during the week of April 18, 2011 because the sampling equipment used was dedicated and pre-decontaminated precluding the potential for cross contamination.

Surrogate Compounds

SDG SL77: The recovery value for decachlorobiphenyl was greater than the upper control limit for Sample LDW-SS2106-A. The second surrogate recovery value was acceptable and qualification was not required.

Standard Reference Material

The Sequim Bay reference material SQ-1 was analyzed with the samples. As the SQ-1 values are reference values only and were not certified, no action was taken based on the recovery outliers.

SDG SL76, SL77, SM58, SN88, and SO23: Aroclor 1254 was outside of the reference range.

Field Duplicate

The following acceptance criteria were used to evaluate precision: the relative percent difference (RPD) control limit is 50% for results greater than 5x the reporting limit (RL). For results less than 5x the RL, the absolute difference between the sample and replicate must be less than 2x the RL. No data were qualified based on field replicate precision outliers. Data users should consider the impact of field precision outliers on the reported results.

The following table lists the parent and field duplicate samples for each data set, and the precision outliers, if any.

SDG	Parent Sample ID	Duplicate Sample ID	Outliers
SL76	LDW-SS3037-D	LDW- SS3037-D-2	Aroclor 1260
SM01	LDW-SS2113-A	LDW- SS2113-A-2	None
SM01	LDW-SSPSF-U	LDW- SSPSF-U-2	None
SN88	LDW-SSBCD2-A	LDW-SSBCD2-A-2	None
SO11	LDW-SSRWSD-A	LDW- SSRWSD-A-2	None
SO23	LDW-SS2246-U	LDW-SS2246-U-2	None
SO83	LDW-SS2034-U	LDW-SS2034-U-2	Aroclor 1260
SO83	LDW-SS2022-A	LDW- SS2022-A-2	Aroclor 1260
SR19	LDW-SSSWCSO-A	LDW-SSWCSO-A-2	None
SS31	LDW-SS2025-A	LDW-SS2025-A-2	Aroclor 1254 Aroclor 1260
ST00	LDW-SS2148-A	LDW- SS2148-A-2	None

Matrix Spike/Matrix Spike Duplicate

Matrix spike/matrix spike duplicate (MS/MSD) samples were analyzed at the appropriate frequency. No action is taken unless both the MS and MSD percent recovery (%R) values are outside the control limits for MS/MSD %R outliers. Precision is indicated by the RPD values calculated between the MS and MSD results. Any RPD values outside the control limits indicate uncertainty in the measured results for the sample. Qualifiers were only issued to the parent sample.

When the MS/MSD %R values indicate a potential low bias, associated results are estimated (J/UJ-8). Only the associated positive results are estimated (J-8) if the %R values indicate a potential high bias. Associated positive results are estimated (J-9) if the RPD values indicate uncertainty.

SDG SM58: MS/MSD analyses were performed on Sample LDW-SS2018-U. All RPD values were acceptable. The Aroclor 1016 recovery value was below the lower control limit in the MS but acceptable in the MSD and qualification was not warranted.

SDG SO83: MS/MSD analyses were performed on Sample LDW-SS2034-D. The % R value for Aroclor 1260 was below the control limit in the MS and was not recovered in the MSD. The Aroclor 1260 result was qualified as estimated (J-8).

Internal Standards

SDG SN88: One internal standard was biased high in Sample LDW-SS031711-RB on one column. The internal standard recovery value was acceptable on the second column and Aroclors were not detected in this sample. Qualification was not required.

SDG SL77: One internal standard was biased high in Sample LDW-SS2098-A on one column. The internal standard recovery value was acceptable on the second column and Aroclors were not detected in this sample. Qualification was not required.

SDG SM05: Internal standard bromonitrobenze was biased high on both columns in Sample LDW-SS2035-U. The associated Aroclor 1242 and Aroclor 1254 results were estimated (J-19).

Reporting Limits

SDGs SO83, SM01, SM05, and SS31: Several samples were analyzed at dilutions. The RLs were raised accordingly.

SDGs SL76, SL77, SM01, SN88, SO11, SO83, SS31, and ST00: Several Aroclor results were flagged "Y" by the laboratory indicating an elevated reporting limit due to chromatographic interference. The reporting limits were qualified (U-22).

Reported Results

SDG SN88: The difference between the dual-column Aroclor 1260 results in Sample LDW-SS2090-D was greater than 60%. This result was qualified as estimated (NJ-3).

SDG SM05: The difference between the dual-column Aroclor 1248 results in Sample LDW-SS2037-U was greater than 40%. This result was qualified as estimated (J-3).

IV. OVERALL ASSESSMENT

As was determined by this evaluation, the laboratory performed the specified analytical method. With the exceptions noted above, accuracy was acceptable as demonstrated by the surrogate, laboratory control sample, and MS/MSD analyses; and precision was acceptable as demonstrated by the RPD values for the MS/MSD and field duplicate analyses.

Data were estimated based on MS/MSD %R, internal standard, and confirmation column RPD outliers. Data were qualified as not detected (U-22) because of chromatographic interference.

All data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
Lower Duwamish Waterway Outfall Surface Sediment Sampling
Dioxin & Furan Compounds by Axys Method MLA-017 (EPA 1613b)

This report documents the review of analytical data from the analyses of sediment samples and the associated laboratory and field quality control (QC) samples. Samples were analyzed by Axys Analytical Services, Ltd. of Sidney, British Columbia, Canada. See the **Sample Index** for a complete list of samples.

SDG	Number of Samples	DV Level
WG36100	2 Sediment	Stage 4
WG36131	18 Sediment	Stage 4
WG36417	12 Sediment	Stage 4

I. DATA PACKAGE COMPLETENESS

The laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative.

II. EDD TO HARDCOPY VERIFICATION

A complete (100%) verification of the electronic data deliverable (EDD) results was performed by comparison to the hardcopy laboratory data package. Laboratory QC results were also verified (10%). No errors were found.

III. TECHNICAL DATA VALIDATION

The QC requirements reviewed are summarized in the following table:

	Sample Receipt, Preservation, and Holding Time	2	Standard Reference Material (SRM)
	System Performance and Resolution Checks	2	Laboratory Duplicate Samples
	Initial Calibration (ICAL)	1	Field Duplicates
	Calibration Verification (CVER)		Target Analyte List
2	Method Blanks		Reported Results
	Labeled Compound Recovery	2	Compound Identification
	Ongoing Precision and Recovery (OPR)	1	Calculation Verification

[1] ***Quality control results are discussed below, but no data were qualified.***
[2] ***Quality control outliers that impact the reported data were noted. Data qualifiers were issued as discussed below.***

Method Blanks

In order to assess the impact of blank contamination on the reported sample results, action levels at five times the blank concentrations are established. If the concentrations in the associated field samples are less than the action levels, the results are qualified as not detected (U-7).

The laboratory assigned K-flags to analyte values when a peak was detected but did not meet identification criteria. These values cannot be considered as positive identifications, but are "estimated maximum possible concentrations". When these occurred in the method blank the results were considered as false positives. No action levels were established for these analytes.

SDG WG36100: The following analytes were qualified in one or more samples based on method blank contamination: 1,2,3,4,6,7,8-HpCDF and OCDF (1 result each).

SDG WG36131: All sample results were greater than the action level for OCDD, which was detected in the method blank. No data were qualified.

Standard Reference Material

The NIST standard reference material (SRM) 1944 was analyzed. The criteria for SRM recoveries are that the reported results are within ±20% of the 95% confidence interval of the true value. With the exceptions listed below, all results were within control limits.

SDG WG36100: The result for 2,3,7,8-TCDD was greater than the upper control limit. The result for this analyte in Sample LDW-SS2090-A was estimated (J-12) to indicate potential high bias.

SDG WG36131: The result for 2,3,7,8-TCDD was greater than the upper control limit. The results for this analyte in six samples were estimated (J-12) to indicate potential high bias.

SDG WG36417: The results for 2,3,7,8-TCDD and 1,2,3,7,8,9-HxCDD were greater than the upper control limit. The four positive results for 2,3,7,8-TCDD and twelve positive results for 1,2,3,7,8,9-HxCDD were estimated (J-12) to indicate potential high bias.

Laboratory Duplicates

The following acceptance criteria were used to evaluate precision: the relative percent difference (RPD) control limit is 40% for results greater than 5x the reporting limit (RL). The absolute difference between the sample and replicate must be less than 2x the RL for results less than 5x the RL. Qualifiers were only issued to the parent sample

SDG WG36131: Sample LDW-SS2122-D was analyzed in duplicate. The RPD values for 2,3,7,8-TCDF and the homolog group total TCDF were greater than the control limit. These results in the parent sample were qualified J-9.

SDG WG36417: Sample LDW-SS2150-A was analyzed in duplicate. The RPD values for 1,2,3,7,8,9-HxCDD and the homolog groups total TCDD, total PeCDD, and total HxCDD were greater than the control limit. These results in the parent sample were estimated (J-9).

Field Duplicates

The RPD control limit is 50% for results greater than 5x the RL. The absolute difference between the sample and replicate must be less than 2x the RL for results less than 5x the RL. No data were qualified based on field duplicate precision outliers.

SDG WG36417: One set of field replicates, LDW-SS2022-A & LDW-SS2022-A-2, was submitted. Field precision was acceptable.

Compound Identification

All results for 2,3,7,8-TCDF were confirmed on a DB-225 column as required by the method. Although the 2,3,7,8-TCDF results from both columns were reported in the raw data, only the results from the DB-225 column were reported in the EDD. No action was necessary.

The laboratory assigned a" K" flag to one or more analytes in all samples to indicate the ion ratio criterion were not met. Since the ion abundance ratio is the primary identification criterion for high resolution mass spectroscopy, an outlier indicates that the reported result may be a false positive. Due to this, these results were qualified as not detected (U-22) at the reported concentration.

SDG WG36417: Lock mass interferences were noted in Samples LDW-SS2115-A, LDW-SS2022-D, the method blank, and OPR sample, and were flagged "G" by the laboratory. The field sample results for 1,2,3,6,7,8-HxCDD were estimated (J-14). Results for the labeled analyte, 13C-1,2,3,6,7,8-HxCDD, were "G" flagged in six field samples and two QC samples. No data were qualified for these QC results.

Sample LDW-SS5000-A was analyzed at dilution (2x). The initial result for OCDD exceeded the linear calibration range. Only the reanalysis result for OCDD was reported in the EDD. No data were qualified.

Calculation Verification

Several results were verified by recalculation from the raw data. No calculation or transcription errors were noted.

IV. OVERALL ASSESSMENT

As was determined by this evaluation, the laboratory followed the specified analytical method. With the exceptions previously noted, accuracy was acceptable, as demonstrated by the labeled compound, ongoing precision and recovery (OPR), and SRM recoveries;.. precision was also acceptable, as demonstrated by the laboratory and field duplicate RPD values.

Detection limits were elevated based on method blank contamination and ion ratio outliers. Data were estimated due to outliers for SRM recoveries, lock mass interference, and laboratory duplicate precision.

All data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
Lower Duwamish Waterway Outfall Surface Sediment Sampling
Metals by Methods 6010B, 200.8, 7470A, and 7471A

This report documents the review of analytical data from the analysis of sediment samples and the associated laboratory and field quality control (QC) samples. Samples were analyzed by Analytical Resources, Inc., Tukwila, Washington. See the **Sample Index** for a complete list of samples.

SDG	Number of Samples	Validation Level
SL76	12 Sediment	Stage 2B
SL77	16 Sediment	Stage 2B
SM01	14 Sediment & 1 Rinse Blank	Stage 2B Stage 2A
SM05	12 Sediment	Stage 2B
SM58	9 Sediment	Stage 2B
SN88	18 Sediment & 1 Rinse Blank	Stage 2B Stage 2A
SO11	14 Sediment	Stage 2B
SO23	19 Sediment & 1 Rinse Blank	Stage 2B Stage 2A
SO80	12 Sediment	Stage 2B
SO83	13 Sediment	Stage 2B
SR19	12 Sediment & 1 Rinse Blank	Stage 2B Stage 2A
SS31	1 Rinse Blank	Stage 2A
SW12	13 Sediment	Stage 2B
ST00	9 Sediment	Stage 2B

I. DATA PACKAGE COMPLETENESS

With the exceptions listed below, the laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative.

SDGs SL76, SL77, SM01, SM05, SM58, SN88, SO11, SO23, SO80, SO83, & SR19: The raw data for mercury were not provided in the initial data package. The laboratory was contacted and raw data for 7471A analyses were provided. No further action was necessary.

SDGs SM01, SN88, SO23, & SR19: The ICP-MS raw data were not provided in the initial data package. The laboratory was contacted and raw data for 200.8 analyses were provided. No further action was necessary.

II. EDD TO HARDCOPY VERIFICATION

A complete (100%) verification of the electronic data deliverable (EDD) results was performed by comparison to the hardcopy laboratory data package.

SDGs SL76, SL77, SM58, SN88, SO11, SO80, & SO83: The matrix spike (MS) sample results in the EDD did not match the results reported in the data package summary forms. The laboratory duplicate sample results had mistakenly been imported into the MS fields in the EDD. The laboratory was contacted and data were corrected in the EDD with the exception of SDG SO83, the MS results were reported twice (the corrected data was included but the original incorrect data were not removed); the incorrect records were deleted from the database. No further action was necessary.

III. TECHNICAL DATA VALIDATION

The QC requirements that were reviewed are listed below.

1	Sample Receipt, Preservation and Holding Times	2	Matrix Spikes (MS)
	Initial Calibration	2	Laboratory Duplicates
	Calibration Verification	1	Field Duplicates
	Reporting Limit Standards		Interference Check Samples
	Laboratory Blanks		Serial Dilutions
1	Field Blanks		ICP-MS Internal Standards
1	Laboratory Control Samples (LCS)		Reporting Limits
1	Reference Materials		Reported Results

[1] ***Quality control results are discussed below, but no data were qualified.***
[2] ***Quality control outliers that impact the reported data were noted. Data qualifiers were issued as discussed below.***

Sample Receipt, Preservation and Holding Times

The validation guidance documents state that the cooler temperatures should be within an advisory temperature range of 2° to 6°C. The laboratory received sample coolers with temperatures less than the lower limit, the lowest at 0.3°C. These outliers did not impact data quality; therefore no qualifiers were assigned.

SDG SL77: Sample LDW-SS030411-RB was noted on the chain of custody (COC) and indicated for metals analysis. The cooler receipt form in the data package notes that Sample LDW-SS030411-RB was not received with this group of samples. Sample LDW-SS030411-RB was analyzed with the samples in **SDG SM01**.

SDG SO11: Sample LDW-SSRWSD-A-2 was identified as LDW-SSRWSD-2 on the sample label. The sample was logged as LDW-SSRWSD-A-2 as listed on the COC.

SDG SS31: The sediment samples received in SDG SS31 were re-logged under SDG SWl2 and analyzed for metals. Metals results for the rinse blank sample were reported in SDG SS31. Metals results for the associated sediment samples were reported in SDG SW12.

SDG ST00: The laboratory received sample coolers with temperatures above the advisory limits at 9.3°C and 10.3°C. The samples arrived at the laboratory approximately an hour after the samples were collected and likely did not have time to equilibrate with the ice. No qualifiers were assigned.

SDG SW12: Sample IDs were amended by laboratory. The sample listed as LDW-SSBoyer-?-D on the COC was changed to LDW-SSUNK-D. The sample listed as LDW-SSBoyer-?-A on the COC was changed to LDW-SSUNK-A. A copy of the laboratory email correspondence describing the request for the change in sample names was included in data package.

Field Blanks

SDG SL76 and SL77: The samples in these SDG were associated with the rinsate blank LDW-SS030411-RB submitted in **SDG SM01**. Copper was detected in the rinsate blank. The copper values for all samples in these SDG were greater than the action level and no qualification of data was necessary.

SDG SM01: One rinse blank sample, LDW-SS030411-RB, was submitted with this SDG. After evaluation based on laboratory blanks, contamination for the analyte copper remained in Sample LDW-SS031711-RB. This rinsate blank is associated with the samples in **SDG SL76** and **SL77**.

SDG SN88: One rinse blank sample, LDW-SS031711-RB, was submitted with this SDG. After evaluation based on laboratory blanks, contamination for the analyte copper remained in Sample LDW-SS031711-RB. No field sample data were qualified based on field blank contamination; associated results were greater than the action levels.

SDG SO23: One rinse blank sample, LDW-SS032111-RB, was submitted with this SDG. No target analyte contamination was detected in the rinse blank sample. Consequently, no field sample data were qualified based on field blank contamination.

SDG SR19: One rinse blank sample, LDW-SS040811-RB, was submitted with this SDG. No target analyte contamination was detected in the rinse blank sample. Consequently, no field sample data were qualified based on field blank contamination.

SDG SS31: One rinse blank sample, LDW-SS041511-RB, was submitted with this SDG. The samples associated with this rinse blank are reported in SDG SW12. No target analyte contamination was detected in the rinse blank sample. Consequently, no field sample data were qualified based on field blank contamination.

A rinse blank sample was not collected for samples collected during the week of April 18, 2011 because the sampling equipment used was dedicated and pre-decontaminated precluding the potential for cross contamination.

Laboratory Control Samples

SDG SR19: The laboratory control sample (LCS) recovery for mercury (125%) in method 7470A analysis was greater than the upper control limit of 120%. Mercury was not detected in the associated rinse blank sample. No qualification of data was necessary.

Reference Materials

SDGs SM58 & SR19: The Environmental Resource Associates (ERA) reference material D044540 was analyzed with each batch of samples. The criteria for reference material recoveries are that the reported results are within ±20% of the 95% confidence interval of the true value. All recoveries were within the laboratory's acceptance limits.

SDGs SL76, SL77, SM01, SM05, SN88, SO11, SO23, SO80, SO83, ST00, & SW12: The ERA reference material D053540 was analyzed with each batch of samples. The criteria for SRM recoveries are that the reported results are within ±20% of the 95% confidence interval of the true value. All recoveries were within the laboratory's acceptance limits.

Matrix Spikes

Matrix spike (MS) samples were analyzed at the appropriate frequency. When an MS %R value indicates a potential low bias, associated results are estimated (J/UJ-8). Only the associated positive results are estimated (J-8) if the %R value indicates a potential high bias. Qualifiers were issued to all samples in the associated QC batch.

SDG SL76: The MS recovery for zinc (-20.4%) was less than the lower control limit of 75%. A post digestion spike was analyzed and the recovery was within the control limits of 75%-125%. Associated zinc results were estimated (J-8) to indicate a potential low bias.

SDG SM01, SO23, SR19, and SS31: MS samples were not analyzed for these rinse blank samples. The LCS recoveries were used to evaluate laboratory accuracy.

SDG SO83: The MS recovery for zinc (18.4%) was less than the lower control limit of 75%. A post digestion spike was analyzed and the recovery was within the control limits of 75%-125%. Associated zinc results were estimated (J-8) to indicate a potential low bias.

SDG SR19: The MS recovery for copper (58.8%) was less than the lower control limit of 75%. A post digestion spike was analyzed and the recovery was within the control limits of 75%-125%. Associated copper results were estimated (J-8) to indicate a potential low bias.

The MS recovery for zinc (-6.3%) was less than the lower control limit of 75%. A post digestion spike was analyzed and the recovery was within the control limits of 75%-125%. Associated zinc results were estimated (J-8) to indicate a potential low bias.

SDG ST00: The MS recoveries for chromium (277%), copper (177%), and zinc (294%) were greater than the upper control limit of 125%. Associated positive results for chromium, copper, and zinc were estimated (J-8) to indicate a potential positive bias.

SDG SW12: The MS recovery for copper (71.4%) was less than the lower control limit of 75%. A post digestion spike was analyzed and the recovery was within the control limits of 75%-125%. Associated copper results were estimated (J-8) to indicate a potential low bias.

Laboratory Duplicates

SDG SL76: The laboratory duplicate RPD values for copper (34.9%), lead (22.2%), and zinc (55.6%) were greater than the control limit of 20%. Associated copper, lead, and zinc results were estimated (J-9).

SDGs SM01, SO23, SR19, SS31: Laboratory duplicate samples were not analyzed for these rinse blank samples.

SDG SO83: The laboratory duplicate RPD values for arsenic (21.8%), copper (21.1%), and zinc (22.8%) were greater than the control limit of 20%. Associated arsenic, copper, and zinc results were estimated (J/UJ-9).

SDG SR19: Arsenic results were less than 5x the reporting limit (RL). The absolute difference between the sample and replicate was greater than 2x the RL. All sediment arsenic results were estimated (J-9).

The laboratory duplicate RPD values for copper (58.4%), lead (23.3%), and zinc (59.5%) were greater than the control limit of 20%. Associated copper, lead, and zinc results were estimated (J-9).

SDG ST00: The laboratory duplicate RPD values for chromium (50.1%) and zinc (22.9%) were greater than the control limit of 20%. Associated chromium and zinc results were estimated (J/UJ-9).

SDG SW12: The laboratory duplicate RPD values for chromium (23.9%) and copper (29.4%) were greater than the control limit of 20%. Associated chromium and copper results were estimated (J-9).

Field Duplicates

The RPD control limit is 50% for results greater than 5x the reporting limit (RL). For results less than 5x the RL, the absolute difference between the sample and replicate must be less than 2x the RL. No data were qualified based on field replicate precision outliers.

SDG	Parent Sample ID	Duplicate Sample ID	Outliers
SL76	LDW-SS3037-D	LDW- SS3037-D-2	None
SM01	LDW-SS2113-A	LDW- SS2113-A-2	None
	LDW-SSPSF-U	LDW- SSPSF-U-2	None
SN88	LDW-SSBCD2-A	LDW-SSBCD2-A-2	None
SO11	LDW-SSRWSD-A	LDW- SSRWSD-A-2	None
SO23	LDW-SS2246-U	LDW-SS2246-U-2	None
SO83	LDW-SS2034-U	LDW-SS2034-U-2	None
	LDW-SS2022-A	LDW- SS2022-A-2	None
SR19	LDW-SSSWCSO-A	LDW-SSWCSO-A-2	None
SW12	LDW-SS2025-A	LDW-SS2025-A-2	None
ST00	LDW-SS2148-A	LDW- SS2148-A-2	None

IV. OVERALL ASSESSMENT

As was determined by this evaluation, the laboratory followed the specified analytical methods. With the exceptions as previously noted, accuracy was acceptable, as demonstrated by the LCS, MS, and reference material recoveries; precision was also acceptable as demonstrated by the RPD values for the laboratory and field duplicate samples.

Data were estimated based on MS sample %R outliers and laboratory duplicate sample RPD outliers.

All data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
Lower Duwamish Waterway Outfall Surface Sediment Sampling
Conventionals Analyses

This report documents the review of analytical data from the analyses of sediment samples and the associated laboratory and field quality control (QC) samples. Samples were analyzed by Analytical Resources, Inc., Tukwila, Washington. See the **Sample Index** for a complete list of samples.

SDG	Number of Samples	Validation Level
SL76	12 Sediment	Stage 2B
SL77	16 Sediment	Stage 2B
SM01	14 Sediment	Stage 2B
SM05	12 Sediment	Stage 2B
SM58	9 Sediment	Stage 2B
SN88	18 Sediment	Stage 2B
SO11	14 Sediment	Stage 2B
SO23	19 Sediment	Stage 2B
SO80	12 Sediment	Stage 2B
SO83	13 Sediment	Stage 2B
SR19	12 Sediment	Stage 2B
SS31	13 Sediment	Stage 2B
ST00	9 Sediment	Stage 2B

The analytical tests that were performed are summarized below:

Parameter	Method
Grain Size	PSEP, 1986
Total Organic Carbon	Plumb, 1981
Total Solids	EPA 160.3

I. DATA PACKAGE COMPLETENESS

With the exceptions listed below, the laboratory submitted all required deliverables. The laboratory followed adequate corrective action processes and all anomalies were discussed in the case narrative.

SDG SL76, SL77, SM58, SN88, SO11, SO23, SO80, SO83, & SR19: The raw data were not provided in the original data package. The laboratory was contacted and the required total organic carbon (TOC) raw data forms were provided. No further action was necessary.

SDG SN88: The summary forms list an analysis date of 3/3/2011 for several samples. The laboratory was contacted and it was confirmed that the samples in question were analyzed for grain size on 3/30/2011. The EDD has an analysis date of 4/3/2011 for all samples. Only sample LDW-SS208S-A was analyzed on 4/3; all other samples were analyzed on 3/30.

II. EDD TO HARDCOPY VERIFICATION

A complete (100%) verification of the electronic data deliverable (EDD) results was performed by comparison to the hardcopy laboratory data package. No errors were noted.

III. TECHNICAL DATA VALIDATION

The QC requirements that were reviewed are listed in the following table.

1	Sample Receipt, Preservation, and Holding Times		Matrix Spikes (MS)
	Initial Calibration	1	Laboratory Replicates
	Calibration Verification	1	Field Replicates
	Laboratory Blanks		Reporting Limits
	Laboratory Control Samples (LCS)		Reported Results
1	Reference Materials		Calculation Verification

[1] ***Quality control results are discussed below, but no data were qualified.***

Sample Receipt, Preservation and Holding Times

The validation guidance documents state that the cooler temperatures should be within an advisory temperature range of 2° to 6°C. The laboratory received sample coolers with temperatures less than the lower limit, the lowest at 0.3°C. These outliers did not impact data quality; therefore no qualifiers were assigned.

SDG SS31: Sample IDs were amended by laboratory. The sample listed as LDW-SSBoyer-?-D in the chain of custody (COC) was changed to LDW-SSUNK-D. The sample listed as LDW-SSBoyer-?-A in the COC was changed to LDW-SSUNK-A. A copy of the laboratory email correspondence describing the request for the change in sample names was included in data package.

SDG SO11: Sample LDW-SSRWSD-A-2 was identified as LDW-SSRWSD-2 on the sample label. The sample was logged as LDW-SSRWSD-A-2 as listed on the COC.

SDG ST00: The laboratory received sample coolers with temperatures above the advisory limits at 9.3°C and 10.3°C. The samples arrived at the laboratory approximately an hour after the samples were collected and likely did not have time to equilibrate with the ice. No qualifiers were assigned.

Reference Materials

The standard reference material (SRM) NIST #1941B was analyzed for TOC. The criteria for SRM recoveries are that the reported results are within ±20% of the 95% confidence interval of the true value. All recoveries were within the certified acceptance ranges.

Laboratory Replicates

Laboratory duplicates were performed for total solids. Laboratory triplicates were performed for all TOC, grain size, and some total solids analyses. The following acceptance criteria were used to evaluate precision for duplicates: the relative percent difference (RPD) control limit is 20% for results greater than 5x the reporting limit (RL). For results less than 5x the RL, the absolute difference between the sample and replicate must be less than 2x the RL. For triplicates, the percent relative standard deviation (%RSD) control limit was 25%. For grain size analysis, the standard deviation must be within 5% of the triplicate average for each fraction.

Precision was acceptable for all laboratory replicate analyses.

SDGs SL76 & SM58: Laboratory duplicate data were not reported for the total solids. The SAP requires laboratory duplicate samples performed at a rate of 5% of samples collected. Total solids laboratory duplicate results were reported in other SDGs satisfying this condition.

Field Replicates

Laboratory duplicates were performed for total solids and laboratory triplicates were performed for TOC and grain size analysis. The following acceptance criteria were used to evaluate precision: the relative percent difference control limit is 50% for results greater than 5x the reporting limit (RL). For results less than 5x the RL, the absolute difference between the sample and replicate must be less than 2x the RL. The standard deviation control limit for grain size is 5%.

The following table summarizes the parent and duplicate samples analyzed with each data set and the precision outliers, if any. No data were qualified based on field replicate precision outliers. Data users should consider the impact of field precision outliers on the reported results.

SDG	Parent Sample ID	Duplicate Sample ID	Outliers
SL76	LDW-SS3037-D	LDW- SS3037-D-2	None
SM01	LDW-SS2113-A	LDW- SS2113-A-2	None
	LDW-SSPSF-U	LDW- SSPSF-U-2	None
SN88	LDW-SSBCD2-A	LDW-SSBCD2-A-2	None
SO11	LDW-SSRWSD-A	LDW- SSRWSD-A-2	TOC
SO23	LDW-SS2246-U	LDW-SS2246-U-2	None
SO83	LDW-SS2034-U	LDW-SS2034-U-2	None
	LDW-SS2022-A	LDW- SS2022-A-2	None
SR19	LDW-SSSWCSO-A	LDW-SSWCSO-A-2	None
SS31	LDW-SS2025-A	LDW-SS2025-A-2	TOC
ST00	LDW-SS2148-A	LDW- SS2148-A-2	None

IV. OVERALL ASSESSMENT

As was determined by this evaluation, the laboratory followed the specified analytical methods. Accuracy was acceptable, as demonstrated by the laboratory control sample, reference material, and

MS recoveries. Precision was acceptable as demonstrated by the %RSD values for the laboratory and field replicate samples, with the exceptions noted above.

No data were qualified for any reason.

All data, as reported, are acceptable for use.

EcoChem, INC.
Environmental Data Quality

APPENDIX A
DATA QUALIFIER DEFINITIONS REASON CODES AND CRITERIA TABLES

DATA VALIDATION QUALIFIER CODES
Based on National Functional Guidelines

The following definitions provide brief explanations of the qualifiers assigned to results in the data review process.

U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
NJ	The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents the approximate concentration.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

The following is an EcoChem qualifier that may also be assigned during the data review process:

DNR	Do not report; a more appropriate result is reported from another analysis or dilution.

DATA QUALIFIER REASON CODES

1	Holding Time/Sample Preservation
2	Chromatographic pattern in sample does not match pattern of calibration standard.
3	Compound Confirmation
4	Tentatively Identified Compound (TIC) (associated with NJ only)
5A	Calibration (initial)
5B	Calibration (continuing)
6	Field Blank Contamination
7	Lab Blank Contamination (e.g., method blank, instrument, etc.)
8	Matrix Spike(MS & MSD) Recoveries
9	Precision (all replicates)
10	Laboratory Control Sample Recoveries
11	A more appropriate result is reported (associated with “R” and “DNR” only)
12	Reference Material
13	Surrogate Spike Recoveries (a.k.a., labeled compounds & recovery standards)
14	Other (define in validation report)
15	GFAA Post Digestion Spike Recoveries
16	ICP Serial Dilution % Difference
17	ICP Interference Check Standard Recovery
18	Trip Blank Contamination
19	Internal Standard Performance (e.g., area, retention time, recovery)
20	Linear Range Exceeded
21	Potential False Positives
22	Elevated Detection Limit Due to Interference (i.e., laboratory, chemical and/or matrix)

EcoChem Validation Guidelines for Semivolatile Analysis by GC/MS (Based on Organic NFG 1999)

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Cooler Temperature	4°C ±2°	J(+)/UJ(-) if greater than 6 deg. C (EcoChem PJ)	1
Holding Time	Water: 7 days from collection Soil: 14 days from collection Analysis: 40 days from extraction	Water: J(+)/UJ(-) if ext. > 7 and < 21 days J(+)/R(-) if ext > 21 days (EcoChem PJ) Solids/Wastes: J(+)/UJ(-) if ext. > 14 and < 42 days J(+)/R(-) if ext. > 42 days (EcoChem PJ) J(+)/UJ(-) if analysis >40 days	1
Tuning	DFTPP Beginning of each 12 hour period Method acceptance criteria	R(+/-) all analytes in all samples associated with the tune	5A
Initial Calibration (Minimum 5 stds.)	RRF > 0.05	(EcoChem PJ, see TM-06) If MDL= reporting limit: J(+)/R(-) if RRF < 0.05 If reporting limit > MDL: note in worksheet if RRF <0.05	5A
	%RSD < 30%	(EcoChem PJ, see TM-06) J(+) if %RSD > 30%	5A
Continuing Calibration (Prior to each 12 hr. shift)	RRF > 0.05	(EcoChem PJ, see TM-06) If MDL= reporting limit: J(+)/R(-) if RRF < 0.05 If reporting limit > MDL: note in worksheet if RRF <0.05	5B
	%D <25%	(EcoChem PJ, see TM-06) If > +/-90%: J+/R- If -90% to -26%: J+ (high bias) If 26% to 90%: J+/UJ- (low bias)	5B
Method Blank	One per matrix per batch No results > CRQL	U(+) if sample (+) result is less than CRQL and less than appropriate 5X or 10X rule (raise sample value to CRQL)	7
		U(+) if sample (+) result is greater than or equal to CRQL and less than appropriate 5X and 10X rule (at reported sample value)	7
	No TICs present	R(+) TICs using 10X rule	7
Field Blanks (Not Required)	No results > CRQL	Apply 5X/10X rule; U(+) < action level	6

EcoChem Validation Guidelines for Semivolatile Analysis by GC/MS (Based on Organic NFG 1999)

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
MS/MSD (recovery)	One per matrix per batch Use method acceptance criteria	Qualify parent only unless other QC indicates systematic problems: J(+) if both %R > UCL J(+)/UJ(-) if both %R < LCL J(+)/R(-) if both %R < 10% PJ if only one %R outlier	8
MS/MSD (RPD)	One per matrix per batch Use method acceptance criteria	J(+) in parent sample if RPD > CL	9
LCS CLP low conc. H2O only	One per lab batch Within method control limits	J(+) assoc. cmpd if > UCL J(+)/R(-) assoc. cmpd if < LCL J(+)/R(-) all cmpds if half are < LCL	10
LCS regular SVOA (H2O & solid)	One per lab batch Lab or method control limits	J(+) if %R > UCL J(+)/UJ(-) if %R <LCL J(+)/R(-) if %R < 10% (EcoChem PJ)	10
LCS/LCSD *(if required)*	One set per matrix and batch of 20 samples RPD < 35%	J(+)/UJ(-) assoc. cmpd. in all samples	9
Surrogates	Minimum of 3 acid and 3 base/neutral compounds Use method acceptance criteria	Do not qualify if only 1 acid and/or 1 B/N surrogate is out unless <10% J(+) if %R > UCL J(+)/UJ(-) if %R < LCL J(+)/R(-) if %R < 10%	13
Internal Standards	Added to all samples Acceptable Range: IS area 50% to 200% of CCAL area RT within 30 seconds of CC RT	J(+) if > 200% J(+)/UJ(-) if < 50% J(+)/R(-) if < 25% RT>30 seconds, narrate and Notify PM	19
Field Duplicates	Use QAPP limits. If no QAPP: Solids: RPD <50% OR absolute diff. < 2X RL (for results < 5X RL) Aqueous: RPD <35% OR absolute diff. < 1X RL (for results < 5X RL)	Narrate and qualify if required by project (EcoChem PJ)	9
TICs	Major ions (>10%) in reference must be present in sample; intensities agree within 20%; check identification	NJ the TIC unless: R(+) common laboratory contaminants See Technical Director for ID issues	4
Quantitation/ Identification	RRT within 0.06 of standard RRT Ion relative intensity within 20% of standard All ions in std. at > 10% intensity must be present in sample	See Technical Director if outliers	14 21 (false +)

EcoChem Validation Guidelines for Pesticides, PCBs, Herbicides, and Phenol by GC/ECD (Based on Organic NFG 1999 & EPA SW-846 Methods 8081/8082/8041/8151)

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Cooler Temperature	4°C ±2°	J(+)/UJ(-) if greater than 6 deg. C (EcoChem PJ)	1
Holding Time	Water: 7 days from collection Soil: 14 days from collection Analysis: 40 days from extraction	J(+)/UJ(-) if ext/analyzed > HT J(+)/R(-) if ext/analyzed > 3X HT (EcoChem PJ)	1
Resolution Check	Beginning of ICAL Sequence Within RTW Resolution >90%	Narrate (Use Professional Judgement to qualify)	14
Instrument Performance (Breakdown)	DDT Breakdown: < 20% Endrin Breakdown: <20% Combined Breakdown: <30% Compounds within RTW	J(+) DDT NJ(+) DDD and/or DDE R(-) DDT - If (+) for either DDE or DDD J(+) Endrin NJ(+) EK and/or EA R(-) Endrin - If (+) for either EK or EA	5A
Retention Times	Surrogates: TCX (+/- 0.05); DCB (+/- 0.10) Target compounds: elute before heptachlor epoxide (+/- 0.05) elute after heptachlor epoxide (+/- 0.07)	NJ(+)/R(-) results for analytes with RT shifts For full DV, use PJ based on examination of raw data	5B
Initial Calibration	Pesticides: Low=CRQL, Mid=4X, High=16X Multiresponse - one point Calibration %RSD<20% %RSD<30% for surr; two comp. may exceed if <30% Resolution in Mix A and Mix B >90%	J(+)/UJ(-)	5A
Continuing Calibration	Alternating PEM standard and INDA/INDB standards every 12 hours (each preceeded by an inst. Blank) %D < 25% Resolution >90% in IND mixes; 100% for PEM	J(+)/UJ(-) J(+)R(-) if %D > 90% PJ for resolution	5B
Method Blank	One per matrix per batch No results > CRQL	U(+) if sample result is < CRQL and < 5X rule (raise sample value to CRQL) U(+) if sample result is > or equal to CRQL and < 5X rule (at reported sample value)	7
Instrument Blanks	Analyzed at the beginning of every 12 hour sequence No analyte > 1/2 CRQL	Same as Method Blank	7
Field Blanks	Not addressed by NFG No results > CRQL	Apply 5X rule; U(+) < action level	6

EcoChem Validation Guidelines for Pesticides, PCBs, Herbicides, and Phenol by GC/ECD (Based on Organic NFG 1999 & EPA SW-846 Methods 8081/8082/8041/8151)

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
MS/MSD (recovery)	One set per matrix per batch Method Acceptance Criteria	Qualify parent only unless other QC indicates systematic problems: J(+) if both %R > UCL J(+)/UJ(-) if both %R < LCL J(+)/R(-) if both %R < 10% PJ if only one %R outlier	8
MS/MSD (RPD)	One set per matrix per batch Method Acceptance Criteria	J(+) in parent sample if RPD > CL	9
LCS	One per SDG Method Acceptance Criteria	J(+) if %R > UCL J(+)/UJ(-) if %R < LCL J(+)/R(-) using PJ if %R <<LCL (< 10%)	10
LCS/LCSD *(if required)*	One set per matrix and batch of 20 samples RPD < 35%	J(+)/UJ(-) assoc. cmpd. in all samples	9
Surrogates	TCX and DCB added to every sample %R = 30-150%	J(+)/UJ(-) if both %R = 10 - 60% J(+) if both >150% J(+)/R(-) if any %R <10%	13
Quantitation/ Identification	Quantitated using ICAL calibration factor (CF) RPD between columns <40%	J(+) if RPD = 40 - 60% NJ(+) if RPD >60% EcoChem PJ - See TM-08	3
Two analyses for one sample	Report only one result per analyte	"DNR" results that should not be used to avoid reporting two results for one sample	11
Sample Clean-up	GPC required for soil samples Florisil required for all samples Sulfur is optional Clean-up standard check %R within CLP limits	J(+)/UJ(-) if %R < LCL J(+) if %R > UCL	14
Field Duplicates	Use QAPP limits. If no QAPP: Solids: RPD <50% OR absolute diff. < 2X RL (for results < 5X RL) Aqueous: RPD <35% OR absolute diff. < 1X RL (for results < 5X RL)	Narrate (Qualifiy if required by project QAPP)	9

EcoChem Validation Guidelines for Dioxin/Furan Analysis by HRMS
(Based on EPA Reg. 10 SOP, Rev. 2, 1996 & EPA SW-846, Methods 1613b and 8290)

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Cooler/Storage Temperature	Waters/Solids < 4°C Tissues <-10°C	EcoChem PJ, see TM-05	1
Holding Time	Extraction - Water: 30 days from collection *Note:* Under CWA, SDWA, and RCRA the HT for H2O is 7 days* Extraction - Soil: 30 days from collection Analysis: 40 days from extraction	J(+)/UJ(-) if ext > 30 days J(+)/UJ(-) if analysis > 40 Days EcoChem PJ, see TM-05	1
Mass Resolution	>=10,000 resolving power at m/z 304.9824 Exact mass of m/z 380.9760 w/in 5 ppm of theoretical value (380.97410 to 380.97790) . Analyzed prior to ICAL and at the start and end of each 12 hr. shift	R(+/-) if not met	14
Window Defining Mix and Column Performance Mix	Window defining mixture/Isomer specificity std run before ICAL and CCAL Valley < 25% (valley = (x/y)*100%) x = ht. of TCDD y = baseline to bottom of valley For all isomers eluting near 2378-TCDD/TCDF isomers (TCDD only for 8290)	J(+) if valley > 25%	5A (ICAL) 5B (CCAL
Initial Calibration	Minimum of five standards %RSD < 20% for native compounds %RSD <30% for labeled compounds (%RSD <35% for labeled compounds under 1613b)	J(+) natives if %RSD > 20%	5A
	Abs. RT of $^{13}C_{12}$-1234-TCDD >25 min on DB5 >15 min on DB-225	EcoChem PJ, see TM-05	
	Ion Abundance ratios within QC limits (Table 8 of method 8290) (Table 9 of method 1613B)	EcoChem PJ, see TM-05	
	S/N ratio > 10 for all native and labeled compounds in CS1 std.	If <10, elevate Det. Limit or R(-)	

EcoChem Validation Guidelines for Dioxin/Furan Analysis by HRMS
(Based on EPA Reg. 10 SOP, Rev. 2, 1996 & EPA SW-846, Methods 1613b and 8290)

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Continuing Calibration	Analyzed at the start and end of each 12 hour shift. %D+/-20% for native compounds %D +/-30% for labeled compounds (Must meet limits in Table 6, Method 1613B) (If %Ds in the closing CCAL are w/in 25%/35% the avg RF from the two CCAL may be used to calculate samples per Method 8290, Section 8.3.2.4)	Do not qualify labeled compounds. Narrate in report for labeled compound %D outliers. For native compound %D outliers: 8290: J(+)/UJ(-) if %D = 20% - 75% J(+)/R(-) if %D > 75% 1613: J(+)/UJ(-) if %D is outside Table 6 limits J(+)/R(-) if %D is +/- 75% of Table 6 limit	5B
	Abs. RT of $^{13}C_{12}$-1234-TCDD and $^{13}C12$-123789-HxCDD +/- 15 sec of ICAL.	EcoChem PJ, see ICAL section of TM-05	
	RRT of all other compounds must meet Table 2 of 1613B.	EcoChem PJ, see TM-05	
	Ion Abundance ratios within QC limits (Table 8 of method 8290) (Table 9 of method 1613B)	EcoChem PJ, see TM-05	
	S/N ratio > 10	If <10, elevate Det. Limit or R(-)	
Method Blank	One per matrix per batch No positive results	If sample result <5X action level, qualify U at reported value.	7
Field Blanks (Not Required)	No positive results	If sample result <5X action level, qualify U at reported value.	6
LCS / OPR	Concentrations must meet limits in Table 6, Method 1613B or lab limits.	J(+) if %R > UCL J(+)/UJ(-) if %R < LCL J(+)/R(-) using PJ if %R <<LCL (< 10%)	10
MS/MSD (recovery)	May not analyze MS/MSD %R should meet lab limits.	Qualify parent only unless other QC indicates systematic problems: J(+) if both %R > UCL J(+)/UJ(-) if both %R < LCL J(+)/R(-) if both %R < 10% PJ if only one %R outlier	8
MS/MSD (RPD)	May not analyze MS/MSD RPD < 20%	J(+) in parent sample if RPD > CL	9

EcoChem Validation Guidelines for Dioxin/Furan Analysis by HRMS
(Based on EPA Reg. 10 SOP, Rev. 2, 1996 & EPA SW-846, Methods 1613b and 8290)

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Lab Duplicate	RPD <25% if present.	J(+)/UJ(-) if outside limts	9
Labeled Compounds / Internal Standards	*Method 8290:* %R = 40% - 135% in all samples --- *Method 1613B:* %R must meet limits specified in Table 7, Method 1613	J(+)/UJ(-) if %R = 10% to LCL J(+) if %R > UCL J(+)/R(-) if %R < 10%	13
Quantitation/ Identification	Ions for analyte, IS, and rec. std. must max w/in 2 sec. S/N >2.5 IA ratios meet limits in Table 9 of 1613B or Table 8 of 8290 RRTs w/in limits in Table 2 of 1613B	If RT criteria not met, use PJ (see TM-05) If S/N criteria not met, J(+). if unlabelled ion abundance not met, change to EMPC If labelled ion abundance not met, J(+).	21
EMPC (estimated maximum possible concentration)	If quantitation idenfication criteria are not met, laboratory should report an EMPC value.	If laboratory correctly reported an EMPC value, qualify with U to indicate that the value is a detection limit.	14
Interferences	PCDF interferences from PCDPE	If both detected, change PCDF result to EMPC	14
Second Column Confirmation	All 2378-TCDF hits must be confirmed on a DB-225 (or equiv) column. All QC specs in this table must be met for the confirmation analysis.	Report lower of the two values. If not performed use PJ (see TM-05).	3
Field Duplicates	Use QAPP limits. If no QAPP: Solids: RPD <50% OR absolute diff. < 2X RL (for results < 5X RL) Aqueous: RPD <35% OR absolute diff. < 1X RL (for results < 5X RL)	Narrate and qualify if required by project (EcoChem PJ)	9
Two analyses for one sample	Report only one result per analyte	"DNR" results that should not be used	11

EcoChem Validation Guidelines for Metals Analysis by ICP
(Based on Inorganic NFG 1994 & 2004)

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Cooler Temperature and Preservation	Cooler temperature: 4°C ±2° Waters: Nitric Acid to pH < 2 For Dissolved Metals: 0.45um filter & preserve after filtration Tissues: Frozen	EcoChem Professional Judgment - no qualification based on cooler temperature outliers J(+)/UJ(-) if pH preservation requirements are not met	1
Holding Time	180 days from date sampled Frozen tissues - HT extended to 2 years	J(+)/UJ(-) if holding time exceeded	1
Initial Calibration	Blank + minimum 1 standard If more than 1 standard, r > 0.995	J(+)/UJ(-) if r < 0.995 (multi point cal)	5A
Initial Calibration Verification (ICV)	Independent source analyzed immediately after calibration %R within ±10% of true value	J(+)/UJ(-) if %R 75-89% J(+) if %R = 111-125% R(+) if %R > 125% R(+/-) if %R < 75%	5A
Continuing Calibration Verification (CCV)	Every ten samples, immediately following ICV/ICB and at end of run %R within ±10% of true value	J(+)/UJ(-) if %R = 75-89% J(+) if %R 111-125% R(+) if %R > 125% R(+/-) if %R < 75%	5B

Initial and Continuing Calibration Blank (ICB/CCB)	After each ICV and CCV
	every ten samples and end of run
	| blank | < IDL (MDL)
		Action level is 5x absolute value of blank conc.
		For (+) blanks, U(+) results < action level
		For (-) blanks, J(+)/UJ(-) results < action level
		(Refer to TM-02 for additional information)
			7

Reporting Limit Standard	2x RL analyzed beginning of run Not required for Al, Ba, Ca, Fe, Mg, Na, K %R = 70%-130% (50%-150% Sb, Pb, Tl)	R(-)/J(+) < 2x RL if %R <50% (< 30% Sb, Pb, Tl) J(+) < 2x RL, UJ(-) if %R 50-69% (30-49% Sb, Pb,Tl) J(+) < 2x RL if %R 130-180% (150-200% Sb, Pb, Tl) R(+) < 2x RL if %R > 180% (200% Sb, Pb, Tl)	14
Interference Check Samples (ICSA/ICSAB)	ICSAB %R 80 - 120% for all spiked elements | ICSA | < MDL for all unspiked elements except: K, Na	For samples with Al, Ca, Fe, or Mg > ICS levels R(+/-) if %R < 50% J(+) if %R >120% J(+)/UJ(-) if %R= 50 to 79% Use Professional Judgment for ICSA to determine if bias is present see TM-09 for additional details	17
Method Blank	One per matrix per batch (batch not to exceed 20 samples) blank < MDL	Action level is 5x blank concentration U(+) results < action level	7
Laboratory Control Sample (LCS)	One per matrix per batch		10
	Blank Spike: %R within 80-120%	R(+/-) if %R < 50% J(+)/UJ(-) if %R = 50-79% J(+) if %R >120%	
	CRM: Result within manufacturer's certified acceptance range or project guidelines	J(+)/UJ(-) if < LCL, J(+) if > UCL	

EcoChem Validation Guidelines for Metals Analysis by ICP
(Based on Inorganic NFG 1994 & 2004)

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Matrix Spikes	One per matrix per batch 75-125% for samples less than 4x spike level	J(+) if %R > 125% J(+)/UJ(-) if %R < 75% J(+)/R(-) if %R < 30% or J(+)/UJ(-) if Post Spike %R 75-125% Qualify all samples in batch	8
Post-digestion Spike	If Matrix Spike is outside 75-125%, spike at twice the sample conc.	No qualifiers assigned based on this element	
Laboratory Duplicate (or MS/MSD)	One per matrix per batch RPD < 20% for samples > 5x RL Diff < RL for samples >RL and < 5x RL (Diff < 2x RL for solids)	J(+)/UJ(-) if RPD > 20% or diff > RL (2x RL for solids) qualify all samples in batch	9
Serial Dilution	5x dilution one per matrix %D < 10% for original sample conc. > 50x MDL	J(+)/UJ(-) if %D >10% qualify all samples in batch	16
Field Blank	Blank < MDL	Action level is 5x blank conc. U(+) sample values < action level in associated field samples only	6
Field Duplicate	For results > 5x RL: Water: RPD < 35% Solid: RPD < 50% For results < 5 x RL: Water: Diff < RL Solid: Diff < 2x RL	J(+)/UJ(-) in parent samples only	9
Linear Range	Sample concentrations must fall within range	J values over range	20

EcoChem Validation Guidelines for Metals Analysis by ICP-MS (Based on Inorganic NFG 1994 & 2004)

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Cooler Temperature and Preservation	Cooler temperature: 4°C ±2° Waters: Nitric Acid to pH < 2 For Dissolved Metals: 0.45um filter & preserve after filtration	EcoChem Professional Judgment - no qualification based on cooler temperature outliers J(+)/UJ(-) if pH preservation requirements are not met	1
Holding Time	180 days from date sampled Frozen tissues - HT extended to 2 years	J(+)/UJ(-) if holding time exceeded	1
Tune	Prior to ICAL monitoring compounds analyzed 5 times wih Std Dev. ≤ 5% mass calibration <0.1 amu from True Value Resolution < 0.9 AMU @ 10% peak height or <0.75 amu @ 5% peak height	Use Professional Judgment to evaluate tune J(+)/UJ(-) if tune criteria not met	5A
Initial Calibration	Blank + minimum 1 standard If more than 1 standard, r>0.995	J(+)/UJ(-) if r<0.995 (for multi point cal)	5A
Initial Calibration Verification (ICV)	Independent source analyzed immediately after calibration %R within ±10% of true value	J(+)/UJ(-) if %R 75-89% J(+) if %R = 111-125% R(+) if %R > 125% R(+/-) if %R < 75%	5A
Continuing Calibration Verification (CCV)	Every ten samples, immediately following ICV/ICB and at end of run ±10% of true value	J(+)/UJ(-) if %R = 75-89% J(+) if %R 111-125% R(+) if %R > 125% R(+/-) if %R < 75%	5B

Initial and Continuing Calibration Blanks (ICB/CCB)	After each ICV and CCV
	every ten samples and end of run
	| blank | < IDL (MDL)
		Action level is 5x absolute value of blank conc.
		For (+) blanks, U(+) results < action level
		For (-) blanks, J(+)/UJ(-) results < action level
		refer to TM-02 for additional details
			7

Reporting Limit Standard (CRI)	2x RL analyzed beginning of run Not required for Al, Ba, Ca, Fe, Mg, Na, K %R = 70%-130% (50%-150% Co,Mn, Zn)	R(-),(+) < 2x RL if %R < 50% (< 30% Co,Mn, Zn) J(+) < 2x RL, UJ(-) if %R 50-69% (30%-49% Co,Mn, Zn) J(+) < 2x RL if %R 130%-180% (150%-200% Co,Mn, Zn) R(+) < 2x RL if %R > 180% (200% Co, Mn, Zn)	14
Interference Check Samples (ICSA/ICSAB)	Required by SW 6020, but not 200.8 ICSAB %R 80% - 120% for all spiked elements | ICSA | < IDL (MDL) for all unspiked elements	For samples with Al, Ca, Fe, or Mg > ICS levels R(+/-) if %R < 50% J(+) if %R >120% J(+)/UJ(-) if %R = 50% to 79% Use Professional Judgment for ICSA to determine if bias is present see TM-09 for additional details	17
Method Blank	One per matrix per batch (batch not to exceed 20 samples) blank < MDL	Action level is 5x blank concentration U(+) results < action level	7

EcoChem Validation Guidelines for Metals Analysis by ICP-MS
(Based on Inorganic NFG 1994 & 2004)

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Laboratory Control Sample (LCS)	One per matrix per batch Blank Spike: %R within 80%-120%	R(+/-) if %R < 50% J(+)/UJ(-) if %R = 50-79% J(+) if %R >120%	10
	CRM: Result within manufacturer's certified acceptance range or project guidelines	J(+)/UJ(-) if < LCL, J(+) if > UCL	
Matrix Spike/ Matrix Spike Duplicate (MS/MSD)	One per matrix per batch 75-125% for samples where results do not exceed 4x spike level	J(+) if %R>125% J(+)/UJ(-) if %R <75% J(+)/R(-) if %R<30% or J(+)/UJ(-) if Post Spike %R 75%-125% Qualify all samples in batch	8
Post-digestion Spike	If Matrix Spike is outside 75-125%, Spike parent sample at 2x the sample conc.	No qualifiers assigned based on this element	
Laboratory Duplicate (or MS/MSD)	One per matrix per batch RPD < 20% for samples > 5x RL Diff < RL for samples > RL and < 5 x RL (Diff < 2x RL for solids)	J(+)/UJ(-) if RPD > 20% or diff > RL all samples in batch	9
Serial Dilution	5x dilution one per matrix %D < 10% for original sample values > 50x MDL	J(+)/UJ(-) if %D >10% All samples in batch	16
Internal Standards	Every sample SW6020: 60%-125% of cal blank IS 200.8: 30%-120% of cal blank IS	J (+)/UJ (-) all analytes associated with IS outlier	19
Field Blank	Blank < MDL	Action level is 5x blank conc. U(+) sample values < AL in associated field samples only	6
Field Duplicate	For results > 5x RL: Water: RPD < 35% Solid: RPD < 50% For results < 5 x RL: Water: Diff < RL Solid: Diff < 2x RL	J(+)/UJ(-) in parent samples only	9
Linear Range	Sample concentrations must fall within range	J values over range	20

EcoChem Validation Guidelines for Mercury Analysis by CVAA (Based on Inorganic NFG 1994 & 2004)

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Cooler Temperature and Preservation	Cooler temperature: 4°C ±2° Waters: Nitric Acid to pH < 2 For Dissolved Metals: 0.45um filter & preserve after filtration	EcoChem Professional Judgment - no qualification based on cooler temperature outliers J(+)/UJ(-) if pH preservation requirements are not met	1
Holding Time	28 days from date sampled Frozen tissues: HT extended to 6 months	J(+)/UJ(-) if holding time exceeded	1
Initial Calibration	Blank + 4 standards, one at RL r > 0.995	J(+)/UJ(-) if r<0.995	5A
Initial Calibration Verification (ICV)	Independent source analyzed immediately after calibration %R within ±20% of true value	J(+)/UJ(-) if %R = 65%-79% J(+) if %R = 121-135% R(+/-) if %R < 65% R(+) if %R > 135%	5A
Continuing Calibration Verification (CCV)	Every ten samples, immediately following ICV/ICB and at end of run %R within ±20% of true value	J(+)/UJ(-) if %R = 65%-79% J(+) if %R = 121-135% R(+/-) if %R < 65% R(+) if %R > 135%	5B

Initial and Continuing Calibration Blanks (ICB/CCB)	after each ICV and CCV
	every ten samples and end of run
	| blank | < IDL (MDL)
		Action level is 5x absolute value of blank conc.
		For (+) blanks, U(+) results < action level
		For (-) blanks, J(+)/UJ(-) results < action level
		refer to TM-02 for additional details
			7

Reporting Limit Standard (CRA)	conc at RL - analyzed beginning of run %R = 70-130%	R(-),(+)<2xRL if %R <50% J(+)<2x RL, UJ(-) if %R 50-69% J(+) <2x RL if %R 130-180% R(+)<2x RL if %R>180%	14
Method Blank	One per matrix per batch (batch not to exceed 20 samples) blank < MDL	Action level is 5x blank concentration U(+) results < action level	7
Laboratory Control Sample (LCS)	One per matrix per batch		10
	Blank Spike: %R within 80-120%	R(+/-) if %R < 50% J(+)/UJ(-) if %R = 50-79% J(+) if %R >120%	
	CRM: Result within manufacturer's certified acceptance range or project guidelines	J(+)/UJ(-) if < LCL, J(+) if > UCL	
Matrix Spike/Matrix Spike Duplicate (MS/MSD)	One per matrix per batch 5% frequency 75-125% for samples less than 4x spike level	J(+) if %R>125% J(+)/UJ(-) if %R <75% J(+)/R(-) if %R<30% all samples in batch	8
Laboratory Duplicate (or MS/MSD)	One per matrix per batch RPD < 20% for samples > 5x RL Diff < RL for samples > RL and < 5x RL (Diff < 2x RL for solids)	J(+)/UJ(-) if RPD > 20% or diff > RL all samples in batch	9

EcoChem Validation Guidelines for Mercury Analysis by CVAA (Based on Inorganic NFG 1994 & 2004)

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Field Blank	Blank < MDL	Action level is 5x blank conc. U(+) sample values < action level in associated field samples only	6
Field Duplicate	For results > 5x RL: Water: RPD < 35% Solid: RPD < 50% For results < 5x RL: Water: Diff<RL Solid: Diff < 2x RL	J(+)/UJ(-) in parent samples only	9
Linear Range	Sample concentrations must be less than 110% of high standard	J values over range	20

EcoChem Validation Guidelines for Conventional Chemistry Analysis (Based on EPA Standard Methods)

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Cooler Temperature and Preservation	Cooler Temperature 4°C ±2°C Preservation: Method Specific	Use Professional Judgment to qualify based to qualify for coole temp outliers J(+)/UJ(-) if preservation requirements not met	1
Holding Time	Method Specific	Professional Judgment J(+)/UJ(-) if holding time exceeded J(+)/R(-) if HT exceeded by > 3X	1
Initial Calibration	Method specific r>0.995	Use professional judgment J(+)/UJ(-) for r < 0.995	5A
Initial Calibration Verification (ICV)	Where applicable to method Independent source analyzed immediately after calibration %R method specific, usually 90% - 110%	R(+/-) if %R significantly < LCL J(+)/UJ(-) if %R < LCL J(+) if %R > UCL R(+) if %R significantly > UCL	5A
Continuing Cal Verification (CCV)	Where applicable to method Every ten samples, immed. following ICV/ICB and end of run %R method specific, usually 90% - 110%	R(+/-) if %R significantly < LCL J(+)/UJ(-) if %R < LCL J(+) if %R > UCL R(+) if %R significantly > UCL	5B

Initial and Continuing Cal Blanks (ICB/CCB)	Where applicable to method
	After each ICV and CCV every ten samples and end of run
	| blank| < MDL
		Action level is 5x absolute value of blank conc.
		For (+) blanks, U(+) results < action level
		For (-) blanks, J(+)/UJ(-) results < action level
		refer to TM-02 for additional details
			7

Method Blank	One per matrix per batch
	(not to exceed 20 samples)
	blank < MDL
		Action level is 5x absolute value of blank conc.
		For (+) blk value, U(+) results < action level
		For (-) blk value, J(+)/UJ(-) results < action level
			7

Laboratory Control Sample	Waters: One per matrix per batch %R (80-120%)	R(+/-) if %R < 50% J(+)/UJ(-) if %R = 50-79% J(+) if %R >120%	10
	Soils: One per matrix per batch Result within manufacturer's certified acceptance range	J(+)/UJ(-) if < LCL, J(+) if > UCL	10
Matrix Spike	One per matrix per batch; 5% frequency 75-125% for samples less than 4 x spike level	J(+) if %R > 125% or < 75% UJ(-) if %R = 30-74% R(+/-) results < IDL if %R < 30%	8
Laboratory Duplicate	One per matrix per batch RPD <20% for samples > 5x RL Diff <RL for samples >RL and <5 x RL (may use RPD < 35%, Diff < 2X RL for solids)	J(+)/UJ(-) if RPD > 20% or diff > RL all samples in batch	9

EcoChem Validation Guidelines for Conventional Chemistry Analysis (Based on EPA Standard Methods)

VALIDATION QC ELEMENT	ACCEPTANCE CRITERIA	ACTION	REASON CODE
Field Blank	blank < MDL	Action level is 5x blank conc. U(+) sample values < action level in associated field samples only	6
Field Duplicate	For results > 5X RL: Water: RPD < 35% Solid: RPD < 50% For results < 5 x RL: Water: Diff<RL Solid: Diff < 2X RL	J(+)/UJ(-) in parent samples only	9

EcoChem, INC.
Environmental Data Quality

APPENDIX B
QUALIFIED DATA SUMMARY TABLE

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SL76	LDW-SS2039-D	11-4618-SL76A	SW6010B	Copper	52.2	mg/kg		J	9
SL76	LDW-SS2039-D	11-4618-SL76A	SW6010B	Lead	30	mg/kg		J	9
SL76	LDW-SS2039-D	11-4618-SL76A	SW6010B	Zinc	193	mg/kg		J	8,9
SL76	LDW-SS2039-D	11-4618-SL76A	SW8082	Aroclor 1248	20	ug/kg	Y	U	22
SL76	LDW-SS2039-D	11-4618-SL76A	SW8270D	Hexachlorocyclopentadiene	98	ug/kg	U	UJ	5B
SL76	LDW-SS2039-D	11-4618-SL76A	SW8270D	Pentachlorophenol	98	ug/kg	U	UJ	5B
SL76	LDW-SS2039-D	11-4618-SL76A	SW8270D	Butylbenzylphthalate	22	ug/kg	Q	J	5B
SL76	LDW-SS2039-D	11-4618-SL76A	SW8270D	bis(2-Ethylhexyl)phthalate	87	ug/kg		U	6
SL76	LDW-SS2039-A	11-4619-SL76B	SW6010B	Copper	35.7	mg/kg		J	9
SL76	LDW-SS2039-A	11-4619-SL76B	SW6010B	Lead	25	mg/kg		J	9
SL76	LDW-SS2039-A	11-4619-SL76B	SW6010B	Zinc	80	mg/kg		J	8,9
SL76	LDW-SS2039-A	11-4619-SL76B	SW8082	Aroclor 1248	12	ug/kg	Y	U	22
SL76	LDW-SS2039-A	11-4619-SL76B	SW8270D	Hexachlorocyclopentadiene	93	ug/kg	U	UJ	5B
SL76	LDW-SS2039-A	11-4619-SL76B	SW8270D	Pentachlorophenol	93	ug/kg	U	UJ	5B
SL76	LDW-SS2039-A	11-4619-SL76B	SW8270D	Butylbenzylphthalate	17	ug/kg	J	J	5B
SL76	LDW-SS2039-A	11-4619-SL76B	SW8270D	bis(2-Ethylhexyl)phthalate	71	ug/kg		U	6
SL76	LDW-SS2039-A	11-4619-SL76B	SW8270DSIM	Pentachlorophenol	23	ug/kg	U	UJ	5B
SL76	LDW-SS2038-A	11-4620-SL76C	SW6010B	Copper	30.8	mg/kg		J	9
SL76	LDW-SS2038-A	11-4620-SL76C	SW6010B	Lead	22	mg/kg		J	9
SL76	LDW-SS2038-A	11-4620-SL76C	SW6010B	Zinc	87	mg/kg		J	8,9
SL76	LDW-SS2038-A	11-4620-SL76C	SW8082	Aroclor 1248	12	ug/kg	Y	U	22
SL76	LDW-SS2038-A	11-4620-SL76C	SW8270D	Hexachlorocyclopentadiene	95	ug/kg	U	UJ	5B
SL76	LDW-SS2038-A	11-4620-SL76C	SW8270D	Pentachlorophenol	95	ug/kg	U	UJ	5B
SL76	LDW-SS2038-A	11-4620-SL76C	SW8270D	Butylbenzylphthalate	51	ug/kg	Q	J	5B
SL76	LDW-SS2038-A	11-4620-SL76C	SW8270D	bis(2-Ethylhexyl)phthalate	99	ug/kg		U	6
SL76	LDW-SS2038-A	11-4620-SL76C	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SL76	LDW-SS2038-D	11-4621-SL76D	SW6010B	Copper	51.9	mg/kg		J	9
SL76	LDW-SS2038-D	11-4621-SL76D	SW6010B	Lead	38	mg/kg		J	9
SL76	LDW-SS2038-D	11-4621-SL76D	SW6010B	Zinc	211	mg/kg		J	8,9
SL76	LDW-SS2038-D	11-4621-SL76D	SW8082	Aroclor 1248	6.6	ug/kg	Y	U	22
SL76	LDW-SS2038-D	11-4621-SL76D	SW8270D	Hexachlorocyclopentadiene	93	ug/kg	U	UJ	5B
SL76	LDW-SS2038-D	11-4621-SL76D	SW8270D	Pentachlorophenol	93	ug/kg	U	UJ	5B
SL76	LDW-SS2038-D	11-4621-SL76D	SW8270D	Butylbenzylphthalate	16	ug/kg	JQ	J	5B
SL76	LDW-SS2038-D	11-4621-SL76D	SW8270D	bis(2-Ethylhexyl)phthalate	47	ug/kg		U	6
SL76	LDW-SS2038-D	11-4621-SL76D	SW8270DSIM	Pentachlorophenol	23	ug/kg	U	UJ	5B
SL76	LDW-SS3037-D	11-4622-SL76E	SW6010B	Copper	34.2	mg/kg		J	9
SL76	LDW-SS3037-D	11-4622-SL76E	SW6010B	Lead	16	mg/kg		J	9
SL76	LDW-SS3037-D	11-4622-SL76E	SW6010B	Zinc	71	mg/kg		J	8,9
SL76	LDW-SS3037-D	11-4622-SL76E	SW8082	Aroclor 1248	6.9	ug/kg	Y	U	22
SL76	LDW-SS3037-D	11-4622-SL76E	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	5B
SL76	LDW-SS3037-D	11-4622-SL76E	SW8270D	bis(2-Ethylhexyl)phthalate	71	ug/kg		U	6
SL76	LDW-SS3037-D-2	11-4623-SL76F	SW6010B	Copper	33.8	mg/kg		J	9
SL76	LDW-SS3037-D-2	11-4623-SL76F	SW6010B	Lead	16	mg/kg		J	9
SL76	LDW-SS3037-D-2	11-4623-SL76F	SW6010B	Zinc	72	mg/kg		J	8,9
SL76	LDW-SS3037-D-2	11-4623-SL76F	SW8082	Aroclor 1248	6.7	ug/kg	Y	U	22
SL76	LDW-SS3037-D-2	11-4623-SL76F	SW8270D	Hexachlorocyclopentadiene	93	ug/kg	U	UJ	5B
SL76	LDW-SS3037-D-2	11-4623-SL76F	SW8270D	Pentachlorophenol	93	ug/kg	U	UJ	5B
SL76	LDW-SS3037-D-2	11-4623-SL76F	SW8270D	bis(2-Ethylhexyl)phthalate	33	ug/kg		U	6
SL76	LDW-SS3037-D-2	11-4623-SL76F	SW8270DSIM	Pentachlorophenol	23	ug/kg	U	UJ	5B
SL76	LDW-SS3037-A	11-4624-SL76G	SW6010B	Copper	31.5	mg/kg		J	9
SL76	LDW-SS3037-A	11-4624-SL76G	SW6010B	Lead	11	mg/kg		J	9
SL76	LDW-SS3037-A	11-4624-SL76G	SW6010B	Zinc	65	mg/kg		J	8,9
SL76	LDW-SS3037-A	11-4624-SL76G	SW8082	Aroclor 1248	5.8	ug/kg	Y	U	22
SL76	LDW-SS3037-A	11-4624-SL76G	SW8270D	2,4-Dinitrophenol	190	ug/kg	U	UJ	5B
SL76	LDW-SS3037-A	11-4624-SL76G	SW8270D	bis(2-Ethylhexyl)phthalate	53	ug/kg		U	6
SL76	LDW-SS3037-U	11-4625-SL76H	SW6010B	Copper	29.5	mg/kg		J	9
SL76	LDW-SS3037-U	11-4625-SL76H	SW6010B	Lead	17	mg/kg		J	9
SL76	LDW-SS3037-U	11-4625-SL76H	SW6010B	Zinc	69	mg/kg		J	8,9
SL76	LDW-SS3037-U	11-4625-SL76H	SW8082	Aroclor 1248	5.7	ug/kg	Y	U	22

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SL76	LDW-SS3037-U	11-4625-SL76H	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	5B
SL76	LDW-SS3037-U	11-4625-SL76H	SW8270D	bis(2-Ethylhexyl)phthalate	33	ug/kg		U	6
SL76	LDW-SSSP5-A	11-4626-SL76I	SW6010B	Copper	25.6	mg/kg		J	9
SL76	LDW-SSSP5-A	11-4626-SL76I	SW6010B	Lead	21	mg/kg		J	9
SL76	LDW-SSSP5-A	11-4626-SL76I	SW6010B	Zinc	72	mg/kg		J	8,9
SL76	LDW-SSSP5-A	11-4626-SL76I	SW8082	Aroclor 1248	5.7	ug/kg	Y	U	22
SL76	LDW-SSSP5-A	11-4626-SL76I	SW8270D	Hexachlorocyclopentadiene	95	ug/kg	U	UJ	5B
SL76	LDW-SSSP5-A	11-4626-SL76I	SW8270D	Pentachlorophenol	95	ug/kg	U	UJ	5B
SL76	LDW-SSSP5-A	11-4626-SL76I	SW8270D	Butylbenzylphthalate	10	ug/kg	JQ	J	5B
SL76	LDW-SSSP5-A	11-4626-SL76I	SW8270D	bis(2-Ethylhexyl)phthalate	150	ug/kg		U	6
SL76	LDW-SS2099-D	11-4627-SL76J	SW6010B	Copper	39.8	mg/kg		J	9
SL76	LDW-SS2099-D	11-4627-SL76J	SW6010B	Lead	13	mg/kg		J	9
SL76	LDW-SS2099-D	11-4627-SL76J	SW6010B	Zinc	89	mg/kg		J	8,9
SL76	LDW-SS2099-D	11-4627-SL76J	SW8270D	Hexachlorocyclopentadiene	94	ug/kg	U	UJ	5B
SL76	LDW-SS2099-D	11-4627-SL76J	SW8270D	Pentachlorophenol	94	ug/kg	U	UJ	5B
SL76	LDW-SS2099-D	11-4627-SL76J	SW8270D	Butylbenzylphthalate	9.4	ug/kg	JQ	J	5B
SL76	LDW-SS2099-D	11-4627-SL76J	SW8270D	bis(2-Ethylhexyl)phthalate	72	ug/kg		U	6
SL76	LDW-SS2099-D	11-4627-SL76J	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SL76	LDW-SS2099-A	11-4628-SL76K	SW6010B	Copper	19.3	mg/kg		J	9
SL76	LDW-SS2099-A	11-4628-SL76K	SW6010B	Lead	6	mg/kg		J	9
SL76	LDW-SS2099-A	11-4628-SL76K	SW6010B	Zinc	52	mg/kg		J	8,9
SL76	LDW-SS2099-A	11-4628-SL76K	SW8270D	Hexachlorocyclopentadiene	98	ug/kg	U	UJ	5B
SL76	LDW-SS2099-A	11-4628-SL76K	SW8270D	Pentachlorophenol	98	ug/kg	U	UJ	5B
SL76	LDW-SS2099-A	11-4628-SL76K	SW8270D	bis(2-Ethylhexyl)phthalate	24	ug/kg		U	6
SL76	LDW-SS2099-A	11-4628-SL76K	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SL76	LDW-SS2099-U	11-4629-SL76L	SW6010B	Copper	15.9	mg/kg		J	9
SL76	LDW-SS2099-U	11-4629-SL76L	SW6010B	Lead	4	mg/kg		J	9
SL76	LDW-SS2099-U	11-4629-SL76L	SW6010B	Zinc	47	mg/kg		J	8,9
SL76	LDW-SS2099-U	11-4629-SL76L	SW8270D	Hexachlorocyclopentadiene	96	ug/kg	U	UJ	8
SL76	LDW-SS2099-U	11-4629-SL76L	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	5B
SL76	LDW-SS2099-U	11-4629-SL76L	SW8270D	bis(2-Ethylhexyl)phthalate	31	ug/kg		U	6
SL77	LDW-SS2098-D	11-4630-SL77A	SW8270D	4-Chloroaniline	95	ug/kg	U	UJ	8
SL77	LDW-SS2098-D	11-4630-SL77A	SW8270D	Hexachlorocyclopentadiene	95	ug/kg	U	UJ	8
SL77	LDW-SS2098-D	11-4630-SL77A	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	5A
SL77	LDW-SS2098-D	11-4630-SL77A	SW8270D	3,3'-Dichlorobenzidine	95	ug/kg	U	UJ	8
SL77	LDW-SS2098-D	11-4630-SL77A	SW8270D	Aniline	120	ug/kg	U	UJ	8
SL77	LDW-SS2098-D	11-4630-SL77A	SW8270D	bis(2-Ethylhexyl)phthalate	43	ug/kg		U	6
SL77	LDW-SS2098-A	11-4631-SL77B	SW8082	Aroclor 1248	4.8	ug/kg	Y	U	22
SL77	LDW-SS2098-A	11-4631-SL77B	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	5A
SL77	LDW-SS2098-A	11-4631-SL77B	SW8270D	bis(2-Ethylhexyl)phthalate	35	ug/kg		U	6
SL77	LDW-SS2098-U	11-4632-SL77C	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	5A
SL77	LDW-SS2098-U	11-4632-SL77C	SW8270D	bis(2-Ethylhexyl)phthalate	28	ug/kg		U	6
SL77	LDW-SS2103-D	11-4633-SL77D	SW8082	Aroclor 1248	12	ug/kg	Y	U	22
SL77	LDW-SS2103-D	11-4633-SL77D	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	5A
SL77	LDW-SS2103-D	11-4633-SL77D	SW8270D	bis(2-Ethylhexyl)phthalate	48	ug/kg		U	6
SL77	LDW-SS2103-A	11-4634-SL77E	SW8082	Aroclor 1248	9.7	ug/kg	Y	U	22
SL77	LDW-SS2103-A	11-4634-SL77E	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	5A
SL77	LDW-SS2103-A	11-4634-SL77E	SW8270D	bis(2-Ethylhexyl)phthalate	44	ug/kg		U	6
SL77	LDW-SS2103-U	11-4635-SL77F	SW8082	Aroclor 1248	5.9	ug/kg	Y	U	22
SL77	LDW-SS2103-U	11-4635-SL77F	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	5A
SL77	LDW-SS2103-U	11-4635-SL77F	SW8270D	bis(2-Ethylhexyl)phthalate	17	ug/kg	J	U	6
SL77	LDW-SS2106-D	11-4636-SL77G	SW8082	Aroclor 1248	49	ug/kg	Y	U	22
SL77	LDW-SS2106-D	11-4636-SL77G	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	5A
SL77	LDW-SS2106-D	11-4636-SL77G	SW8270D	bis(2-Ethylhexyl)phthalate	86	ug/kg		U	6
SL77	LDW-SS2106-A	11-4637-SL77H	SW8082	Aroclor 1254	200	ug/kg	Y	U	22
SL77	LDW-SS2106-A	11-4637-SL77H	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	5A
SL77	LDW-SS2106-A	11-4637-SL77H	SW8270D	bis(2-Ethylhexyl)phthalate	88	ug/kg		U	6
SL77	LDW-SS2040-D	11-4638-SL77I	SW8082	Aroclor 1248	14	ug/kg	Y	U	22
SL77	LDW-SS2040-D	11-4638-SL77I	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	5A

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SL77	LDW-SS2040-D	11-4638-SL77I	SW8270D	bis(2-Ethylhexyl)phthalate	21	ug/kg		U	6
SL77	LDW-SS2040-A	11-4639-SL77J	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	5A
SL77	LDW-SS2040-A	11-4639-SL77J	SW8270D	bis(2-Ethylhexyl)phthalate	21	ug/kg		U	6
SL77	LDW-SS2040-U	11-4640-SL77K	SW8082	Aroclor 1248	5.8	ug/kg	Y	U	22
SL77	LDW-SS2040-U	11-4640-SL77K	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	5A
SL77	LDW-SS2040-U	11-4640-SL77K	SW8270D	bis(2-Ethylhexyl)phthalate	40	ug/kg		U	6
SL77	LDW-SSBRSTSD-D	11-4641-SL77L	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	5A
SL77	LDW-SSBRSTSD-D	11-4641-SL77L	SW8270D	bis(2-Ethylhexyl)phthalate	150	ug/kg		U	6
SL77	LDW-SSBRSTSD-A	11-4642-SL77M	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	5A
SL77	LDW-SSBRSTSD-A	11-4642-SL77M	SW8270D	bis(2-Ethylhexyl)phthalate	160	ug/kg		U	6
SL77	LDW-SSRVSTSD-D	11-4644-SL77O	SW8270D	3-Nitroaniline	96	ug/kg	U	UJ	5B
SL77	LDW-SSRVSTSD-D	11-4644-SL77O	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	5A,5B
SL77	LDW-SSRVSTSD-D	11-4644-SL77O	SW8270D	4-Nitroaniline	96	ug/kg	U	UJ	5B
SL77	LDW-SSRVSTSD-D	11-4644-SL77O	SW8270DSIM	Butylbenzylphthalate	20	ug/kg	Q	J	5B
SL77	LDW-SSRVSTSD-A	11-4645-SL77P	SW8082	Aroclor 1248	24	ug/kg	Y	U	22
SL77	LDW-SSRVSTSD-A	11-4645-SL77P	SW8270D	3-Nitroaniline	92	ug/kg	U	UJ	5B
SL77	LDW-SSRVSTSD-A	11-4645-SL77P	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	5A,5B
SL77	LDW-SSRVSTSD-A	11-4645-SL77P	SW8270D	4-Nitroaniline	92	ug/kg	U	UJ	5B
SL77	LDW-SSRVSTSD-A	11-4645-SL77P	SW8270DSIM	Butylbenzylphthalate	20	ug/kg	Q	J	5B
SL77	LDW-SSRVSTSD-A	11-4645-SL77P	SW8270DSIM	Pentachlorophenol	50	ug/kg	Q	J	5B
SM01	LDW-SS2113-A	11-4763-SM01A	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	R	5B
SM01	LDW-SS2113-A	11-4763-SM01A	SW8270DSIM	Benzyl Alcohol	120	ug/kg	Q	J	10
SM01	LDW-SS2113-A-2	11-4764-SM01B	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	R	5B
SM01	LDW-SS2113-A-2	11-4764-SM01B	SW8270DSIM	Benzyl Alcohol	100	ug/kg	Q	J	10
SM01	LDW-SS2113-U	11-4765-SM01C	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	R	5B
SM01	LDW-SS2113-U	11-4765-SM01C	SW8270DSIM	Benzyl Alcohol	46	ug/kg	Q	J	10
SM01	LDW-SS2106-U	11-4766-SM01D	SW8082	Aroclor 1254	58	ug/kg	Y	U	22
SM01	LDW-SS2106-U	11-4766-SM01D	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	R	5B
SM01	LDW-SS2106-U	11-4766-SM01D	SW8270DSIM	Benzyl Alcohol	650	ug/kg	Q	J	10
SM01	LDW-SS2108-A	11-4767-SM01E	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	R	5B
SM01	LDW-SS2108-A	11-4767-SM01E	SW8270DSIM	Benzyl Alcohol	170	ug/kg	Q	J	10
SM01	LDW-SS2108-U	11-4768-SM01F	SW8270D	4-Chloroaniline	98	ug/kg	U	R	8
SM01	LDW-SS2108-U	11-4768-SM01F	SW8270D	Hexachlorocyclopentadiene	98	ug/kg	U	R	8
SM01	LDW-SS2108-U	11-4768-SM01F	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	R	5B,8
SM01	LDW-SS2108-U	11-4768-SM01F	SW8270D	4-Nitroaniline	98	ug/kg	U	UJ	8
SM01	LDW-SS2108-U	11-4768-SM01F	SW8270D	3,3'-Dichlorobenzidine	98	ug/kg	U	R	8
SM01	LDW-SS2108-U	11-4768-SM01F	SW8270D	Aniline	130	ug/kg	U	R	8
SM01	LDW-SS2108-U	11-4768-SM01F	SW8270DSIM	Benzyl Alcohol	280	ug/kg	Q	J	10
SM01	LDW-SS2214-A	11-4769-SM01G	SW8082	Aroclor 1254	98	ug/kg	Y	U	22
SM01	LDW-SS2214-A	11-4769-SM01G	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	R	5B
SM01	LDW-SS2214-A	11-4769-SM01G	SW8270DSIM	Benzyl Alcohol	280	ug/kg	Q	J	10
SM01	LDW-SS2214-D	11-4770-SM01H	SW8082	Aroclor 1254	120	ug/kg	Y	U	22
SM01	LDW-SS2214-D	11-4770-SM01H	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	5B
SM01	LDW-SS2214-D	11-4770-SM01H	SW8270DSIM	Benzyl Alcohol	250	ug/kg	Q	J	10
SM01	LDW-SS2214-U	11-4771-SM01I	SW8082	Aroclor 1254	160	ug/kg	Y	U	22
SM01	LDW-SS2214-U	11-4771-SM01I	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	5B
SM01	LDW-SS2214-U	11-4771-SM01I	SW8270DSIM	Benzyl Alcohol	160	ug/kg	Q	J	10
SM01	LDW-SS2036-D	11-4772-SM01J	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	5B
SM01	LDW-SS2036-D	11-4772-SM01J	SW8270DSIM	Benzyl Alcohol	120	ug/kg	Q	J	10
SM01	LDW-SS2036-A	11-4773-SM01K	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	5B
SM01	LDW-SS2036-A	11-4773-SM01K	SW8270DSIM	Benzyl Alcohol	130	ug/kg	Q	J	10
SM01	LDW-SS2035-D	11-4774-SM01L	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	R	5B
SM01	LDW-SS2035-D	11-4774-SM01L	SW8270DSIM	Benzyl Alcohol	170	ug/kg	Q	J	10
SM01	LDW-SSPSF-U	11-4775-SM01M	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	R	5B
SM01	LDW-SSPSF-U	11-4775-SM01M	SW8270DSIM	Benzyl Alcohol	130	ug/kg	Q	J	10
SM01	LDW-SSPSF-U-2	11-4776-SM01N	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	5B
SM01	LDW-SSPSF-U-2	11-4776-SM01N	SW8270D	N-Nitrosodiphenylamine	26	ug/kg	Y	U	22
SM01	LDW-SSPSF-U-2	11-4776-SM01N	SW8270D	Phenanthrene	8400	ug/kg	ES	DNR	20
SM01	LDW-SSPSF-U-2	11-4776-SM01N	SW8270D	Fluoranthene	6200	ug/kg	ES	DNR	20

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SM01	LDW-SSPSF-U-2	11-4776-SM01N	SW8270D	Pyrene	4700	ug/kg	E	DNR	20
SM01	LDW-SSPSF-U-2	11-4776-SM01N	SW8270DSIM	Benzyl Alcohol	120	ug/kg	Q	J	10
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Phenol	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Bis-(2-Chloroethyl) Ether	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	2-Chlorophenol	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	1,3-Dichlorobenzene	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	1,4-Dichlorobenzene	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Benzyl Alcohol	110	ug/kg	J	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	1,2-Dichlorobenzene	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	2-Methylphenol	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	2,2'-Oxybis(1-Chloropropane)	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	4-Methylphenol	330	ug/kg		DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	N-Nitroso-Di-N-Propylamine	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Hexachloroethane	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Nitrobenzene	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Isophorone	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	2-Nitrophenol	950	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	2,4-Dimethylphenol	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Benzoic Acid	1900	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	bis(2-Chloroethoxy) Methane	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	2,4-Dichlorophenol	950	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	1,2,4-Trichlorobenzene	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Naphthalene	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	4-Chloroaniline	950	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Hexachlorobutadiene	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	4-Chloro-3-methylphenol	950	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	2-Methylnaphthalene	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Hexachlorocyclopentadiene	950	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	2,4,6-Trichlorophenol	950	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	2,4,5-Trichlorophenol	950	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	2-Chloronaphthalene	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	2-Nitroaniline	950	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Dimethylphthalate	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Acenaphthylene	130	ug/kg	J	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	3-Nitroaniline	950	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Acenaphthene	880	ug/kg		DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	2,4-Dinitrophenol	2000	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	4-Nitrophenol	950	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Dibenzofuran	1100	ug/kg		DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	2,6-Dinitrotoluene	950	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	2,4-Dinitrotoluene	950	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Diethylphthalate	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	4-Chlorophenyl-phenylether	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Fluorene	1000	ug/kg		DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	4-Nitroaniline	950	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	4,6-Dinitro-2-Methylphenol	1900	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	N-Nitrosodiphenylamine	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	4-Bromophenyl-phenylether	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Hexachlorobenzene	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Pentachlorophenol	950	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Carbazole	460	ug/kg		DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Anthracene	570	ug/kg		DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Di-n-Butylphthalate	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Butylbenzylphthalate	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	3,3'-Dichlorobenzidine	950	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Benzo(a)anthracene	640	ug/kg		DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	bis(2-Ethylhexyl)phthalate	100	ug/kg	J	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Chrysene	1600	ug/kg		DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Di-n-Octyl phthalate	190	ug/kg	U	DNR	11

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Benzo(a)pyrene	360	ug/kg		DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Indeno(1,2,3-cd)pyrene	220	ug/kg	Q	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Dibenz(a,h)anthracene	190	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Benzo(g,h,i)perylene	210	ug/kg	Q	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Aniline	1200	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	N-Nitrosodimethylamine	2500	ug/kg	U	DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	1-Methylnaphthalene	200	ug/kg		DNR	11
SM01	LDW-SSPSF-U-2	11-4776-SM01NDL	SW8270D	Total Benzofluoranthenes	1300	ug/kg		DNR	11
SM01	LDW-SS030411-RB	11-4777-SM01O	SW8270D	2-Nitrophenol	6.4	ug/L	U	UJ	10
SM01	LDW-SS030411-RB	11-4777-SM01O	SW8270D	Benzoic Acid	13	ug/L	U	UJ	10
SM01	LDW-SS030411-RB	11-4777-SM01O	SW8270D	2,4-Dichlorophenol	6.4	ug/L	U	UJ	10
SM01	LDW-SS030411-RB	11-4777-SM01O	SW8270D	4-Chloro-3-methylphenol	6.4	ug/L	U	UJ	10
SM01	LDW-SS030411-RB	11-4777-SM01O	SW8270D	Hexachlorocyclopentadiene	6.4	ug/L	U	UJ	10
SM01	LDW-SS030411-RB	11-4777-SM01O	SW8270D	2,4,6-Trichlorophenol	6.4	ug/L	U	UJ	10
SM01	LDW-SS030411-RB	11-4777-SM01O	SW8270D	2,4,5-Trichlorophenol	6.4	ug/L	U	UJ	10
SM01	LDW-SS030411-RB	11-4777-SM01O	SW8270D	2-Nitroaniline	6.4	ug/L	U	UJ	10
SM01	LDW-SS030411-RB	11-4777-SM01O	SW8270D	4-Nitrophenol	6.4	ug/L	U	UJ	10
SM01	LDW-SS030411-RB	11-4777-SM01O	SW8270D	2,6-Dinitrotoluene	6.4	ug/L	U	UJ	10
SM01	LDW-SS030411-RB	11-4777-SM01O	SW8270D	2,4-Dinitrotoluene	6.4	ug/L	U	UJ	10
SM01	LDW-SS030411-RB	11-4777-SM01O	SW8270D	4-Nitroaniline	6.4	ug/L	U	UJ	10
SM01	LDW-SS030411-RB	11-4777-SM01O	SW8270D	Pentachlorophenol	6.4	ug/L	U	UJ	10
SM01	LDW-SS030411-RB	11-4777-SM01O	SW8270D	N-Nitrosodimethylamine	6.4	ug/L	U	UJ	10
SM05	LDW-SS2035-U	11-4785-SM05B	SW8082	Aroclor 1242	10	ug/kg		J	19
SM05	LDW-SS2035-U	11-4785-SM05B	SW8082	Aroclor 1254	25	ug/kg		J	19
SM05	LDW-SS2035-U	11-4785-SM05B	SW8270D	Phenanthrene	2200	ug/kg	E	DNR	20
SM05	LDW-SS2035-U	11-4785-SM05B	SW8270D	Fluoranthene	2400	ug/kg	E	DNR	20
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Phenol	58	ug/kg		DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Bis-(2-Chloroethyl) Ether	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	2-Chlorophenol	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	1,3-Dichlorobenzene	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	1,4-Dichlorobenzene	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Benzyl Alcohol	340	ug/kg		DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	1,2-Dichlorobenzene	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	2-Methylphenol	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	2,2'-Oxybis(1-Chloropropane)	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	4-Methylphenol	82	ug/kg		DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	N-Nitroso-Di-N-Propylamine	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Hexachloroethane	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Nitrobenzene	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Isophorone	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	2-Nitrophenol	290	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	2,4-Dimethylphenol	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Benzoic Acid	350	ug/kg	JQ	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	bis(2-Chloroethoxy) Methane	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	2,4-Dichlorophenol	290	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	1,2,4-Trichlorobenzene	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Naphthalene	88	ug/kg		DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	4-Chloroaniline	290	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Hexachlorobutadiene	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	4-Chloro-3-methylphenol	290	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	2-Methylnaphthalene	97	ug/kg		DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Hexachlorocyclopentadiene	290	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	2,4,6-Trichlorophenol	290	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	2,4,5-Trichlorophenol	290	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	2-Chloronaphthalene	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	2-Nitroaniline	290	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Dimethylphthalate	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Acenaphthylene	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	3-Nitroaniline	290	ug/kg	U	DNR	11

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Acenaphthene	560	ug/kg		DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	2,4-Dinitrophenol	620	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	4-Nitrophenol	290	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Dibenzofuran	410	ug/kg		DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	2,6-Dinitrotoluene	290	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	2,4-Dinitrotoluene	290	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Diethylphthalate	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	4-Chlorophenyl-phenylether	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Fluorene	510	ug/kg		DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	4-Nitroaniline	290	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	4,6-Dinitro-2-Methylphenol	580	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	N-Nitrosodiphenylamine	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	4-Bromophenyl-phenylether	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Hexachlorobenzene	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Pentachlorophenol	290	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Carbazole	130	ug/kg		DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Anthracene	600	ug/kg		DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Di-n-Butylphthalate	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Pyrene	1800	ug/kg		DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Butylbenzylphthalate	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	3,3'-Dichlorobenzidine	290	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Benzo(a)anthracene	670	ug/kg		DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	bis(2-Ethylhexyl)phthalate	200	ug/kg		DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Chrysene	780	ug/kg		DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Di-n-Octyl phthalate	58	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Benzo(a)pyrene	280	ug/kg		DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Indeno(1,2,3-cd)pyrene	79	ug/kg		DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Dibenz(a,h)anthracene	44	ug/kg	J	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Benzo(g,h,i)perylene	100	ug/kg		DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Aniline	380	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	N-Nitrosodimethylamine	760	ug/kg	U	DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	1-Methylnaphthalene	85	ug/kg		DNR	11
SM05	LDW-SS2035-U	11-4785-SM05BDL	SW8270D	Total Benzofluoranthenes	750	ug/kg		DNR	11
SM05	LDW-SS2037-D	11-4786-SM05C	SW8270DSIM	Benzyl Alcohol	570	ug/kg	EB	J	20
SM05	LDW-SS2037-A	11-4787-SM05D	SW8270DSIM	Benzyl Alcohol	580	ug/kg	EB	J	20
SM05	LDW-SS2037-U	11-4788-SM05E	SW8082	Aroclor 1248	14	ug/kg		J	3
SM05	LDW-SS2505-A	11-4789-SM05F	SW8270DSIM	Benzyl Alcohol	7.3	ug/kg	B	U	7
SM05	LDW-SS2512-A	11-4790-SM05G	SW8270DSIM	Benzyl Alcohol	8.4	ug/kg	B	U	7
SM05	LDW-SS2512-U	11-4791-SM05H	SW8270DSIM	Benzyl Alcohol	8.1	ug/kg	B	U	7
SM05	LDW-SS2506-D	11-4792-SM05I	SW8270D	bis(2-Ethylhexyl)phthalate	3600	ug/kg	E	DNR	20
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Phenol	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Bis-(2-Chloroethyl) Ether	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	2-Chlorophenol	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	1,3-Dichlorobenzene	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	1,4-Dichlorobenzene	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Benzyl Alcohol	52	ug/kg	J	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	1,2-Dichlorobenzene	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	2-Methylphenol	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	2,2'-Oxybis(1-Chloropropane)	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	4-Methylphenol	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	N-Nitroso-Di-N-Propylamine	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Hexachloroethane	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Nitrobenzene	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Isophorone	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	2-Nitrophenol	480	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	2,4-Dimethylphenol	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Benzoic Acid	950	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	bis(2-Chloroethoxy) Methane	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	2,4-Dichlorophenol	480	ug/kg	U	DNR	11

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	1,2,4-Trichlorobenzene	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Naphthalene	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	4-Chloroaniline	480	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Hexachlorobutadiene	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	4-Chloro-3-methylphenol	480	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	2-Methylnaphthalene	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Hexachlorocyclopentadiene	480	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	2,4,6-Trichlorophenol	480	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	2,4,5-Trichlorophenol	480	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	2-Chloronaphthalene	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	2-Nitroaniline	480	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Dimethylphthalate	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Acenaphthylene	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	3-Nitroaniline	480	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Acenaphthene	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	2,4-Dinitrophenol	1000	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	4-Nitrophenol	480	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Dibenzofuran	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	2,6-Dinitrotoluene	480	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	2,4-Dinitrotoluene	480	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Diethylphthalate	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	4-Chlorophenyl-phenylether	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Fluorene	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	4-Nitroaniline	480	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	4,6-Dinitro-2-Methylphenol	950	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	N-Nitrosodiphenylamine	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	4-Bromophenyl-phenylether	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Hexachlorobenzene	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Pentachlorophenol	480	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Carbazole	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Anthracene	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Di-n-Butylphthalate	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Pyrene	140	ug/kg		DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Butylbenzylphthalate	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	3,3'-Dichlorobenzidine	480	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Benzo(a)anthracene	62	ug/kg	J	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Chrysene	95	ug/kg		DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Di-n-Octyl phthalate	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Benzo(a)pyrene	62	ug/kg	J	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Indeno(1,2,3-cd)pyrene	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Dibenz(a,h)anthracene	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Benzo(g,h,i)perylene	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Aniline	620	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	N-Nitrosodimethylamine	1200	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	1-Methylnaphthalene	95	ug/kg	U	DNR	11
SM05	LDW-SS2506-D	11-4792-SM05IDL	SW8270D	Total Benzofluoranthenes	140	ug/kg		DNR	11
SM05	LDW-SS2506-A	11-4793-SM05J	SW8270D	4-Chloroaniline	97	ug/kg	U	R	8
SM05	LDW-SS2506-A	11-4793-SM05J	SW8270D	Hexachlorocyclopentadiene	97	ug/kg	U	R	8
SM05	LDW-SS2506-A	11-4793-SM05J	SW8270D	3-Nitroaniline	97	ug/kg	U	R	8
SM05	LDW-SS2506-A	11-4793-SM05J	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	R	8
SM05	LDW-SS2506-A	11-4793-SM05J	SW8270D	4-Nitroaniline	97	ug/kg	U	R	8
SM05	LDW-SS2506-A	11-4793-SM05J	SW8270D	3,3'-Dichlorobenzidine	97	ug/kg	U	R	8
SM05	LDW-SS2506-A	11-4793-SM05J	SW8270D	bis(2-Ethylhexyl)phthalate	2400	ug/kg	E	DNR	20
SM05	LDW-SS2506-A	11-4793-SM05J	SW8270D	Aniline	130	ug/kg	U	R	8
SM05	LDW-SS2506-A	11-4793-SM05J	SW8270DSIM	1,2,4-Trichlorobenzene	4.9	ug/kg	U	UJ	5B
SM05	LDW-SS2506-A	11-4793-SM05J	SW8270DSIM	Pentachlorophenol	30	ug/kg		J	8
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Phenol	61	ug/kg		DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Bis-(2-Chloroethyl) Ether	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	2-Chlorophenol	58	ug/kg	U	DNR	11

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	1,3-Dichlorobenzene	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	1,4-Dichlorobenzene	76	ug/kg		DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Benzyl Alcohol	110	ug/kg		DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	1,2-Dichlorobenzene	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	2-Methylphenol	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	2,2'-Oxybis(1-Chloropropane)	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	4-Methylphenol	130	ug/kg		DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	N-Nitroso-Di-N-Propylamine	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Hexachloroethane	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Nitrobenzene	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Isophorone	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	2-Nitrophenol	290	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	2,4-Dimethylphenol	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Benzoic Acid	200	ug/kg	JQ	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	bis(2-Chloroethoxy) Methane	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	2,4-Dichlorophenol	290	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	1,2,4-Trichlorobenzene	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Naphthalene	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	4-Chloroaniline	290	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Hexachlorobutadiene	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	4-Chloro-3-methylphenol	290	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	2-Methylnaphthalene	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Hexachlorocyclopentadiene	290	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	2,4,6-Trichlorophenol	290	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	2,4,5-Trichlorophenol	290	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	2-Chloronaphthalene	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	2-Nitroaniline	290	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Dimethylphthalate	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Acenaphthylene	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	3-Nitroaniline	290	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Acenaphthene	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	2,4-Dinitrophenol	620	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	4-Nitrophenol	290	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Dibenzofuran	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	2,6-Dinitrotoluene	290	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	2,4-Dinitrotoluene	290	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Diethylphthalate	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	4-Chlorophenyl-phenylether	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Fluorene	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	4-Nitroaniline	290	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	4,6-Dinitro-2-Methylphenol	580	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	N-Nitrosodiphenylamine	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	4-Bromophenyl-phenylether	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Hexachlorobenzene	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Pentachlorophenol	290	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Carbazole	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Anthracene	58	ug/kg		DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Di-n-Butylphthalate	35	ug/kg	J	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Pyrene	320	ug/kg		DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Butylbenzylphthalate	140	ug/kg		DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	3,3'-Dichlorobenzidine	290	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Benzo(a)anthracene	150	ug/kg		DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Chrysene	250	ug/kg		DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Di-n-Octyl phthalate	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Benzo(a)pyrene	130	ug/kg		DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Indeno(1,2,3-cd)pyrene	64	ug/kg		DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Dibenz(a,h)anthracene	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Benzo(g,h,i)perylene	100	ug/kg		DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Aniline	380	ug/kg	U	DNR	11

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	N-Nitrosodimethylamine	760	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	1-Methylnaphthalene	58	ug/kg	U	DNR	11
SM05	LDW-SS2506-A	11-4793-SM05JDL	SW8270D	Total Benzofluoranthenes	320	ug/kg		DNR	11
SM58	LDW-SS2122-A	11-5099-SM58A	SW8270D	bis(2-Ethylhexyl)phthalate	170	ug/kg	B	U	7
SM58	LDW-SS2122-D	11-5100-SM58B	SW8270D	Fluoranthene	2400	ug/kg	E	DNR	20
SM58	LDW-SS2122-D	11-5100-SM58B	SW8270DSIM	N-Nitrosodiphenylamine	5.8	ug/kg	M	J	2
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Phenol	92	ug/kg		DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Bis-(2-Chloroethyl) Ether	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	2-Chlorophenol	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	1,3-Dichlorobenzene	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	1,4-Dichlorobenzene	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Benzyl Alcohol	180	ug/kg		DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	1,2-Dichlorobenzene	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	2-Methylphenol	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	2,2'-Oxybis(1-Chloropropane)	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	4-Methylphenol	260	ug/kg		DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	N-Nitroso-Di-N-Propylamine	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Hexachloroethane	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Nitrobenzene	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Isophorone	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	2-Nitrophenol	460	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	2,4-Dimethylphenol	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Benzoic Acid	920	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	bis(2-Chloroethoxy) Methane	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	2,4-Dichlorophenol	460	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	1,2,4-Trichlorobenzene	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Naphthalene	50	ug/kg	J	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	4-Chloroaniline	460	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Hexachlorobutadiene	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	4-Chloro-3-methylphenol	460	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	2-Methylnaphthalene	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Hexachlorocyclopentadiene	460	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	2,4,6-Trichlorophenol	460	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	2,4,5-Trichlorophenol	460	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	2-Chloronaphthalene	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	2-Nitroaniline	460	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Dimethylphthalate	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Acenaphthylene	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	3-Nitroaniline	460	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Acenaphthene	150	ug/kg		DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	2,4-Dinitrophenol	980	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	4-Nitrophenol	460	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Dibenzofuran	100	ug/kg		DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	2,6-Dinitrotoluene	460	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	2,4-Dinitrotoluene	460	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Diethylphthalate	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	4-Chlorophenyl-phenylether	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Fluorene	100	ug/kg		DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	4-Nitroaniline	460	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	4,6-Dinitro-2-Methylphenol	920	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	N-Nitrosodiphenylamine	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	4-Bromophenyl-phenylether	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Hexachlorobenzene	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Pentachlorophenol	460	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Phenanthrene	680	ug/kg		DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Carbazole	73	ug/kg	J	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Anthracene	170	ug/kg		DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Di-n-Butylphthalate	46	ug/kg	J	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Pyrene	1600	ug/kg		DNR	11

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Butylbenzylphthalate	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	3,3'-Dichlorobenzidine	460	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Benzo(a)anthracene	530	ug/kg		DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	bis(2-Ethylhexyl)phthalate	530	ug/kg	B	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Chrysene	1000	ug/kg		DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Di-n-Octyl phthalate	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Benzo(a)pyrene	320	ug/kg		DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Indeno(1,2,3-cd)pyrene	200	ug/kg		DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Dibenz(a,h)anthracene	73	ug/kg	J	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Benzo(g,h,i)perylene	220	ug/kg		DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Aniline	590	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	N-Nitrosodimethylamine	1200	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	1-Methylnaphthalene	92	ug/kg	U	DNR	11
SM58	LDW-SS2122-D	11-5100-SM58BDL	SW8270D	Total Benzofluoranthenes	1100	ug/kg		DNR	11
SM58	LDW-SS2122-U	11-5101-SM58C	SW8270D	bis(2-Ethylhexyl)phthalate	260	ug/kg	B	U	7
SM58	LDW-SS6146-D	11-5102-SM58D	SW8270D	bis(2-Ethylhexyl)phthalate	190	ug/kg	B	U	7
SM58	LDW-SS2018-U	11-5103-SM58E	SW8270D	4-Chloroaniline	92	ug/kg	U	UJ	8
SM58	LDW-SS2018-U	11-5103-SM58E	SW8270D	Hexachlorocyclopentadiene	92	ug/kg	U	R	8
SM58	LDW-SS2018-U	11-5103-SM58E	SW8270D	Phenanthrene	69	ug/kg		J	9
SM58	LDW-SS2018-U	11-5103-SM58E	SW8270D	Fluoranthene	270	ug/kg		J	9
SM58	LDW-SS2018-U	11-5103-SM58E	SW8270D	3,3'-Dichlorobenzidine	92	ug/kg	U	R	8
SM58	LDW-SS2018-U	11-5103-SM58E	SW8270D	bis(2-Ethylhexyl)phthalate	120	ug/kg	B	U	7
SM58	LDW-SS2018-U	11-5103-SM58E	SW8270D	Aniline	120	ug/kg	U	R	8
SM58	LDW-SS2015-D	11-5104-SM58F	SW8270D	bis(2-Ethylhexyl)phthalate	130	ug/kg	B	U	7
SM58	LDW-SS2009-A	11-5105-SM58G	SW8270D	bis(2-Ethylhexyl)phthalate	140	ug/kg	B	U	7
SM58	LDW-SS2009-U	11-5106-SM58H	SW8270D	bis(2-Ethylhexyl)phthalate	250	ug/kg	B	U	7
SM58	LDW-SS2008-A	11-5107-SM58I	SW8270D	bis(2-Ethylhexyl)phthalate	300	ug/kg	B	U	7
SN88	LDW-SS2082-U	11-6147-SN88A	SW8270D	4-Chloroaniline	99	ug/kg	U	R	8
SN88	LDW-SS2082-U	11-6147-SN88A	SW8270D	Hexachlorocyclopentadiene	99	ug/kg	U	R	5B,8,10
SN88	LDW-SS2082-U	11-6147-SN88A	SW8270D	3-Nitroaniline	99	ug/kg	U	R	8
SN88	LDW-SS2082-U	11-6147-SN88A	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	R	5B,8
SN88	LDW-SS2082-U	11-6147-SN88A	SW8270D	4-Nitroaniline	99	ug/kg	U	R	8
SN88	LDW-SS2082-U	11-6147-SN88A	SW8270D	4,6-Dinitro-2-Methylphenol	200	ug/kg	U	R	8
SN88	LDW-SS2082-U	11-6147-SN88A	SW8270D	Pentachlorophenol	99	ug/kg	U	UJ	5B
SN88	LDW-SS2082-U	11-6147-SN88A	SW8270D	Butylbenzylphthalate	13	ug/kg	JQ	J	5B
SN88	LDW-SS2082-U	11-6147-SN88A	SW8270D	3,3'-Dichlorobenzidine	99	ug/kg	U	R	8
SN88	LDW-SS2082-U	11-6147-SN88A	SW8270D	Aniline	130	ug/kg	U	R	8
SN88	LDW-SS2082-U	11-6147-SN88A	SW8270DSIM	Pentachlorophenol	25	ug/kg	U	UJ	5B
SN88	LDW-SS2083-A	11-6148-SN88B	SW8270D	Hexachlorocyclopentadiene	96	ug/kg	U	UJ	5B,10
SN88	LDW-SS2083-A	11-6148-SN88B	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	5B
SN88	LDW-SS2083-A	11-6148-SN88B	SW8270D	Pentachlorophenol	96	ug/kg	U	UJ	5B
SN88	LDW-SS2083-A	11-6148-SN88B	SW8270D	Butylbenzylphthalate	14	ug/kg	JQ	J	5B
SN88	LDW-SS2083-A	11-6148-SN88B	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SN88	LDW-SS2089-D	11-6149-SN88C	SW8270D	Hexachlorocyclopentadiene	97	ug/kg	U	UJ	5B,10
SN88	LDW-SS2089-D	11-6149-SN88C	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	5B
SN88	LDW-SS2089-D	11-6149-SN88C	SW8270D	Pentachlorophenol	97	ug/kg	U	UJ	5B
SN88	LDW-SS2089-D	11-6149-SN88C	SW8270D	Butylbenzylphthalate	11	ug/kg	JQ	J	5B
SN88	LDW-SS2089-D	11-6149-SN88C	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SN88	LDW-SS2089-A	11-6150-SN88D	SW8270D	2,4-Dichlorophenol	98	ug/kg	U	UJ	5B
SN88	LDW-SS2089-A	11-6150-SN88D	SW8270D	Hexachlorocyclopentadiene	98	ug/kg	U	UJ	5B,10
SN88	LDW-SS2089-A	11-6150-SN88D	SW8270D	4-Chlorophenyl-phenylether	20	ug/kg	U	UJ	5B
SN88	LDW-SS2089-A	11-6150-SN88D	SW8270D	4-Bromophenyl-phenylether	20	ug/kg	U	UJ	5B
SN88	LDW-SS2089-A	11-6150-SN88D	SW8270D	Pentachlorophenol	98	ug/kg	U	UJ	5B
SN88	LDW-SS2089-A	11-6150-SN88D	SW8270DSIM	Pentachlorophenol	25	ug/kg	U	UJ	5B
SN88	LDW-SS2085-A	11-6151-SN88E	SW8270D	Hexachlorocyclopentadiene	94	ug/kg	U	UJ	5B,10
SN88	LDW-SS2085-A	11-6151-SN88E	SW8270D	Pentachlorophenol	94	ug/kg	U	UJ	5B
SN88	LDW-SS2085-A	11-6151-SN88E	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SN88	LDW-SS2090-D	11-6152-SN88F	SW8082	Aroclor 1248	14	ug/kg	Y	U	22
SN88	LDW-SS2090-D	11-6152-SN88F	SW8082	Aroclor 1260	32	ug/kg	P	NJ	3

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SN88	LDW-SS2090-D	11-6152-SN88F	SW8270D	Hexachlorocyclopentadiene	93	ug/kg	U	UJ	5B,10
SN88	LDW-SS2090-D	11-6152-SN88F	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	5B
SN88	LDW-SS2090-D	11-6152-SN88F	SW8270D	Pentachlorophenol	93	ug/kg	U	UJ	5B
SN88	LDW-SS2090-D	11-6152-SN88F	SW8270D	Butylbenzylphthalate	10	ug/kg	JQ	J	5B
SN88	LDW-SS2090-D	11-6152-SN88F	SW8270DSIM	Pentachlorophenol	23	ug/kg	U	UJ	5B
SN88	LDW-SS2090-A	11-6153-SN88G	SW8082	Aroclor 1248	5.9	ug/kg	Y	U	22
SN88	LDW-SS2090-A	11-6153-SN88G	SW8270D	Hexachlorocyclopentadiene	96	ug/kg	U	UJ	5B,10
SN88	LDW-SS2090-A	11-6153-SN88G	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	5B
SN88	LDW-SS2090-A	11-6153-SN88G	SW8270D	Pentachlorophenol	96	ug/kg	U	UJ	5B
SN88	LDW-SS2090-A	11-6153-SN88G	SW8270D	Butylbenzylphthalate	19	ug/kg	U	UJ	5B
SN88	LDW-SS2090-A	11-6153-SN88G	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SN88	LDW-SSBDC2-D	11-6154-SN88H	SW8270D	2,4-Dichlorophenol	95	ug/kg	U	UJ	5B
SN88	LDW-SSBDC2-D	11-6154-SN88H	SW8270D	Hexachlorocyclopentadiene	95	ug/kg	U	UJ	5B,10
SN88	LDW-SSBDC2-D	11-6154-SN88H	SW8270D	4-Chlorophenyl-phenylether	19	ug/kg	U	UJ	5B
SN88	LDW-SSBDC2-D	11-6154-SN88H	SW8270D	4-Bromophenyl-phenylether	19	ug/kg	U	UJ	5B
SN88	LDW-SSBDC2-D	11-6154-SN88H	SW8270D	Pentachlorophenol	95	ug/kg	U	UJ	5B
SN88	LDW-SSBDC2-D	11-6154-SN88H	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SN88	LDW-SSBDC2-A	11-6155-SN88I	SW8270D	2,4-Dichlorophenol	94	ug/kg	U	UJ	5B
SN88	LDW-SSBDC2-A	11-6155-SN88I	SW8270D	Hexachlorocyclopentadiene	94	ug/kg	U	UJ	5B,10
SN88	LDW-SSBDC2-A	11-6155-SN88I	SW8270D	4-Chlorophenyl-phenylether	19	ug/kg	U	UJ	5B
SN88	LDW-SSBDC2-A	11-6155-SN88I	SW8270D	4-Bromophenyl-phenylether	19	ug/kg	U	UJ	5B
SN88	LDW-SSBDC2-A	11-6155-SN88I	SW8270D	Pentachlorophenol	94	ug/kg	U	UJ	5B
SN88	LDW-SSBDC2-A	11-6155-SN88I	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SN88	LDW-SSBDC2-A-2	11-6156-SN88J	SW8082	Aroclor 1248	8.0	ug/kg	Y	U	22
SN88	LDW-SSBDC2-A-2	11-6156-SN88J	SW8270D	2,4-Dichlorophenol	96	ug/kg	U	UJ	5B
SN88	LDW-SSBDC2-A-2	11-6156-SN88J	SW8270D	Hexachlorocyclopentadiene	96	ug/kg	U	UJ	5B,10
SN88	LDW-SSBDC2-A-2	11-6156-SN88J	SW8270D	4-Chlorophenyl-phenylether	19	ug/kg	U	UJ	5B
SN88	LDW-SSBDC2-A-2	11-6156-SN88J	SW8270D	4-Bromophenyl-phenylether	19	ug/kg	U	UJ	5B
SN88	LDW-SSBDC2-A-2	11-6156-SN88J	SW8270D	Pentachlorophenol	96	ug/kg	U	UJ	5B
SN88	LDW-SSBDC2-A-2	11-6156-SN88J	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SN88	LDW-SSBDC2-U	11-6157-SN88K	SW8082	Aroclor 1248	7.8	ug/kg	Y	U	22
SN88	LDW-SSBDC2-U	11-6157-SN88K	SW8270D	2,4-Dichlorophenol	95	ug/kg	U	UJ	5B
SN88	LDW-SSBDC2-U	11-6157-SN88K	SW8270D	Hexachlorocyclopentadiene	95	ug/kg	U	UJ	5B,10
SN88	LDW-SSBDC2-U	11-6157-SN88K	SW8270D	4-Chlorophenyl-phenylether	19	ug/kg	U	UJ	5B
SN88	LDW-SSBDC2-U	11-6157-SN88K	SW8270D	4-Bromophenyl-phenylether	19	ug/kg	U	UJ	5B
SN88	LDW-SSBDC2-U	11-6157-SN88K	SW8270D	Pentachlorophenol	95	ug/kg	U	UJ	5B
SN88	LDW-SSBDC2-U	11-6157-SN88K	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SN88	LDW-SSBDC3-D	11-6158-SN88L	SW8082	Aroclor 1232	7.8	ug/kg	Y	U	22
SN88	LDW-SSBDC3-D	11-6158-SN88L	SW8270D	2,4-Dichlorophenol	98	ug/kg	U	UJ	5B
SN88	LDW-SSBDC3-D	11-6158-SN88L	SW8270D	4-Chloroaniline	98	ug/kg	U	UJ	8
SN88	LDW-SSBDC3-D	11-6158-SN88L	SW8270D	Hexachlorocyclopentadiene	98	ug/kg	U	R	5B,8,10
SN88	LDW-SSBDC3-D	11-6158-SN88L	SW8270D	4-Chlorophenyl-phenylether	20	ug/kg	U	UJ	5B
SN88	LDW-SSBDC3-D	11-6158-SN88L	SW8270D	4-Bromophenyl-phenylether	20	ug/kg	U	UJ	5B
SN88	LDW-SSBDC3-D	11-6158-SN88L	SW8270D	Pentachlorophenol	98	ug/kg	U	UJ	5B
SN88	LDW-SSBDC3-D	11-6158-SN88L	SW8270D	3,3'-Dichlorobenzidine	98	ug/kg	U	R	8
SN88	LDW-SSBDC3-D	11-6158-SN88L	SW8270D	Aniline	130	ug/kg	U	R	8
SN88	LDW-SSBDC3-D	11-6158-SN88L	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SN88	LDW-SSBDC3-U	11-6159-SN88M	SW8270D	2,4-Dichlorophenol	97	ug/kg	U	UJ	5B
SN88	LDW-SSBDC3-U	11-6159-SN88M	SW8270D	Hexachlorocyclopentadiene	97	ug/kg	U	UJ	5B,10
SN88	LDW-SSBDC3-U	11-6159-SN88M	SW8270D	4-Chlorophenyl-phenylether	19	ug/kg	U	UJ	5B
SN88	LDW-SSBDC3-U	11-6159-SN88M	SW8270D	4-Bromophenyl-phenylether	19	ug/kg	U	UJ	5B
SN88	LDW-SSBDC3-U	11-6159-SN88M	SW8270D	Pentachlorophenol	97	ug/kg	U	UJ	5B
SN88	LDW-SSBDC3-U	11-6159-SN88M	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SN88	LDW-SSBDC4-A	11-6160-SN88N	SW8082	Aroclor 1248	5.9	ug/kg	Y	U	22
SN88	LDW-SSBDC4-A	11-6160-SN88N	SW8270D	2,4-Dichlorophenol	95	ug/kg	U	UJ	5B
SN88	LDW-SSBDC4-A	11-6160-SN88N	SW8270D	Hexachlorocyclopentadiene	95	ug/kg	U	UJ	5B,10
SN88	LDW-SSBDC4-A	11-6160-SN88N	SW8270D	4-Chlorophenyl-phenylether	19	ug/kg	U	UJ	5B
SN88	LDW-SSBDC4-A	11-6160-SN88N	SW8270D	4-Bromophenyl-phenylether	19	ug/kg	U	UJ	5B
SN88	LDW-SSBDC4-A	11-6160-SN88N	SW8270D	Pentachlorophenol	95	ug/kg	U	UJ	5B

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SN88	LDW-SSBDC4-A	11-6160-SN88N	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SN88	LDW-SS2091-U	11-6161-SN88O	SW8270D	2,4-Dichlorophenol	96	ug/kg	U	UJ	5B
SN88	LDW-SS2091-U	11-6161-SN88O	SW8270D	Hexachlorocyclopentadiene	96	ug/kg	U	UJ	5B,10
SN88	LDW-SS2091-U	11-6161-SN88O	SW8270D	4-Chlorophenyl-phenylether	19	ug/kg	U	UJ	5B
SN88	LDW-SS2091-U	11-6161-SN88O	SW8270D	4-Bromophenyl-phenylether	19	ug/kg	U	UJ	5B
SN88	LDW-SS2091-U	11-6161-SN88O	SW8270D	Pentachlorophenol	96	ug/kg	U	UJ	5B
SN88	LDW-SS2091-U	11-6161-SN88O	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SN88	LDW-SS2147-D	11-6162-SN88P	SW8270D	2,4-Dichlorophenol	96	ug/kg	U	UJ	5B
SN88	LDW-SS2147-D	11-6162-SN88P	SW8270D	Hexachlorocyclopentadiene	96	ug/kg	U	UJ	5B,10
SN88	LDW-SS2147-D	11-6162-SN88P	SW8270D	4-Chlorophenyl-phenylether	19	ug/kg	U	UJ	5B
SN88	LDW-SS2147-D	11-6162-SN88P	SW8270D	4-Bromophenyl-phenylether	19	ug/kg	U	UJ	5B
SN88	LDW-SS2147-D	11-6162-SN88P	SW8270D	Pentachlorophenol	96	ug/kg	U	UJ	5B
SN88	LDW-SS2147-D	11-6162-SN88P	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SN88	LDW-SS2146-A	11-6163-SN88Q	SW8270D	2,4-Dichlorophenol	93	ug/kg	U	UJ	5B
SN88	LDW-SS2146-A	11-6163-SN88Q	SW8270D	Hexachlorocyclopentadiene	93	ug/kg	U	UJ	5B,10
SN88	LDW-SS2146-A	11-6163-SN88Q	SW8270D	4-Chlorophenyl-phenylether	19	ug/kg	U	UJ	5B
SN88	LDW-SS2146-A	11-6163-SN88Q	SW8270D	4-Bromophenyl-phenylether	19	ug/kg	U	UJ	5B
SN88	LDW-SS2146-A	11-6163-SN88Q	SW8270D	Pentachlorophenol	93	ug/kg	U	UJ	5B
SN88	LDW-SS2146-A	11-6163-SN88Q	SW8270DSIM	Pentachlorophenol	23	ug/kg	U	UJ	5B
SN88	LDW-SS2144-A	11-6164-SN88R	SW8270D	2,4-Dichlorophenol	91	ug/kg	U	UJ	5B
SN88	LDW-SS2144-A	11-6164-SN88R	SW8270D	Hexachlorocyclopentadiene	91	ug/kg	U	UJ	5B,10
SN88	LDW-SS2144-A	11-6164-SN88R	SW8270D	4-Chlorophenyl-phenylether	18	ug/kg	U	UJ	5B
SN88	LDW-SS2144-A	11-6164-SN88R	SW8270D	4-Bromophenyl-phenylether	18	ug/kg	U	UJ	5B
SN88	LDW-SS2144-A	11-6164-SN88R	SW8270D	Pentachlorophenol	91	ug/kg	U	UJ	5B
SN88	LDW-SS2144-A	11-6164-SN88R	SW8270DSIM	Pentachlorophenol	23	ug/kg	U	UJ	5B
SO11	LDW-SS2092-A	11-6308-SO11A	SW8270D	Hexachlorocyclopentadiene	96	ug/kg	U	UJ	5B,10
SO11	LDW-SS2092-A	11-6308-SO11A	SW8270D	Diethylphthalate	51	ug/kg	B	U	7
SO11	LDW-SS2092-A	11-6308-SO11A	SW8270D	Pentachlorophenol	96	ug/kg	U	UJ	5B
SO11	LDW-SS2092-A	11-6308-SO11A	SW8270D	bis(2-Ethylhexyl)phthalate	65	ug/kg	B	U	7
SO11	LDW-SS2092-A	11-6308-SO11A	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO11	LDW-SS2092-A	11-6308-SO11A	SW8270D SIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO11	LDW-SS2097-D	11-6309-SO11B	SW8270D	Hexachlorocyclopentadiene	97	ug/kg	U	UJ	5B,10
SO11	LDW-SS2097-D	11-6309-SO11B	SW8270D	Pentachlorophenol	97	ug/kg	U	UJ	5B
SO11	LDW-SS2097-D	11-6309-SO11B	SW8270D	Aniline	130	ug/kg	U	UJ	10
SO11	LDW-SS2097-D	11-6309-SO11B	SW8270D SIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO11	LDW-SS2097-A	11-6310-SO11C	SW8082	Aroclor 1248	24	ug/kg	Y	U	22
SO11	LDW-SS2097-A	11-6310-SO11C	SW8270D	Hexachlorocyclopentadiene	96	ug/kg	U	UJ	5B,10
SO11	LDW-SS2097-A	11-6310-SO11C	SW8270D	Pentachlorophenol	96	ug/kg	U	UJ	5B
SO11	LDW-SS2097-A	11-6310-SO11C	SW8270D	bis(2-Ethylhexyl)phthalate	73	ug/kg	B	U	7
SO11	LDW-SS2097-A	11-6310-SO11C	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO11	LDW-SS2097-A	11-6310-SO11C	SW8270D SIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO11	LDW-SS2094-D	11-6311-SO11D	SW8270D	Hexachlorocyclopentadiene	99	ug/kg	U	UJ	5B,10
SO11	LDW-SS2094-D	11-6311-SO11D	SW8270D	Pentachlorophenol	99	ug/kg	U	UJ	5B
SO11	LDW-SS2094-D	11-6311-SO11D	SW8270D	Aniline	130	ug/kg	U	UJ	10
SO11	LDW-SS2094-D	11-6311-SO11D	SW8270D SIM	Pentachlorophenol	25	ug/kg	U	UJ	5B
SO11	LDW-SS2093-D	11-6312-SO11E	SW8270D	Hexachlorocyclopentadiene	92	ug/kg	U	UJ	5B,8,10
SO11	LDW-SS2093-D	11-6312-SO11E	SW8270D	Pentachlorophenol	92	ug/kg	U	UJ	5B
SO11	LDW-SS2093-D	11-6312-SO11E	SW8270D	bis(2-Ethylhexyl)phthalate	38	ug/kg	B	U	7
SO11	LDW-SS2093-D	11-6312-SO11E	SW8270D	Aniline	120	ug/kg	U	UJ	8,10
SO11	LDW-SS2093-D	11-6312-SO11E	SW8270D SIM	Pentachlorophenol	23	ug/kg	U	UJ	5B
SO11	LDW-SSRWSD-A	11-6313-SO11F	SW8270D	Hexachlorocyclopentadiene	90	ug/kg	U	UJ	5B,10
SO11	LDW-SSRWSD-A	11-6313-SO11F	SW8270D	Pentachlorophenol	90	ug/kg	U	UJ	5B
SO11	LDW-SSRWSD-A	11-6313-SO11F	SW8270D	bis(2-Ethylhexyl)phthalate	10	ug/kg	J	U	7
SO11	LDW-SSRWSD-A	11-6313-SO11F	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO11	LDW-SSRWSD-A	11-6313-SO11F	SW8270D SIM	Pentachlorophenol	23	ug/kg	U	UJ	5B
SO11	LDW-SSRWSD-A-2	11-6314-SO11G	SW8270D	Hexachlorocyclopentadiene	97	ug/kg	U	UJ	5B,10
SO11	LDW-SSRWSD-A-2	11-6314-SO11G	SW8270D	Pentachlorophenol	97	ug/kg	U	UJ	5B
SO11	LDW-SSRWSD-A-2	11-6314-SO11G	SW8270D	bis(2-Ethylhexyl)phthalate	11	ug/kg	J	U	7
SO11	LDW-SSRWSD-A-2	11-6314-SO11G	SW8270D	Aniline	130	ug/kg	U	UJ	10

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SO11	LDW-SSRWSD-A-2	11-6314-SO11G	SW8270D SIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO11	LDW-SS2096-A	11-6315-SO11H	SW8270D	Hexachlorocyclopentadiene	94	ug/kg	U	UJ	5B,10
SO11	LDW-SS2096-A	11-6315-SO11H	SW8270D	Pentachlorophenol	94	ug/kg	U	UJ	5B
SO11	LDW-SS2096-A	11-6315-SO11H	SW8270D	bis(2-Ethylhexyl)phthalate	49	ug/kg	B	U	7
SO11	LDW-SS2096-A	11-6315-SO11H	SW8270D	Aniline	23	ug/kg	J	J	10
SO11	LDW-SS2096-A	11-6315-SO11H	SW8270D SIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO11	LDW-SS2096-U	11-6316-SO11I	SW8270D	Hexachlorocyclopentadiene	97	ug/kg	U	UJ	5B,10
SO11	LDW-SS2096-U	11-6316-SO11I	SW8270D	Pentachlorophenol	97	ug/kg	U	UJ	5B
SO11	LDW-SS2096-U	11-6316-SO11I	SW8270D	bis(2-Ethylhexyl)phthalate	22	ug/kg	B	U	7
SO11	LDW-SS2096-U	11-6316-SO11I	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO11	LDW-SS2096-U	11-6316-SO11I	SW8270D SIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO11	LDW-SS2200-D	11-6317-SO11J	SW8082	Aroclor 1248	4.9	ug/kg	Y	U	22
SO11	LDW-SS2200-D	11-6317-SO11J	SW8270D	Hexachlorocyclopentadiene	96	ug/kg	U	UJ	5B,10
SO11	LDW-SS2200-D	11-6317-SO11J	SW8270D	Pentachlorophenol	96	ug/kg	U	UJ	5B
SO11	LDW-SS2200-D	11-6317-SO11J	SW8270D	bis(2-Ethylhexyl)phthalate	68	ug/kg	B	U	7
SO11	LDW-SS2200-D	11-6317-SO11J	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO11	LDW-SS2200-D	11-6317-SO11J	SW8270D SIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO11	LDW-SS2200-A	11-6318-SO11K	SW8082	Aroclor 1248	5.8	ug/kg	Y	U	22
SO11	LDW-SS2200-A	11-6318-SO11K	SW8270D	Hexachlorocyclopentadiene	93	ug/kg	U	UJ	5B,10
SO11	LDW-SS2200-A	11-6318-SO11K	SW8270D	Pentachlorophenol	93	ug/kg	U	UJ	5B
SO11	LDW-SS2200-A	11-6318-SO11K	SW8270D	bis(2-Ethylhexyl)phthalate	42	ug/kg	B	U	7
SO11	LDW-SS2200-A	11-6318-SO11K	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO11	LDW-SS2200-A	11-6318-SO11K	SW8270D SIM	Pentachlorophenol	23	ug/kg	U	UJ	5B
SO11	LDW-SS2201-D	11-6319-SO11L	SW8270D	Hexachlorocyclopentadiene	96	ug/kg	U	UJ	5B,10
SO11	LDW-SS2201-D	11-6319-SO11L	SW8270D	Pentachlorophenol	96	ug/kg	U	UJ	5B
SO11	LDW-SS2201-D	11-6319-SO11L	SW8270D	bis(2-Ethylhexyl)phthalate	57	ug/kg	B	U	7
SO11	LDW-SS2201-D	11-6319-SO11L	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO11	LDW-SS2201-D	11-6319-SO11L	SW8270D SIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO11	LDW-SS2201-A	11-6320-SO11M	SW8082	Aroclor 1232	5.9	ug/kg	Y	U	22
SO11	LDW-SS2201-A	11-6320-SO11M	SW8270D	4-Chloroaniline	98	ug/kg	U	UJ	5B
SO11	LDW-SS2201-A	11-6320-SO11M	SW8270D	Hexachlorocyclopentadiene	98	ug/kg	U	UJ	5B,10
SO11	LDW-SS2201-A	11-6320-SO11M	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	5B
SO11	LDW-SS2201-A	11-6320-SO11M	SW8270D	bis(2-Ethylhexyl)phthalate	46	ug/kg	B	U	7
SO11	LDW-SS2201-A	11-6320-SO11M	SW8270D	Aniline	130	ug/kg	U	UJ	10
SO11	LDW-SS2201-A	11-6320-SO11M	SW8270D SIM	Butylbenzylphthalate	3.8	ug/kg	JQ	J	5B
SO11	LDW-SS2201-A	11-6320-SO11M	SW8270D SIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO11	LDW-SS2201-U	11-6321-SO11N	SW8082	Aroclor 1248	12	ug/kg	Y	U	22
SO11	LDW-SS2201-U	11-6321-SO11N	SW8270D	4-Chloroaniline	94	ug/kg	U	UJ	5B
SO11	LDW-SS2201-U	11-6321-SO11N	SW8270D	Hexachlorocyclopentadiene	94	ug/kg	U	UJ	5B,10
SO11	LDW-SS2201-U	11-6321-SO11N	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	5B
SO11	LDW-SS2201-U	11-6321-SO11N	SW8270D	Diethylphthalate	50	ug/kg	B	U	7
SO11	LDW-SS2201-U	11-6321-SO11N	SW8270D	bis(2-Ethylhexyl)phthalate	28	ug/kg	B	U	7
SO11	LDW-SS2201-U	11-6321-SO11N	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO11	LDW-SS2201-U	11-6321-SO11N	SW8270D SIM	Butylbenzylphthalate	3.4	ug/kg	JQ	J	5B
SO11	LDW-SS2201-U	11-6321-SO11N	SW8270D SIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO23	LDW-SS2246-A	11-6353-SO23A	SW8270D	2,4-Dimethylphenol	19	ug/kg	U	UJ	10
SO23	LDW-SS2246-A	11-6353-SO23A	SW8270D	Hexachlorocyclopentadiene	94	ug/kg	U	UJ	5B,10
SO23	LDW-SS2246-A	11-6353-SO23A	SW8270D	Pentachlorophenol	94	ug/kg	U	UJ	5B
SO23	LDW-SS2246-A	11-6353-SO23A	SW8270D	Fluoranthene	2700	ug/kg	E	DNR	20
SO23	LDW-SS2246-A	11-6353-SO23A	SW8270D	Pyrene	2000	ug/kg	E	DNR	20
SO23	LDW-SS2246-A	11-6353-SO23A	SW8270D	Butylbenzylphthalate	19	ug/kg	Q	J	5B
SO23	LDW-SS2246-A	11-6353-SO23A	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO23	LDW-SS2246-A	11-6353-SO23A	SW8270DSIM	Butylbenzylphthalate	23	ug/kg	Q	J	5B
SO23	LDW-SS2246-A	11-6353-SO23A	SW8270DSIM	2,4-Dimethylphenol	4.1	ug/kg	J	J	10
SO23	LDW-SS2246-A	11-6353-SO23A	SW8270DSIM	Benzyl Alcohol	130	ug/kg	Q	J	5B
SO23	LDW-SS2246-A	11-6353-SO23A	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Phenol	33	ug/kg	J	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	2-Chlorophenol	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	1,3-Dichlorobenzene	94	ug/kg	U	DNR	11

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	1,4-Dichlorobenzene	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Benzyl Alcohol	110	ug/kg	Q	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	1,2-Dichlorobenzene	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	2-Methylphenol	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	2,2'-Oxybis(1-Chloropropane)	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	4-Methylphenol	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	N-Nitroso-Di-N-Propylamine	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Hexachloroethane	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Nitrobenzene	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Isophorone	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	2-Nitrophenol	470	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	2,4-Dimethylphenol	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Benzoic Acid	240	ug/kg	J	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	bis(2-Chloroethoxy) Methane	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	2,4-Dichlorophenol	470	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	1,2,4-Trichlorobenzene	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Naphthalene	56	ug/kg	J	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	4-Chloroaniline	470	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Hexachlorobutadiene	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	4-Chloro-3-methylphenol	470	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	2-Methylnaphthalene	47	ug/kg	J	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Hexachlorocyclopentadiene	470	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	2,4,6-Trichlorophenol	470	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	2,4,5-Trichlorophenol	470	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	2-Chloronaphthalene	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	2-Nitroaniline	470	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Dimethylphthalate	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Acenaphthylene	42	ug/kg	J	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	3-Nitroaniline	470	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Acenaphthene	52	ug/kg	J	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	2,4-Dinitrophenol	1000	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	4-Nitrophenol	470	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Dibenzofuran	71	ug/kg	J	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	2,6-Dinitrotoluene	470	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	2,4-Dinitrotoluene	470	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Diethylphthalate	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	4-Chlorophenyl-phenylether	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Fluorene	56	ug/kg	J	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	4-Nitroaniline	470	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	4,6-Dinitro-2-Methylphenol	940	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	N-Nitrosodiphenylamine	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	4-Bromophenyl-phenylether	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Hexachlorobenzene	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Pentachlorophenol	470	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Phenanthrene	1200	ug/kg		DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Carbazole	170	ug/kg		DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Anthracene	75	ug/kg	J	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Di-n-Butylphthalate	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Butylbenzylphthalate	38	ug/kg	JQ	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	3,3'-Dichlorobenzidine	470	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Benzo(a)anthracene	240	ug/kg		DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	bis(2-Ethylhexyl)phthalate	230	ug/kg	B	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Chrysene	820	ug/kg		DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Di-n-Octyl phthalate	94	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Benzo(a)pyrene	230	ug/kg		DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Indeno(1,2,3-cd)pyrene	150	ug/kg		DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Dibenz(a,h)anthracene	47	ug/kg	J	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Benzo(g,h,i)perylene	160	ug/kg		DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Aniline	610	ug/kg	U	DNR	11

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	N-Nitrosodimethylamine	1200	ug/kg	U	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	1-Methylnaphthalene	28	ug/kg	J	DNR	11
SO23	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Total Benzofluoranthenes	910	ug/kg		DNR	11
SO23	LDW-SS2246-U	11-6354-SO23B	SW8270D	2,4-Dimethylphenol	19	ug/kg	U	UJ	10
SO23	LDW-SS2246-U	11-6354-SO23B	SW8270D	Hexachlorocyclopentadiene	94	ug/kg	U	UJ	5B,10
SO23	LDW-SS2246-U	11-6354-SO23B	SW8270D	Pentachlorophenol	94	ug/kg	U	UJ	5B
SO23	LDW-SS2246-U	11-6354-SO23B	SW8270D	Butylbenzylphthalate	17	ug/kg	JQ	J	5B
SO23	LDW-SS2246-U	11-6354-SO23B	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO23	LDW-SS2246-U	11-6354-SO23B	SW8270DSIM	Butylbenzylphthalate	14	ug/kg	Q	J	5B
SO23	LDW-SS2246-U	11-6354-SO23B	SW8270DSIM	2,4-Dimethylphenol	3.2	ug/kg	J	J	10
SO23	LDW-SS2246-U	11-6354-SO23B	SW8270DSIM	Benzyl Alcohol	130	ug/kg	Q	J	5B
SO23	LDW-SS2246-U	11-6354-SO23B	SW8270DSIM	Pentachlorophenol	23	ug/kg	U	UJ	5B
SO23	LDW-SS2246-U-2	11-6355-SO23C	SW8270D	2,4-Dimethylphenol	19	ug/kg	U	UJ	10
SO23	LDW-SS2246-U-2	11-6355-SO23C	SW8270D	Hexachlorocyclopentadiene	94	ug/kg	U	UJ	5B,10
SO23	LDW-SS2246-U-2	11-6355-SO23C	SW8270D	Pentachlorophenol	94	ug/kg	U	UJ	5B
SO23	LDW-SS2246-U-2	11-6355-SO23C	SW8270D	Butylbenzylphthalate	23	ug/kg	Q	J	5B
SO23	LDW-SS2246-U-2	11-6355-SO23C	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO23	LDW-SS2247-A	11-6356-SO23D	SW8270D	2,4-Dimethylphenol	19	ug/kg	U	UJ	10
SO23	LDW-SS2247-A	11-6356-SO23D	SW8270D	Hexachlorocyclopentadiene	94	ug/kg	U	UJ	5B,10
SO23	LDW-SS2247-A	11-6356-SO23D	SW8270D	Pentachlorophenol	94	ug/kg	U	UJ	5B
SO23	LDW-SS2247-A	11-6356-SO23D	SW8270D	Butylbenzylphthalate	15	ug/kg	JQ	J	5B
SO23	LDW-SS2247-A	11-6356-SO23D	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO23	LDW-SS2247-A	11-6356-SO23D	SW8270DSIM	Butylbenzylphthalate	14	ug/kg	Q	J	5B
SO23	LDW-SS2247-A	11-6356-SO23D	SW8270DSIM	2,4-Dimethylphenol	2.9	ug/kg	J	J	10
SO23	LDW-SS2247-A	11-6356-SO23D	SW8270DSIM	Benzyl Alcohol	180	ug/kg	Q	J	5B
SO23	LDW-SS2247-A	11-6356-SO23D	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO23	LDW-SS2247-U	11-6357-SO23E	SW8270D	2,4-Dimethylphenol	19	ug/kg	U	UJ	10
SO23	LDW-SS2247-U	11-6357-SO23E	SW8270D	4-Chloroaniline	96	ug/kg	U	R	8
SO23	LDW-SS2247-U	11-6357-SO23E	SW8270D	Hexachlorocyclopentadiene	96	ug/kg	U	R	5B,8,10
SO23	LDW-SS2247-U	11-6357-SO23E	SW8270D	3-Nitroaniline	96	ug/kg	U	R	8
SO23	LDW-SS2247-U	11-6357-SO23E	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	8
SO23	LDW-SS2247-U	11-6357-SO23E	SW8270D	Pentachlorophenol	96	ug/kg	U	UJ	5B
SO23	LDW-SS2247-U	11-6357-SO23E	SW8270D	Butylbenzylphthalate	16	ug/kg	JQ	J	5B
SO23	LDW-SS2247-U	11-6357-SO23E	SW8270D	3,3'-Dichlorobenzidine	96	ug/kg	U	R	8
SO23	LDW-SS2247-U	11-6357-SO23E	SW8270D	Chrysene	500	ug/kg		J	8
SO23	LDW-SS2247-U	11-6357-SO23E	SW8270D	Aniline	120	ug/kg	U	R	8,10
SO23	LDW-SS2247-U	11-6357-SO23E	SW8270DSIM	Butylbenzylphthalate	16	ug/kg	Q	J	5B
SO23	LDW-SS2247-U	11-6357-SO23E	SW8270DSIM	2,4-Dimethylphenol	4.2	ug/kg	J	J	10
SO23	LDW-SS2247-U	11-6357-SO23E	SW8270DSIM	Benzyl Alcohol	240	ug/kg	Q	J	5B
SO23	LDW-SS2247-U	11-6357-SO23E	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO23	LDW-SS2244-D	11-6358-SO23F	SW8270D	2,4-Dimethylphenol	19	ug/kg	U	UJ	10
SO23	LDW-SS2244-D	11-6358-SO23F	SW8270D	Hexachlorocyclopentadiene	97	ug/kg	U	UJ	5B,10
SO23	LDW-SS2244-D	11-6358-SO23F	SW8270D	Pentachlorophenol	97	ug/kg	U	UJ	5B
SO23	LDW-SS2244-D	11-6358-SO23F	SW8270D	Phenanthrene	5000	ug/kg	E	DNR	20
SO23	LDW-SS2244-D	11-6358-SO23F	SW8270D	Fluoranthene	2500	ug/kg	E	DNR	20
SO23	LDW-SS2244-D	11-6358-SO23F	SW8270D	Butylbenzylphthalate	14	ug/kg	JQ	J	5B
SO23	LDW-SS2244-D	11-6358-SO23F	SW8270D	Aniline	130	ug/kg	U	UJ	10
SO23	LDW-SS2244-D	11-6358-SO23F	SW8270DSIM	Butylbenzylphthalate	12	ug/kg	Q	J	5B
SO23	LDW-SS2244-D	11-6358-SO23F	SW8270DSIM	2,4-Dimethylphenol	3.6	ug/kg	J	J	10
SO23	LDW-SS2244-D	11-6358-SO23F	SW8270DSIM	Benzyl Alcohol	370	ug/kg	Q	J	5B
SO23	LDW-SS2244-D	11-6358-SO23F	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Phenol	53	ug/kg	J	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Bis-(2-Chloroethyl) Ether	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	2-Chlorophenol	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	1,3-Dichlorobenzene	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	1,4-Dichlorobenzene	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Benzyl Alcohol	340	ug/kg	Q	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	1,2-Dichlorobenzene	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	2-Methylphenol	97	ug/kg	U	DNR	11

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	2,2'-Oxybis(1-Chloropropane)	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	4-Methylphenol	34	ug/kg	J	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	N-Nitroso-Di-N-Propylamine	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Hexachloroethane	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Nitrobenzene	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Isophorone	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	2-Nitrophenol	480	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	2,4-Dimethylphenol	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Benzoic Acid	350	ug/kg	J	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	bis(2-Chloroethoxy) Methane	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	2,4-Dichlorophenol	480	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	1,2,4-Trichlorobenzene	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Naphthalene	78	ug/kg	J	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	4-Chloroaniline	480	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Hexachlorobutadiene	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	4-Chloro-3-methylphenol	480	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	2-Methylnaphthalene	210	ug/kg		DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Hexachlorocyclopentadiene	480	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	2,4,6-Trichlorophenol	480	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	2,4,5-Trichlorophenol	480	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	2-Chloronaphthalene	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	2-Nitroaniline	480	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Dimethylphthalate	44	ug/kg	J	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Acenaphthylene	39	ug/kg	J	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	3-Nitroaniline	480	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Acenaphthene	960	ug/kg		DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	2,4-Dinitrophenol	1000	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	4-Nitrophenol	480	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Dibenzofuran	620	ug/kg		DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	2,6-Dinitrotoluene	480	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	2,4-Dinitrotoluene	480	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Diethylphthalate	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	4-Chlorophenyl-phenylether	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Fluorene	1200	ug/kg		DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	4-Nitroaniline	480	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	4,6-Dinitro-2-Methylphenol	970	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	N-Nitrosodiphenylamine	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	4-Bromophenyl-phenylether	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Hexachlorobenzene	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Pentachlorophenol	480	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Carbazole	510	ug/kg		DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Anthracene	1500	ug/kg		DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Di-n-Butylphthalate	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Pyrene	2300	ug/kg		DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Butylbenzylphthalate	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	3,3'-Dichlorobenzidine	480	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Benzo(a)anthracene	370	ug/kg		DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	bis(2-Ethylhexyl)phthalate	130	ug/kg	B	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Chrysene	460	ug/kg		DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Di-n-Octyl phthalate	97	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Benzo(a)pyrene	150	ug/kg		DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Indeno(1,2,3-cd)pyrene	68	ug/kg	J	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Dibenz(a,h)anthracene	24	ug/kg	J	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Benzo(g,h,i)perylene	78	ug/kg	J	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Aniline	630	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	N-Nitrosodimethylamine	1300	ug/kg	U	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	1-Methylnaphthalene	87	ug/kg	J	DNR	11
SO23	LDW-SS2244-D	11-6358-SO23FDL	SW8270D	Total Benzofluoranthenes	370	ug/kg		DNR	11
SO23	LDW-SS2244-A	11-6359-SO23G	SW8270D	2,4-Dimethylphenol	19	ug/kg	U	UJ	10

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SO23	LDW-SS2244-A	11-6359-SO23G	SW8270D	Hexachlorocyclopentadiene	96	ug/kg	U	UJ	5B,10
SO23	LDW-SS2244-A	11-6359-SO23G	SW8270D	Pentachlorophenol	96	ug/kg	U	UJ	5B
SO23	LDW-SS2244-A	11-6359-SO23G	SW8270D	Butylbenzylphthalate	20	ug/kg	Q	J	5B
SO23	LDW-SS2244-A	11-6359-SO23G	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO23	LDW-SS2244-A	11-6359-SO23G	SW8270DSIM	Butylbenzylphthalate	19	ug/kg	Q	J	5B
SO23	LDW-SS2244-A	11-6359-SO23G	SW8270DSIM	2,4-Dimethylphenol	2.5	ug/kg	J	J	10
SO23	LDW-SS2244-A	11-6359-SO23G	SW8270DSIM	Benzyl Alcohol	280	ug/kg	Q	J	5B
SO23	LDW-SS2244-A	11-6359-SO23G	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO23	LDW-SS2223-A	11-6360-SO23H	SW8270D	2,4-Dimethylphenol	18	ug/kg	U	UJ	10
SO23	LDW-SS2223-A	11-6360-SO23H	SW8270D	Hexachlorocyclopentadiene	92	ug/kg	U	UJ	5B,10
SO23	LDW-SS2223-A	11-6360-SO23H	SW8270D	Pentachlorophenol	92	ug/kg	U	UJ	5B
SO23	LDW-SS2223-A	11-6360-SO23H	SW8270D	Butylbenzylphthalate	44	ug/kg	Q	J	5B
SO23	LDW-SS2223-A	11-6360-SO23H	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO23	LDW-SS2223-A	11-6360-SO23H	SW8270DSIM	Butylbenzylphthalate	50	ug/kg	Q	J	5B
SO23	LDW-SS2223-A	11-6360-SO23H	SW8270DSIM	2,4-Dimethylphenol	4.6	ug/kg	U	UJ	10
SO23	LDW-SS2223-A	11-6360-SO23H	SW8270DSIM	Benzyl Alcohol	120	ug/kg	Q	J	5B
SO23	LDW-SS2223-A	11-6360-SO23H	SW8270DSIM	Pentachlorophenol	23	ug/kg	U	UJ	5B
SO23	LDW-SS2010-D	11-6361-SO23I	SW8270D	2,4-Dimethylphenol	20	ug/kg	U	UJ	10
SO23	LDW-SS2010-D	11-6361-SO23I	SW8270D	Hexachlorocyclopentadiene	99	ug/kg	U	UJ	5B,10
SO23	LDW-SS2010-D	11-6361-SO23I	SW8270D	Pentachlorophenol	99	ug/kg	U	UJ	5B
SO23	LDW-SS2010-D	11-6361-SO23I	SW8270D	Butylbenzylphthalate	14	ug/kg	JQ	J	5B
SO23	LDW-SS2010-D	11-6361-SO23I	SW8270D	Aniline	130	ug/kg	U	UJ	10
SO23	LDW-SS2010-D	11-6361-SO23I	SW8270DSIM	Butylbenzylphthalate	11	ug/kg	Q	J	5B
SO23	LDW-SS2010-D	11-6361-SO23I	SW8270DSIM	2,4-Dimethylphenol	4.9	ug/kg	U	UJ	10
SO23	LDW-SS2010-D	11-6361-SO23I	SW8270DSIM	Benzyl Alcohol	130	ug/kg	Q	J	5B
SO23	LDW-SS2010-D	11-6361-SO23I	SW8270DSIM	Pentachlorophenol	25	ug/kg	U	UJ	5B
SO23	LDW-SS2010-A	11-6362-SO23J	SW8270D	2,4-Dimethylphenol	19	ug/kg	U	UJ	10
SO23	LDW-SS2010-A	11-6362-SO23J	SW8270D	Hexachlorocyclopentadiene	96	ug/kg	U	UJ	5B,10
SO23	LDW-SS2010-A	11-6362-SO23J	SW8270D	Pentachlorophenol	96	ug/kg	U	UJ	5B
SO23	LDW-SS2010-A	11-6362-SO23J	SW8270D	Butylbenzylphthalate	14	ug/kg	JQ	J	5B
SO23	LDW-SS2010-A	11-6362-SO23J	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO23	LDW-SS2010-A	11-6362-SO23J	SW8270DSIM	Butylbenzylphthalate	14	ug/kg	Q	J	5B
SO23	LDW-SS2010-A	11-6362-SO23J	SW8270DSIM	2,4-Dimethylphenol	2.7	ug/kg	J	J	10
SO23	LDW-SS2010-A	11-6362-SO23J	SW8270DSIM	Benzyl Alcohol	110	ug/kg	Q	J	5B
SO23	LDW-SS2010-A	11-6362-SO23J	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO23	LDW-SS2010-U	11-6363-SO23K	SW8270D	2,4-Dimethylphenol	19	ug/kg	U	UJ	10
SO23	LDW-SS2010-U	11-6363-SO23K	SW8270D	Hexachlorocyclopentadiene	96	ug/kg	U	UJ	5B,10
SO23	LDW-SS2010-U	11-6363-SO23K	SW8270D	Pentachlorophenol	96	ug/kg	U	UJ	5B
SO23	LDW-SS2010-U	11-6363-SO23K	SW8270D	Butylbenzylphthalate	15	ug/kg	JQ	J	5B
SO23	LDW-SS2010-U	11-6363-SO23K	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO23	LDW-SS2010-U	11-6363-SO23K	SW8270DSIM	Butylbenzylphthalate	13	ug/kg	Q	J	5B
SO23	LDW-SS2010-U	11-6363-SO23K	SW8270DSIM	2,4-Dimethylphenol	4.8	ug/kg	U	UJ	10
SO23	LDW-SS2010-U	11-6363-SO23K	SW8270DSIM	Benzyl Alcohol	100	ug/kg	Q	J	5B
SO23	LDW-SS2010-U	11-6363-SO23K	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO23	LDW-SS2011-D	11-6364-SO23L	SW8270D	2,4-Dimethylphenol	18	ug/kg	U	UJ	10
SO23	LDW-SS2011-D	11-6364-SO23L	SW8270D	Hexachlorocyclopentadiene	92	ug/kg	U	UJ	5B,10
SO23	LDW-SS2011-D	11-6364-SO23L	SW8270D	Fluorene	2200	ug/kg	E	DNR	20
SO23	LDW-SS2011-D	11-6364-SO23L	SW8270D	Pentachlorophenol	92	ug/kg	U	UJ	5B
SO23	LDW-SS2011-D	11-6364-SO23L	SW8270D	Phenanthrene	7600	ug/kg	ES	DNR	20
SO23	LDW-SS2011-D	11-6364-SO23L	SW8270D	Anthracene	3900	ug/kg	E	DNR	20
SO23	LDW-SS2011-D	11-6364-SO23L	SW8270D	Fluoranthene	8000	ug/kg	ES	DNR	20
SO23	LDW-SS2011-D	11-6364-SO23L	SW8270D	Pyrene	7900	ug/kg	ES	DNR	20
SO23	LDW-SS2011-D	11-6364-SO23L	SW8270D	Butylbenzylphthalate	8.3	ug/kg	JQ	J	5B
SO23	LDW-SS2011-D	11-6364-SO23L	SW8270D	Benzo(a)anthracene	4500	ug/kg	E	DNR	20
SO23	LDW-SS2011-D	11-6364-SO23L	SW8270D	bis(2-Ethylhexyl)phthalate	93	ug/kg	B	U	7
SO23	LDW-SS2011-D	11-6364-SO23L	SW8270D	Chrysene	5000	ug/kg	E	DNR	20
SO23	LDW-SS2011-D	11-6364-SO23L	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO23	LDW-SS2011-D	11-6364-SO23L	SW8270D	Total Benzofluoranthenes	3900	ug/kg	E	DNR	20
SO23	LDW-SS2011-D	11-6364-SO23L	SW8270DSIM	Butylbenzylphthalate	8.5	ug/kg	Q	J	5B

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SO23	LDW-SS2011-D	11-6364-SO23L	SW8270DSIM	2,4-Dimethylphenol	4.6	ug/kg	U	UJ	10
SO23	LDW-SS2011-D	11-6364-SO23L	SW8270DSIM	Pentachlorophenol	23	ug/kg	U	UJ	5B
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Phenol	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Bis-(2-Chloroethyl) Ether	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	2-Chlorophenol	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	1,3-Dichlorobenzene	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	1,4-Dichlorobenzene	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Benzyl Alcohol	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	1,2-Dichlorobenzene	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	2-Methylphenol	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	2,2'-Oxybis(1-Chloropropane)	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	4-Methylphenol	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	N-Nitroso-Di-N-Propylamine	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Hexachloroethane	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Nitrobenzene	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Isophorone	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	2-Nitrophenol	1800	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	2,4-Dimethylphenol	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Benzoic Acid	3700	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	bis(2-Chloroethoxy) Methane	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	2,4-Dichlorophenol	1800	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	1,2,4-Trichlorobenzene	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Naphthalene	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	4-Chloroaniline	1800	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Hexachlorobutadiene	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	4-Chloro-3-methylphenol	1800	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	2-Methylnaphthalene	150	ug/kg	J	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Hexachlorocyclopentadiene	1800	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	2,4,6-Trichlorophenol	1800	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	2,4,5-Trichlorophenol	1800	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	2-Chloronaphthalene	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	2-Nitroaniline	1800	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Dimethylphthalate	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Acenaphthylene	130	ug/kg	J	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	3-Nitroaniline	1800	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Acenaphthene	1400	ug/kg		DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	2,4-Dinitrophenol	3900	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	4-Nitrophenol	1800	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Dibenzofuran	640	ug/kg		DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	2,6-Dinitrotoluene	1800	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	2,4-Dinitrotoluene	1800	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Diethylphthalate	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	4-Chlorophenyl-phenylether	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	4-Nitroaniline	1800	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	4,6-Dinitro-2-Methylphenol	3700	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	N-Nitrosodiphenylamine	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	4-Bromophenyl-phenylether	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Hexachlorobenzene	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Pentachlorophenol	1800	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Carbazole	990	ug/kg		DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Di-n-Butylphthalate	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Butylbenzylphthalate	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	3,3'-Dichlorobenzidine	1800	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	bis(2-Ethylhexyl)phthalate	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Di-n-Octyl phthalate	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Benzo(a)pyrene	1600	ug/kg		DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Indeno(1,2,3-cd)pyrene	480	ug/kg		DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Dibenz(a,h)anthracene	220	ug/kg	J	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Benzo(g,h,i)perylene	420	ug/kg		DNR	11

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	Aniline	2400	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	N-Nitrosodimethylamine	4800	ug/kg	U	DNR	11
SO23	LDW-SS2011-D	11-6364-SO23LDL	SW8270D	1-Methylnaphthalene	370	ug/kg	U	DNR	11
SO23	LDW-SS2011-A	11-6365-SO23M	SW8270D	2,4-Dimethylphenol	19	ug/kg	U	UJ	10
SO23	LDW-SS2011-A	11-6365-SO23M	SW8270D	Hexachlorocyclopentadiene	96	ug/kg	U	UJ	5B,10
SO23	LDW-SS2011-A	11-6365-SO23M	SW8270D	Pentachlorophenol	96	ug/kg	U	UJ	5B
SO23	LDW-SS2011-A	11-6365-SO23M	SW8270D	Butylbenzylphthalate	21	ug/kg	Q	J	5B
SO23	LDW-SS2011-A	11-6365-SO23M	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO23	LDW-SS2011-A	11-6365-SO23M	SW8270DSIM	Butylbenzylphthalate	21	ug/kg	Q	J	5B
SO23	LDW-SS2011-A	11-6365-SO23M	SW8270DSIM	2,4-Dimethylphenol	4.8	ug/kg	U	UJ	10
SO23	LDW-SS2011-A	11-6365-SO23M	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO23	LDW-SS6146-A	11-6366-SO23N	SW8270D	2,4-Dimethylphenol	19	ug/kg	U	UJ	10
SO23	LDW-SS6146-A	11-6366-SO23N	SW8270D	Hexachlorocyclopentadiene	94	ug/kg	U	UJ	5B,10
SO23	LDW-SS6146-A	11-6366-SO23N	SW8270D	Pentachlorophenol	94	ug/kg	U	UJ	5B
SO23	LDW-SS6146-A	11-6366-SO23N	SW8270D	Butylbenzylphthalate	8.4	ug/kg	JQ	J	5B
SO23	LDW-SS6146-A	11-6366-SO23N	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO23	LDW-SS6146-A	11-6366-SO23N	SW8270DSIM	Butylbenzylphthalate	8.0	ug/kg	Q	J	5B
SO23	LDW-SS6146-A	11-6366-SO23N	SW8270DSIM	2,4-Dimethylphenol	4.7	ug/kg	U	UJ	10
SO23	LDW-SS6146-A	11-6366-SO23N	SW8270DSIM	Pentachlorophenol	23	ug/kg	U	UJ	5B
SO23	LDW-SS6146-U	11-6367-SO23O	SW8270D	2,4-Dimethylphenol	20	ug/kg	U	UJ	10
SO23	LDW-SS6146-U	11-6367-SO23O	SW8270D	Hexachlorocyclopentadiene	98	ug/kg	U	UJ	5B,10
SO23	LDW-SS6146-U	11-6367-SO23O	SW8270D	Pentachlorophenol	98	ug/kg	U	UJ	5B
SO23	LDW-SS6146-U	11-6367-SO23O	SW8270D	Butylbenzylphthalate	11	ug/kg	JQ	J	5B
SO23	LDW-SS6146-U	11-6367-SO23O	SW8270D	bis(2-Ethylhexyl)phthalate	91	ug/kg	B	U	7
SO23	LDW-SS6146-U	11-6367-SO23O	SW8270D	Aniline	130	ug/kg	U	UJ	10
SO23	LDW-SS6146-U	11-6367-SO23O	SW8270DSIM	Butylbenzylphthalate	12	ug/kg	Q	J	5B
SO23	LDW-SS6146-U	11-6367-SO23O	SW8270DSIM	2,4-Dimethylphenol	4.9	ug/kg	U	UJ	10
SO23	LDW-SS6146-U	11-6367-SO23O	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO23	LDW-SS2080-A	11-6368-SO23P	SW8270D	2,4-Dimethylphenol	20	ug/kg	U	UJ	10
SO23	LDW-SS2080-A	11-6368-SO23P	SW8270D	Hexachlorocyclopentadiene	98	ug/kg	U	UJ	5B,10
SO23	LDW-SS2080-A	11-6368-SO23P	SW8270D	Pentachlorophenol	98	ug/kg	U	UJ	5B
SO23	LDW-SS2080-A	11-6368-SO23P	SW8270D	Butylbenzylphthalate	38	ug/kg	Q	J	5B
SO23	LDW-SS2080-A	11-6368-SO23P	SW8270D	Aniline	130	ug/kg	U	UJ	10
SO23	LDW-SS2080-A	11-6368-SO23P	SW8270DSIM	Dimethylphthalate	940	ug/kg	E	J	20
SO23	LDW-SS2080-A	11-6368-SO23P	SW8270DSIM	Butylbenzylphthalate	33	ug/kg	Q	J	5B
SO23	LDW-SS2080-A	11-6368-SO23P	SW8270DSIM	2,4-Dimethylphenol	4.9	ug/kg	U	UJ	10
SO23	LDW-SS2080-A	11-6368-SO23P	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO23	LDW-SS2078-U	11-6369-SO23Q	SW8270D	2,4-Dimethylphenol	19	ug/kg	U	UJ	10
SO23	LDW-SS2078-U	11-6369-SO23Q	SW8270D	Hexachlorocyclopentadiene	96	ug/kg	U	UJ	5B,10
SO23	LDW-SS2078-U	11-6369-SO23Q	SW8270D	Pentachlorophenol	96	ug/kg	U	UJ	5B
SO23	LDW-SS2078-U	11-6369-SO23Q	SW8270D	Butylbenzylphthalate	14	ug/kg	JQ	J	5B
SO23	LDW-SS2078-U	11-6369-SO23Q	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO23	LDW-SS2078-U	11-6369-SO23Q	SW8270DSIM	Butylbenzylphthalate	15	ug/kg	Q	J	5B
SO23	LDW-SS2078-U	11-6369-SO23Q	SW8270DSIM	2,4-Dimethylphenol	4.8	ug/kg	U	UJ	10
SO23	LDW-SS2078-U	11-6369-SO23Q	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO23	LDW-SS2078-A	11-6370-SO23R	SW8270D	2,4-Dimethylphenol	19	ug/kg	U	UJ	10
SO23	LDW-SS2078-A	11-6370-SO23R	SW8270D	Hexachlorocyclopentadiene	97	ug/kg	U	UJ	5B,10
SO23	LDW-SS2078-A	11-6370-SO23R	SW8270D	Pentachlorophenol	97	ug/kg	U	UJ	5B
SO23	LDW-SS2078-A	11-6370-SO23R	SW8270D	Butylbenzylphthalate	20	ug/kg	Q	J	5B
SO23	LDW-SS2078-A	11-6370-SO23R	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO23	LDW-SS2078-A	11-6370-SO23R	SW8270DSIM	Butylbenzylphthalate	17	ug/kg	Q	J	5B
SO23	LDW-SS2078-A	11-6370-SO23R	SW8270DSIM	2,4-Dimethylphenol	4.8	ug/kg	U	UJ	10
SO23	LDW-SS2078-A	11-6370-SO23R	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO23	LDW-SS2078-D	11-6371-SO23S	SW8270D	2,4-Dimethylphenol	19	ug/kg	U	UJ	10
SO23	LDW-SS2078-D	11-6371-SO23S	SW8270D	Hexachlorocyclopentadiene	95	ug/kg	U	UJ	5B,10
SO23	LDW-SS2078-D	11-6371-SO23S	SW8270D	Pentachlorophenol	95	ug/kg	U	UJ	5B
SO23	LDW-SS2078-D	11-6371-SO23S	SW8270D	Butylbenzylphthalate	19	ug/kg	Q	J	5B
SO23	LDW-SS2078-D	11-6371-SO23S	SW8270D	Aniline	120	ug/kg	U	UJ	10
SO23	LDW-SS2078-D	11-6371-SO23S	SW8270DSIM	Butylbenzylphthalate	16	ug/kg	Q	J	5B

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SO23	LDW-SS2078-D	11-6371-SO23S	SW8270DSIM	2,4-Dimethylphenol	4.7	ug/kg	U	UJ	10
SO23	LDW-SS2078-D	11-6371-SO23S	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SO80	LDW-SSSP2-A	11-6698-SO80A	SW8270D	3-Nitroaniline	80	ug/kg	U	UJ	5B
SO80	LDW-SSSP2-A	11-6698-SO80A	SW8270D	2,4-Dinitrophenol	170	ug/kg	U	UJ	5B
SO80	LDW-SSSP2-A	11-6698-SO80A	SW8270D	4-Nitroaniline	80	ug/kg	U	UJ	5B
SO80	LDW-SSSP2-A	11-6698-SO80A	SW8270DSIM	Butylbenzylphthalate	6.7	ug/kg	Q	J	5B
SO80	LDW-SSSP2-U	11-6699-SO80B	SW8270D	3-Nitroaniline	80	ug/kg	U	UJ	5B
SO80	LDW-SSSP2-U	11-6699-SO80B	SW8270D	2,4-Dinitrophenol	170	ug/kg	U	UJ	5B
SO80	LDW-SSSP2-U	11-6699-SO80B	SW8270D	4-Nitroaniline	80	ug/kg	U	UJ	5B
SO80	LDW-SSSP2-U	11-6699-SO80B	SW8270DSIM	Butylbenzylphthalate	11	ug/kg	Q	J	5B
SO80	LDW-SSSP1-D	11-6700-SO80C	SW8270D	Hexachlorocyclopentadiene	83	ug/kg	U	UJ	8
SO80	LDW-SSSP1-D	11-6700-SO80C	SW8270D	3-Nitroaniline	83	ug/kg	U	UJ	5B
SO80	LDW-SSSP1-D	11-6700-SO80C	SW8270D	2,4-Dinitrophenol	180	ug/kg	U	UJ	5B
SO80	LDW-SSSP1-D	11-6700-SO80C	SW8270D	4-Nitroaniline	83	ug/kg	U	UJ	5B
SO80	LDW-SSSP1-D	11-6700-SO80C	SW8270DSIM	Butylbenzylphthalate	14	ug/kg	Q	J	5B
SO80	LDW-SSSP1-A	11-6701-SO80D	SW8270D	3-Nitroaniline	77	ug/kg	U	UJ	5B
SO80	LDW-SSSP1-A	11-6701-SO80D	SW8270D	2,4-Dinitrophenol	160	ug/kg	U	UJ	5B
SO80	LDW-SSSP1-A	11-6701-SO80D	SW8270D	4-Nitroaniline	77	ug/kg	U	UJ	5B
SO80	LDW-SSSP1-A	11-6701-SO80D	SW8270DSIM	Butylbenzylphthalate	4.2	ug/kg	Q	J	5B
SO80	LDW-SSSP1-U	11-6702-SO80E	SW8270D	3-Nitroaniline	80	ug/kg	U	UJ	5B
SO80	LDW-SSSP1-U	11-6702-SO80E	SW8270D	2,4-Dinitrophenol	170	ug/kg	U	UJ	5B
SO80	LDW-SSSP1-U	11-6702-SO80E	SW8270D	4-Nitroaniline	80	ug/kg	U	UJ	5B
SO80	LDW-SSSP1-U	11-6702-SO80E	SW8270DSIM	Butylbenzylphthalate	6.8	ug/kg	Q	J	5B
SO80	LDW-SS2021-U	11-6703-SO80F	SW8270D	3-Nitroaniline	78	ug/kg	U	UJ	5B
SO80	LDW-SS2021-U	11-6703-SO80F	SW8270D	2,4-Dinitrophenol	170	ug/kg	U	UJ	5B
SO80	LDW-SS2021-U	11-6703-SO80F	SW8270D	4-Nitroaniline	78	ug/kg	U	UJ	5B
SO80	LDW-SS2021-U	11-6703-SO80F	SW8270DSIM	Butylbenzylphthalate	19	ug/kg	Q	J	5B
SO80	LDW-SS2021-A	11-6704-SO80G	SW8270D	3-Nitroaniline	83	ug/kg	U	UJ	5B
SO80	LDW-SS2021-A	11-6704-SO80G	SW8270D	2,4-Dinitrophenol	180	ug/kg	U	UJ	5B
SO80	LDW-SS2021-A	11-6704-SO80G	SW8270D	4-Nitroaniline	83	ug/kg	U	UJ	5B
SO80	LDW-SS2021-A	11-6704-SO80G	SW8270DSIM	Butylbenzylphthalate	6.5	ug/kg	Q	J	5B
SO80	LDW-SS2021-A	11-6704-SO80G	SW8270DSIM	Pentachlorophenol	11	ug/kg	J	J	5B
SO80	LDW-SS2021-D	11-6705-SO80H	SW8270D	3-Nitroaniline	79	ug/kg	U	UJ	5B
SO80	LDW-SS2021-D	11-6705-SO80H	SW8270D	2,4-Dinitrophenol	170	ug/kg	U	UJ	5B
SO80	LDW-SS2021-D	11-6705-SO80H	SW8270D	4-Nitroaniline	79	ug/kg	U	UJ	5B
SO80	LDW-SS2021-D	11-6705-SO80H	SW8270DSIM	Butylbenzylphthalate	14	ug/kg	Q	J	5B
SO80	LDW-SS5002-A	11-6706-SO80I	SW8270D	3-Nitroaniline	80	ug/kg	U	UJ	5B
SO80	LDW-SS5002-A	11-6706-SO80I	SW8270D	2,4-Dinitrophenol	170	ug/kg	U	UJ	5B
SO80	LDW-SS5002-A	11-6706-SO80I	SW8270D	4-Nitroaniline	80	ug/kg	U	UJ	5B
SO80	LDW-SS5002-A	11-6706-SO80I	SW8270DSIM	Butylbenzylphthalate	15	ug/kg	Q	J	5B
SO80	LDW-SS5002-A	11-6706-SO80I	SW8270DSIM	Pentachlorophenol	15	ug/kg	J	J	5B
SO80	LDW-SS5002-D	11-6707-SO80J	SW8270D	3-Nitroaniline	82	ug/kg	U	UJ	5B
SO80	LDW-SS5002-D	11-6707-SO80J	SW8270D	2,4-Dinitrophenol	180	ug/kg	U	UJ	5B
SO80	LDW-SS5002-D	11-6707-SO80J	SW8270D	4-Nitroaniline	82	ug/kg	U	UJ	5B
SO80	LDW-SS5002-D	11-6707-SO80J	SW8270DSIM	Butylbenzylphthalate	30	ug/kg	Q	J	5B
SO80	LDW-SS5002-D	11-6707-SO80J	SW8270DSIM	Pentachlorophenol	11	ug/kg	J	J	5B
SO83	LDW-SS2027-A	11-6713-SO83A	SW6010B	Arsenic	20	mg/kg		J	9
SO83	LDW-SS2027-A	11-6713-SO83A	SW6010B	Copper	138	mg/kg		J	9
SO83	LDW-SS2027-A	11-6713-SO83A	SW6010B	Zinc	552	mg/kg		J	8,9
SO83	LDW-SS2027-A	11-6713-SO83A	SW8270D	Fluoranthene	2000	ug/kg	E	DNR	20
SO83	LDW-SS2027-A	11-6713-SO83A	SW8270D	Pyrene	1900	ug/kg	E	DNR	20
SO83	LDW-SS2027-A	11-6713-SO83A	SW8270D	bis(2-Ethylhexyl)phthalate	17000	ug/kg	ES	DNR	20
SO83	LDW-SS2027-A	11-6713-SO83A	SW8270D	Dibenz(a,h)anthracene	98	ug/kg	Q	J	5B
SO83	LDW-SS2027-A	11-6713-SO83A	SW8270DSIM	Butylbenzylphthalate	1800	ug/kg	E	J	20
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Phenol	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Bis-(2-Chloroethyl) Ether	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	2-Chlorophenol	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	1,3-Dichlorobenzene	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	1,4-Dichlorobenzene	950	ug/kg	U	DNR	11

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Benzyl Alcohol	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	1,2-Dichlorobenzene	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	2-Methylphenol	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	2,2'-Oxybis(1-Chloropropane)	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	4-Methylphenol	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	N-Nitroso-Di-N-Propylamine	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Hexachloroethane	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Nitrobenzene	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Isophorone	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	2-Nitrophenol	4700	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	2,4-Dimethylphenol	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Benzoic Acid	9500	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	bis(2-Chloroethoxy) Methane	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	2,4-Dichlorophenol	4700	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	1,2,4-Trichlorobenzene	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Naphthalene	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	4-Chloroaniline	4700	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Hexachlorobutadiene	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	4-Chloro-3-methylphenol	4700	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	2-Methylnaphthalene	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Hexachlorocyclopentadiene	4700	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	2,4,6-Trichlorophenol	4700	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	2,4,5-Trichlorophenol	4700	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	2-Chloronaphthalene	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	2-Nitroaniline	4700	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Dimethylphthalate	800	ug/kg	J	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Acenaphthylene	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	3-Nitroaniline	4700	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Acenaphthene	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	2,4-Dinitrophenol	10000	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	4-Nitrophenol	4700	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Dibenzofuran	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	2,6-Dinitrotoluene	4700	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	2,4-Dinitrotoluene	4700	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Diethylphthalate	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	4-Chlorophenyl-phenylether	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Fluorene	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	4-Nitroaniline	4700	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	4,6-Dinitro-2-Methylphenol	9500	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	N-Nitrosodiphenylamine	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	4-Bromophenyl-phenylether	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Hexachlorobenzene	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Pentachlorophenol	4700	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Phenanthrene	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Carbazole	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Anthracene	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Di-n-Butylphthalate	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Pyrene	2100	ug/kg	Q	J	5B
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Butylbenzylphthalate	1800	ug/kg	Q	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	3,3'-Dichlorobenzidine	4700	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Benzo(a)anthracene	850	ug/kg	J	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Chrysene	1400	ug/kg		DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Di-n-Octyl phthalate	710	ug/kg	J	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Benzo(a)pyrene	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Indeno(1,2,3-cd)pyrene	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Dibenz(a,h)anthracene	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Benzo(g,h,i)perylene	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Aniline	6100	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	N-Nitrosodimethylamine	12000	ug/kg	U	DNR	11

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	1-Methylnaphthalene	950	ug/kg	U	DNR	11
SO83	LDW-SS2027-A	11-6713-SO83ADL	SW8270D	Total Benzofluoranthenes	1300	ug/kg		DNR	11
SO83	LDW-SS2034-D	11-6714-SO83B	SW6010B	Arsenic	61	mg/kg		J	9
SO83	LDW-SS2034-D	11-6714-SO83B	SW6010B	Copper	57.6	mg/kg		J	9
SO83	LDW-SS2034-D	11-6714-SO83B	SW6010B	Zinc	215	mg/kg		J	8,9
SO83	LDW-SS2034-D	11-6714-SO83B	SW8082	Aroclor 1260	120	ug/kg		J	8
SO83	LDW-SS2034-D	11-6714-SO83B	SW8270D	4-Chloroaniline	95	ug/kg	U	R	8
SO83	LDW-SS2034-D	11-6714-SO83B	SW8270D	Hexachlorocyclopentadiene	95	ug/kg	U	R	8
SO83	LDW-SS2034-D	11-6714-SO83B	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	R	8
SO83	LDW-SS2034-D	11-6714-SO83B	SW8270D	4-Nitroaniline	95	ug/kg	U	UJ	8
SO83	LDW-SS2034-D	11-6714-SO83B	SW8270D	Phenanthrene	590	ug/kg		J	8
SO83	LDW-SS2034-D	11-6714-SO83B	SW8270D	Fluoranthene	960	ug/kg		J	8
SO83	LDW-SS2034-D	11-6714-SO83B	SW8270D	Pyrene	1300	ug/kg		J	8
SO83	LDW-SS2034-D	11-6714-SO83B	SW8270D	3,3'-Dichlorobenzidine	95	ug/kg	U	R	8
SO83	LDW-SS2034-D	11-6714-SO83B	SW8270D	Benzo(a)anthracene	1100	ug/kg		J	8
SO83	LDW-SS2034-D	11-6714-SO83B	SW8270D	Chrysene	1600	ug/kg		J	8
SO83	LDW-SS2034-D	11-6714-SO83B	SW8270D	Benzo(a)pyrene	540	ug/kg		J	8
SO83	LDW-SS2034-D	11-6714-SO83B	SW8270D	Dibenz(a,h)anthracene	80	ug/kg	Q	J	5B
SO83	LDW-SS2034-D	11-6714-SO83B	SW8270D	Aniline	120	ug/kg	U	R	8
SO83	LDW-SS2034-D	11-6714-SO83B	SW8270D	Total Benzofluoranthenes	1300	ug/kg		J	8
SO83	LDW-SS2034-U	11-6715-SO83C	SW6010B	Arsenic	20	mg/kg		J	9
SO83	LDW-SS2034-U	11-6715-SO83C	SW6010B	Copper	43.5	mg/kg		J	9
SO83	LDW-SS2034-U	11-6715-SO83C	SW6010B	Zinc	95	mg/kg		J	8,9
SO83	LDW-SS2034-U	11-6715-SO83C	SW8270D	Dibenz(a,h)anthracene	32	ug/kg	Q	J	5B
SO83	LDW-SS2034-U-2	11-6716-SO83D	SW6010B	Arsenic	20	mg/kg		J	9
SO83	LDW-SS2034-U-2	11-6716-SO83D	SW6010B	Copper	46.2	mg/kg		J	9
SO83	LDW-SS2034-U-2	11-6716-SO83D	SW6010B	Zinc	104	mg/kg		J	8,9
SO83	LDW-SS2034-U-2	11-6716-SO83D	SW8270D	Dibenz(a,h)anthracene	17	ug/kg	JQ	J	5B
SO83	LDW-SS2503-A	11-6717-SO83E	SW6010B	Arsenic	7	mg/kg	U	UJ	9
SO83	LDW-SS2503-A	11-6717-SO83E	SW6010B	Copper	49.5	mg/kg		J	9
SO83	LDW-SS2503-A	11-6717-SO83E	SW6010B	Zinc	167	mg/kg		J	8,9
SO83	LDW-SS2503-A	11-6717-SO83E	SW8082	Aroclor 1248	5.8	ug/kg	Y	U	22
SO83	LDW-SS2503-A	11-6717-SO83E	SW8270D	Dibenz(a,h)anthracene	17	ug/kg	JQ	J	5B
SO83	LDW-SS2022-D	11-6718-SO83F	SW6010B	Arsenic	10	mg/kg		J	9
SO83	LDW-SS2022-D	11-6718-SO83F	SW6010B	Copper	52.3	mg/kg		J	9
SO83	LDW-SS2022-D	11-6718-SO83F	SW6010B	Zinc	107	mg/kg		J	8,9
SO83	LDW-SS2022-D	11-6718-SO83F	SW8082	Aroclor 1248	130	ug/kg	Y	U	22
SO83	LDW-SS2022-D	11-6718-SO83F	SW8270D	Dibenz(a,h)anthracene	23	ug/kg	Q	J	5B
SO83	LDW-SS2022-A	11-6719-SO83G	SW6010B	Arsenic	10	mg/kg		J	9
SO83	LDW-SS2022-A	11-6719-SO83G	SW6010B	Copper	52.6	mg/kg		J	9
SO83	LDW-SS2022-A	11-6719-SO83G	SW6010B	Zinc	105	mg/kg		J	8,9
SO83	LDW-SS2022-A	11-6719-SO83G	SW8270D	Dibenz(a,h)anthracene	21	ug/kg	Q	J	5B
SO83	LDW-SS2022-A-2	11-6720-SO83H	SW6010B	Arsenic	20	mg/kg		J	9
SO83	LDW-SS2022-A-2	11-6720-SO83H	SW6010B	Copper	54.7	mg/kg		J	9
SO83	LDW-SS2022-A-2	11-6720-SO83H	SW6010B	Zinc	109	mg/kg		J	8,9
SO83	LDW-SS2022-A-2	11-6720-SO83H	SW8270D	Dibenz(a,h)anthracene	38	ug/kg	Q	J	5B
SO83	LDW-SSSP3-D	11-6721-SO83I	SW6010B	Arsenic	10	mg/kg		J	9
SO83	LDW-SSSP3-D	11-6721-SO83I	SW6010B	Copper	22.4	mg/kg		J	9
SO83	LDW-SSSP3-D	11-6721-SO83I	SW6010B	Zinc	64	mg/kg		J	8,9
SO83	LDW-SSSP3-A	11-6722-SO83J	SW6010B	Arsenic	30	mg/kg	U	UJ	9
SO83	LDW-SSSP3-A	11-6722-SO83J	SW6010B	Copper	334	mg/kg		J	9
SO83	LDW-SSSP3-A	11-6722-SO83J	SW6010B	Zinc	1440	mg/kg		J	8,9
SO83	LDW-SSSP3-A	11-6722-SO83J	SW8082	Aroclor 1248	5.9	ug/kg	Y	U	22
SO83	LDW-SSSP3-A	11-6722-SO83J	SW8270D	Dibenz(a,h)anthracene	19	ug/kg	Q	J	5B
SO83	LDW-SSSP3-U	11-6723-SO83K	SW6010B	Arsenic	10	mg/kg		J	9
SO83	LDW-SSSP3-U	11-6723-SO83K	SW6010B	Copper	21.9	mg/kg		J	9
SO83	LDW-SSSP3-U	11-6723-SO83K	SW6010B	Zinc	64	mg/kg		J	8,9
SO83	LDW-SSSP2-D	11-6724-SO83L	SW6010B	Arsenic	9	mg/kg		J	9
SO83	LDW-SSSP2-D	11-6724-SO83L	SW6010B	Copper	17.8	mg/kg		J	9

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SO83	LDW-SSSP2-D	11-6724-SO83L	SW6010B	Zinc	61	mg/kg		J	8,9
SO83	LDW-SSSP2-D	11-6724-SO83L	SW8270D	Pyrene	20	ug/kg	Q	J	5B
SO83	LDW-SS2157-A	11-6725-SO83M	SW6010B	Arsenic	20	mg/kg		J	9
SO83	LDW-SS2157-A	11-6725-SO83M	SW6010B	Copper	68.8	mg/kg		J	9
SO83	LDW-SS2157-A	11-6725-SO83M	SW6010B	Zinc	120	mg/kg		J	8,9
SO83	LDW-SS2157-A	11-6725-SO83M	SW8270D	Pyrene	580	ug/kg	Q	J	5B
SR19	LDW-SSSWCSO-A	11-7871-SR19A	SW6010B	Arsenic	20	mg/kg		J	9
SR19	LDW-SSSWCSO-A	11-7871-SR19A	SW6010B	Copper	70.2	mg/kg		J	8,9
SR19	LDW-SSSWCSO-A	11-7871-SR19A	SW6010B	Lead	29	mg/kg		J	9
SR19	LDW-SSSWCSO-A	11-7871-SR19A	SW6010B	Zinc	119	mg/kg		J	8,9
SR19	LDW-SSSWCSO-A	11-7871-SR19A	SW8270D	4-Chloroaniline	100	ug/kg	U	UJ	5B,10
SR19	LDW-SSSWCSO-A	11-7871-SR19A	SW8270D	Acenaphthylene	26	ug/kg	MQ	NJ	4
SR19	LDW-SSSWCSO-A	11-7871-SR19A	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	10
SR19	LDW-SSSWCSO-A	11-7871-SR19A	SW8270D	4-Chlorophenyl-phenylether	20	ug/kg	U	UJ	5B
SR19	LDW-SSSWCSO-A	11-7871-SR19A	SW8270D	4-Bromophenyl-phenylether	20	ug/kg	U	UJ	5B
SR19	LDW-SSSWCSO-A-2	11-7872-SR19B	SW6010B	Copper	68.2	mg/kg		J	8,9
SR19	LDW-SSSWCSO-A-2	11-7872-SR19B	SW6010B	Lead	29	mg/kg		J	9
SR19	LDW-SSSWCSO-A-2	11-7872-SR19B	SW6010B	Zinc	119	mg/kg		J	8,9
SR19	LDW-SSSWCSO-A-2	11-7872-SR19B	SW8270D	4-Chloroaniline	97	ug/kg	U	UJ	5B,10
SR19	LDW-SSSWCSO-A-2	11-7872-SR19B	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	10
SR19	LDW-SSSWCSO-A-2	11-7872-SR19B	SW8270D	4-Chlorophenyl-phenylether	19	ug/kg	U	UJ	5B
SR19	LDW-SSSWCSO-A-2	11-7872-SR19B	SW8270D	4-Bromophenyl-phenylether	19	ug/kg	U	UJ	5B
SR19	LDW-SSSWCSO-U	11-7873-SR19C	SW6010B	Arsenic	30	mg/kg		J	9
SR19	LDW-SSSWCSO-U	11-7873-SR19C	SW6010B	Copper	79.5	mg/kg		J	8,9
SR19	LDW-SSSWCSO-U	11-7873-SR19C	SW6010B	Lead	35	mg/kg		J	9
SR19	LDW-SSSWCSO-U	11-7873-SR19C	SW6010B	Zinc	143	mg/kg		J	8,9
SR19	LDW-SSSWCSO-U	11-7873-SR19C	SW8270D	4-Chloroaniline	96	ug/kg	U	UJ	5B,10
SR19	LDW-SSSWCSO-U	11-7873-SR19C	SW8270D	Acenaphthylene	27	ug/kg	MQ	NJ	4
SR19	LDW-SSSWCSO-U	11-7873-SR19C	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	10
SR19	LDW-SSSWCSO-U	11-7873-SR19C	SW8270D	4-Chlorophenyl-phenylether	19	ug/kg	U	UJ	5B
SR19	LDW-SSSWCSO-U	11-7873-SR19C	SW8270D	4-Bromophenyl-phenylether	19	ug/kg	U	UJ	5B
SR19	LDW-SSSWCSO-U	11-7873-SR19C	SW8270D	Phenanthrene	2300	ug/kg	E	DNR	20
SR19	LDW-SSSWCSO-U	11-7873-SR19C	SW8270D	Fluoranthene	2800	ug/kg	E	DNR	20
SR19	LDW-SSSWCSO-U	11-7873-SR19C	SW8270D	Pyrene	2000	ug/kg	E	DNR	20
SR19	LDW-SSSWCSO-U	11-7873-SR19C	SW8270DSIM	N-Nitrosodiphenylamine	15	ug/kg	M	J	2
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Phenol	62	ug/kg	J	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Bis-(2-Chloroethyl) Ether	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	2-Chlorophenol	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	1,3-Dichlorobenzene	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	1,4-Dichlorobenzene	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Benzyl Alcohol	240	ug/kg		DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	1,2-Dichlorobenzene	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	2-Methylphenol	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	2,2'-Oxybis(1-Chloropropane)	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	4-Methylphenol	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	N-Nitroso-Di-N-Propylamine	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Hexachloroethane	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Nitrobenzene	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Isophorone	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	2-Nitrophenol	480	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	2,4-Dimethylphenol	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Benzoic Acid	960	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	bis(2-Chloroethoxy) Methane	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	2,4-Dichlorophenol	480	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	1,2,4-Trichlorobenzene	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Naphthalene	48	ug/kg	J	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	4-Chloroaniline	480	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Hexachlorobutadiene	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	4-Chloro-3-methylphenol	480	ug/kg	U	DNR	11

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	2-Methylnaphthalene	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Hexachlorocyclopentadiene	480	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	2,4,6-Trichlorophenol	480	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	2,4,5-Trichlorophenol	480	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	2-Chloronaphthalene	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	2-Nitroaniline	480	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Dimethylphthalate	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Acenaphthylene	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	3-Nitroaniline	480	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Acenaphthene	160	ug/kg		DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	2,4-Dinitrophenol	1000	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	4-Nitrophenol	480	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Dibenzofuran	67	ug/kg	J	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	2,6-Dinitrotoluene	480	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	2,4-Dinitrotoluene	480	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Diethylphthalate	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	4-Chlorophenyl-phenylether	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Fluorene	290	ug/kg		DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	4-Nitroaniline	480	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	4,6-Dinitro-2-Methylphenol	960	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	N-Nitrosodiphenylamine	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	4-Bromophenyl-phenylether	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Hexachlorobenzene	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Pentachlorophenol	480	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Carbazole	86	ug/kg	J	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Anthracene	460	ug/kg		DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Di-n-Butylphthalate	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Pyrene	1800	ug/kg	Q	J	5B
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Butylbenzylphthalate	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	3,3'-Dichlorobenzidine	480	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Benzo(a)anthracene	810	ug/kg		DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	bis(2-Ethylhexyl)phthalate	680	ug/kg		DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Chrysene	940	ug/kg		DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Di-n-Octyl phthalate	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Benzo(a)pyrene	310	ug/kg		DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Indeno(1,2,3-cd)pyrene	72	ug/kg	J	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Dibenz(a,h)anthracene	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Benzo(g,h,i)perylene	67	ug/kg	J	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Aniline	620	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	N-Nitrosodimethylamine	1200	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	1-Methylnaphthalene	96	ug/kg	U	DNR	11
SR19	LDW-SSSWCSO-U	11-7873-SR19CDL	SW8270D	Total Benzofluoranthenes	900	ug/kg		DNR	11
SR19	LDW-SS2139-A	11-7874-SR19D	SW6010B	Arsenic	15	mg/kg		J	9
SR19	LDW-SS2139-A	11-7874-SR19D	SW6010B	Copper	55.6	mg/kg		J	8,9
SR19	LDW-SS2139-A	11-7874-SR19D	SW6010B	Lead	25	mg/kg		J	9
SR19	LDW-SS2139-A	11-7874-SR19D	SW6010B	Zinc	102	mg/kg		J	8,9
SR19	LDW-SS2139-A	11-7874-SR19D	SW8270D	4-Chloroaniline	95	ug/kg	U	UJ	5B,10
SR19	LDW-SS2139-A	11-7874-SR19D	SW8270D	Acenaphthylene	33	ug/kg	MQ	NJ	4
SR19	LDW-SS2139-A	11-7874-SR19D	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	10
SR19	LDW-SS2139-A	11-7874-SR19D	SW8270D	4-Chlorophenyl-phenylether	19	ug/kg	U	UJ	5B
SR19	LDW-SS2139-A	11-7874-SR19D	SW8270D	4-Bromophenyl-phenylether	19	ug/kg	U	UJ	5B
SR19	LDW-SSRWSD-Ab	11-7875-SR19E	SW6010B	Arsenic	7	mg/kg		J	9
SR19	LDW-SSRWSD-Ab	11-7875-SR19E	SW6010B	Copper	11.9	mg/kg		J	8,9
SR19	LDW-SSRWSD-Ab	11-7875-SR19E	SW6010B	Lead	3	mg/kg		J	9
SR19	LDW-SSRWSD-Ab	11-7875-SR19E	SW6010B	Zinc	41	mg/kg		J	8,9
SR19	LDW-SSRWSD-Ab	11-7875-SR19E	SW8270D	4-Chloroaniline	93	ug/kg	U	UJ	5B,10
SR19	LDW-SSRWSD-Ab	11-7875-SR19E	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	10
SR19	LDW-SSRWSD-Ab	11-7875-SR19E	SW8270D	4-Chlorophenyl-phenylether	19	ug/kg	U	UJ	5B
SR19	LDW-SSRWSD-Ab	11-7875-SR19E	SW8270D	4-Bromophenyl-phenylether	19	ug/kg	U	UJ	5B

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SR19	LDW-SS2112-A	11-7876-SR19F	SW6010B	Arsenic	20	mg/kg		J	9
SR19	LDW-SS2112-A	11-7876-SR19F	SW6010B	Copper	109	mg/kg		J	8,9
SR19	LDW-SS2112-A	11-7876-SR19F	SW6010B	Lead	72	mg/kg		J	9
SR19	LDW-SS2112-A	11-7876-SR19F	SW6010B	Zinc	348	mg/kg		J	8,9
SR19	LDW-SS2112-A	11-7876-SR19F	SW8270D	4-Chloroaniline	99	ug/kg	U	UJ	5B,10
SR19	LDW-SS2112-A	11-7876-SR19F	SW8270D	Acenaphthylene	22	ug/kg	MQ	NJ	4
SR19	LDW-SS2112-A	11-7876-SR19F	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	10
SR19	LDW-SS2112-A	11-7876-SR19F	SW8270D	4-Chlorophenyl-phenylether	20	ug/kg	U	UJ	5B
SR19	LDW-SS2112-A	11-7876-SR19F	SW8270D	4-Bromophenyl-phenylether	20	ug/kg	U	UJ	5B
SR19	LDW-SS2112-A	11-7876-SR19F	SW8270D	Hexachlorobenzene	24	ug/kg	M	NJ	4
SR19	LDW-SS2013-D	11-7877-SR19G	SW6010B	Arsenic	14	mg/kg		J	9
SR19	LDW-SS2013-D	11-7877-SR19G	SW6010B	Copper	60.1	mg/kg		J	8,9
SR19	LDW-SS2013-D	11-7877-SR19G	SW6010B	Lead	37	mg/kg		J	9
SR19	LDW-SS2013-D	11-7877-SR19G	SW6010B	Zinc	104	mg/kg		J	8,9
SR19	LDW-SS2013-D	11-7877-SR19G	SW8270D	4-Chloroaniline	93	ug/kg	U	UJ	5B,10
SR19	LDW-SS2013-D	11-7877-SR19G	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	10
SR19	LDW-SS2013-D	11-7877-SR19G	SW8270D	4-Chlorophenyl-phenylether	19	ug/kg	U	UJ	5B
SR19	LDW-SS2013-D	11-7877-SR19G	SW8270D	4-Bromophenyl-phenylether	19	ug/kg	U	UJ	5B
SR19	LDW-SS2013-A	11-7878-SR19H	SW6010B	Arsenic	21	mg/kg		J	9
SR19	LDW-SS2013-A	11-7878-SR19H	SW6010B	Copper	54.2	mg/kg		J	8,9
SR19	LDW-SS2013-A	11-7878-SR19H	SW6010B	Lead	24	mg/kg		J	9
SR19	LDW-SS2013-A	11-7878-SR19H	SW6010B	Zinc	144	mg/kg		J	8,9
SR19	LDW-SS2013-A	11-7878-SR19H	SW8270D	4-Chloroaniline	98	ug/kg	U	UJ	5B,8,10
SR19	LDW-SS2013-A	11-7878-SR19H	SW8270D	Hexachlorocyclopentadiene	98	ug/kg	U	R	8
SR19	LDW-SS2013-A	11-7878-SR19H	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	8,10
SR19	LDW-SS2013-A	11-7878-SR19H	SW8270D	4-Chlorophenyl-phenylether	20	ug/kg	U	UJ	5B
SR19	LDW-SS2013-A	11-7878-SR19H	SW8270D	4-Bromophenyl-phenylether	20	ug/kg	U	UJ	5B
SR19	LDW-SS2013-A	11-7878-SR19H	SW8270D	3,3'-Dichlorobenzidine	98	ug/kg	U	R	8
SR19	LDW-SS2013-A	11-7878-SR19H	SW8270D	Aniline	130	ug/kg	U	R	8
SR19	LDW-SS2013-U	11-7879-SR19I	SW6010B	Arsenic	7	mg/kg		J	9
SR19	LDW-SS2013-U	11-7879-SR19I	SW6010B	Copper	29.0	mg/kg		J	8,9
SR19	LDW-SS2013-U	11-7879-SR19I	SW6010B	Lead	15	mg/kg		J	9
SR19	LDW-SS2013-U	11-7879-SR19I	SW6010B	Zinc	56	mg/kg		J	8,9
SR19	LDW-SS2013-U	11-7879-SR19I	SW8270D	4-Chloroaniline	100	ug/kg	U	UJ	5B,10
SR19	LDW-SS2013-U	11-7879-SR19I	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	10
SR19	LDW-SS2013-U	11-7879-SR19I	SW8270D	4-Chlorophenyl-phenylether	20	ug/kg	U	UJ	5B
SR19	LDW-SS2013-U	11-7879-SR19I	SW8270D	4-Bromophenyl-phenylether	20	ug/kg	U	UJ	5B
SR19	LDW-SS5000-D	11-7880-SR19J	SW6010B	Arsenic	20	mg/kg		J	9
SR19	LDW-SS5000-D	11-7880-SR19J	SW6010B	Copper	77.5	mg/kg		J	8,9
SR19	LDW-SS5000-D	11-7880-SR19J	SW6010B	Lead	31	mg/kg		J	9
SR19	LDW-SS5000-D	11-7880-SR19J	SW6010B	Zinc	134	mg/kg		J	8,9
SR19	LDW-SS5000-D	11-7880-SR19J	SW8270D	4-Chloroaniline	97	ug/kg	U	UJ	5B,10
SR19	LDW-SS5000-D	11-7880-SR19J	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	10
SR19	LDW-SS5000-D	11-7880-SR19J	SW8270D	4-Chlorophenyl-phenylether	19	ug/kg	U	UJ	5B
SR19	LDW-SS5000-D	11-7880-SR19J	SW8270D	4-Bromophenyl-phenylether	19	ug/kg	U	UJ	5B
SR19	LDW-SS5000-A	11-7881-SR19K	SW6010B	Arsenic	20	mg/kg		J	9
SR19	LDW-SS5000-A	11-7881-SR19K	SW6010B	Copper	85.1	mg/kg		J	8,9
SR19	LDW-SS5000-A	11-7881-SR19K	SW6010B	Lead	29	mg/kg		J	9
SR19	LDW-SS5000-A	11-7881-SR19K	SW6010B	Zinc	132	mg/kg		J	8,9
SR19	LDW-SS5000-A	11-7881-SR19K	SW8270D	4-Chloroaniline	97	ug/kg	U	UJ	5B,10
SR19	LDW-SS5000-A	11-7881-SR19K	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	10
SR19	LDW-SS5000-A	11-7881-SR19K	SW8270D	4-Chlorophenyl-phenylether	19	ug/kg	U	UJ	5B
SR19	LDW-SS5000-A	11-7881-SR19K	SW8270D	4-Bromophenyl-phenylether	19	ug/kg	U	UJ	5B
SR19	LDW-SS5000-U	11-7882-SR19L	SW6010B	Arsenic	20	mg/kg		J	9
SR19	LDW-SS5000-U	11-7882-SR19L	SW6010B	Copper	79.7	mg/kg		J	8,9
SR19	LDW-SS5000-U	11-7882-SR19L	SW6010B	Lead	31	mg/kg		J	9
SR19	LDW-SS5000-U	11-7882-SR19L	SW6010B	Zinc	137	mg/kg		J	8,9
SR19	LDW-SS5000-U	11-7882-SR19L	SW8270D	4-Chloroaniline	99	ug/kg	U	UJ	5B,10
SR19	LDW-SS5000-U	11-7882-SR19L	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	UJ	10

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SR19	LDW-SS5000-U	11-7882-SR19L	SW8270D	4-Chlorophenyl-phenylether	20	ug/kg	U	UJ	5B
SR19	LDW-SS5000-U	11-7882-SR19L	SW8270D	4-Bromophenyl-phenylether	20	ug/kg	U	UJ	5B
SR19	LDW-SS040811-RB	11-7883-SR19M	SW8270D	Benzoic Acid	10	ug/L	U	R	10
SR19	LDW-SS040811-RB	11-7883-SR19M	SW8270D	Hexachlorocyclopentadiene	5.0	ug/L	U	UJ	10
SR19	LDW-SS040811-RB	11-7883-SR19M	SW8270D	2,4-Dinitrophenol	10	ug/L	U	R	10
SR19	LDW-SS040811-RB	11-7883-SR19M	SW8270D	Aniline	1.0	ug/L	U	UJ	5B
SS31	LDW-SS2025-A	11-8436-SS31A	SW8270D	2,4-Dimethylphenol	37	ug/kg		J	10
SS31	LDW-SS2025-A	11-8436-SS31A	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	R	5B,10
SS31	LDW-SS2025-A	11-8436-SS31A	SW8270D	Butylbenzylphthalate	46	ug/kg	Q	J	5B
SS31	LDW-SS2025-A	11-8436-SS31A	SW8270D	Indeno(1,2,3-cd)pyrene	2100	ug/kg	E	DNR	20
SS31	LDW-SS2025-A	11-8436-SS31A	SW8270D	Benzo(g,h,i)perylene	3000	ug/kg	E	DNR	20
SS31	LDW-SS2025-A	11-8436-SS31A	SW8270DSIM	2,4-Dimethylphenol	37	ug/kg		J	10
SS31	LDW-SS2025-A	11-8436-SS31A	SW8270DSIM	Benzyl Alcohol	18	ug/kg	B	U	7
SS31	LDW-SS2025-A	11-8436-SS31A	SW8270DSIM	Pentachlorophenol	94	ug/kg	Q	J	5B
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	4-Chloro-3-methylphenol	460	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	2-Methylnaphthalene	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Hexachlorocyclopentadiene	460	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	2,4,6-Trichlorophenol	460	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	2,4,5-Trichlorophenol	460	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	2-Chloronaphthalene	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	2-Nitroaniline	460	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Phenol	93	ug/kg		DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Bis-(2-Chloroethyl) Ether	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	2-Chlorophenol	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	1,3-Dichlorobenzene	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	1,4-Dichlorobenzene	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Benzyl Alcohol	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	1,2-Dichlorobenzene	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	2-Methylphenol	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	2,2'-Oxybis(1-Chloropropane)	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	4-Methylphenol	74	ug/kg	J	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	N-Nitroso-Di-N-Propylamine	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Hexachloroethane	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Nitrobenzene	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Isophorone	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	2-Nitrophenol	460	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	2,4-Dimethylphenol	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Benzoic Acid	180	ug/kg	J	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	bis(2-Chloroethoxy) Methane	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	2,4-Dichlorophenol	460	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	1,2,4-Trichlorobenzene	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Naphthalene	46	ug/kg	J	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	4-Chloroaniline	460	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Hexachlorobutadiene	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Dimethylphthalate	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Acenaphthylene	320	ug/kg		DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	3-Nitroaniline	460	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Acenaphthene	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	2,4-Dinitrophenol	990	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	4-Nitrophenol	460	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Dibenzofuran	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	2,6-Dinitrotoluene	460	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	2,4-Dinitrotoluene	460	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Diethylphthalate	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	4-Chlorophenyl-phenylether	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Fluorene	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	4-Nitroaniline	460	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	4,6-Dinitro-2-Methylphenol	930	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	N-Nitrosodiphenylamine	93	ug/kg	U	DNR	11

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	4-Bromophenyl-phenylether	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Hexachlorobenzene	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Pentachlorophenol	46	ug/kg	JQ	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Phenanthrene	360	ug/kg		DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Carbazole	440	ug/kg		DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Anthracene	640	ug/kg		DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Di-n-Butylphthalate	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Fluoranthene	820	ug/kg		DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Pyrene	1100	ug/kg		DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Butylbenzylphthalate	51	ug/kg	JQ	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	3,3'-Dichlorobenzidine	460	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Benzo(a)anthracene	500	ug/kg		DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	bis(2-Ethylhexyl)phthalate	350	ug/kg	B	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Chrysene	890	ug/kg		DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Di-n-Octyl phthalate	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Benzo(a)pyrene	1100	ug/kg	Q	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Dibenz(a,h)anthracene	560	ug/kg	Q	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Aniline	600	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	N-Nitrosodimethylamine	1200	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	1-Methylnaphthalene	93	ug/kg	U	DNR	11
SS31	LDW-SS2025-A	11-8436-SS31ADL	SW8270D	Total Benzofluoranthenes	2100	ug/kg		DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31B	SW8270D	2,4-Dimethylphenol	40	ug/kg		J	10
SS31	LDW-SS2025-A-2	11-8437-SS31B	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	R	10
SS31	LDW-SS2025-A-2	11-8437-SS31B	SW8270D	Butylbenzylphthalate	97	ug/kg	Q	J	5B
SS31	LDW-SS2025-A-2	11-8437-SS31B	SW8270D	Indeno(1,2,3-cd)pyrene	2100	ug/kg	E	DNR	20
SS31	LDW-SS2025-A-2	11-8437-SS31B	SW8270D	Benzo(g,h,i)perylene	2800	ug/kg	E	DNR	20
SS31	LDW-SS2025-A-2	11-8437-SS31B	SW8270DSIM	2,4-Dimethylphenol	38	ug/kg		J	10
SS31	LDW-SS2025-A-2	11-8437-SS31B	SW8270DSIM	Benzyl Alcohol	14	ug/kg	B	U	7
SS31	LDW-SS2025-A-2	11-8437-SS31B	SW8270DSIM	Pentachlorophenol	92	ug/kg	Q	J	5B
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Phenol	76	ug/kg	J	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Bis-(2-Chloroethyl) Ether	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	2-Chlorophenol	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	1,3-Dichlorobenzene	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	1,4-Dichlorobenzene	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Benzyl Alcohol	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	1,2-Dichlorobenzene	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	2-Methylphenol	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	2,2'-Oxybis(1-Chloropropane)	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	4-Methylphenol	81	ug/kg	J	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	N-Nitroso-Di-N-Propylamine	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Hexachloroethane	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Nitrobenzene	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Isophorone	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	2-Nitrophenol	480	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	2,4-Dimethylphenol	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Benzoic Acid	950	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	bis(2-Chloroethoxy) Methane	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	2,4-Dichlorophenol	480	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	1,2,4-Trichlorobenzene	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Naphthalene	52	ug/kg	J	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	4-Chloroaniline	480	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Hexachlorobutadiene	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	4-Chloro-3-methylphenol	480	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	2-Methylnaphthalene	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Hexachlorocyclopentadiene	480	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	2,4,6-Trichlorophenol	480	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	2,4,5-Trichlorophenol	480	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	2-Chloronaphthalene	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	2-Nitroaniline	480	ug/kg	U	DNR	11

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Dimethylphthalate	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Acenaphthylene	320	ug/kg		DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	3-Nitroaniline	480	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Acenaphthene	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	2,4-Dinitrophenol	1000	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	4-Nitrophenol	480	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Dibenzofuran	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	2,6-Dinitrotoluene	480	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	2,4-Dinitrotoluene	480	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Diethylphthalate	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	4-Chlorophenyl-phenylether	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Fluorene	52	ug/kg	J	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	4-Nitroaniline	480	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	4,6-Dinitro-2-Methylphenol	950	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	N-Nitrosodiphenylamine	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	4-Bromophenyl-phenylether	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Hexachlorobenzene	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Pentachlorophenol	480	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Phenanthrene	460	ug/kg		DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Carbazole	440	ug/kg		DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Anthracene	670	ug/kg		DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Di-n-Butylphthalate	130	ug/kg		DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Fluoranthene	870	ug/kg		DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Pyrene	1100	ug/kg		DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Butylbenzylphthalate	120	ug/kg	Q	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	3,3'-Dichlorobenzidine	480	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Benzo(a)anthracene	530	ug/kg		DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	bis(2-Ethylhexyl)phthalate	460	ug/kg	B	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Chrysene	930	ug/kg		DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Di-n-Octyl phthalate	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Benzo(a)pyrene	1300	ug/kg	Q	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Dibenz(a,h)anthracene	580	ug/kg	Q	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Aniline	620	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	N-Nitrosodimethylamine	1200	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	1-Methylnaphthalene	95	ug/kg	U	DNR	11
SS31	LDW-SS2025-A-2	11-8437-SS31BDL	SW8270D	Total Benzofluoranthenes	2200	ug/kg		DNR	11
SS31	LDW-SS2019-A	11-8438-SS31C	SW8270D	2,4-Dimethylphenol	19	ug/kg	U	UJ	10
SS31	LDW-SS2019-A	11-8438-SS31C	SW8270D	4-Chloroaniline	97	ug/kg	U	R	8
SS31	LDW-SS2019-A	11-8438-SS31C	SW8270D	Hexachlorocyclopentadiene	97	ug/kg	U	R	8
SS31	LDW-SS2019-A	11-8438-SS31C	SW8270D	3-Nitroaniline	97	ug/kg	U	R	8
SS31	LDW-SS2019-A	11-8438-SS31C	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	R	8,10
SS31	LDW-SS2019-A	11-8438-SS31C	SW8270D	4-Nitroaniline	97	ug/kg	U	R	8
SS31	LDW-SS2019-A	11-8438-SS31C	SW8270D	4,6-Dinitro-2-Methylphenol	190	ug/kg	U	R	8
SS31	LDW-SS2019-A	11-8438-SS31C	SW8270D	Phenanthrene	730	ug/kg		J	8
SS31	LDW-SS2019-A	11-8438-SS31C	SW8270D	Fluoranthene	1400	ug/kg		J	8
SS31	LDW-SS2019-A	11-8438-SS31C	SW8270D	Pyrene	1000	ug/kg		J	8,9
SS31	LDW-SS2019-A	11-8438-SS31C	SW8270D	Butylbenzylphthalate	50	ug/kg	Q	J	5B,9
SS31	LDW-SS2019-A	11-8438-SS31C	SW8270D	3,3'-Dichlorobenzidine	97	ug/kg	U	R	8
SS31	LDW-SS2019-A	11-8438-SS31C	SW8270D	bis(2-Ethylhexyl)phthalate	710	ug/kg	B	J	9
SS31	LDW-SS2019-A	11-8438-SS31C	SW8270D	Aniline	130	ug/kg	U	R	8
SS31	LDW-SS2019-A	11-8438-SS31C	SW8270DSIM	Butylbenzylphthalate	53	ug/kg	Q	J	9
SS31	LDW-SS2019-A	11-8438-SS31C	SW8270DSIM	2,4-Dimethylphenol	6.4	ug/kg		J	10
SS31	LDW-SS2019-A	11-8438-SS31C	SW8270DSIM	N-Nitrosodiphenylamine	17	ug/kg		J	8,9
SS31	LDW-SS2019-A	11-8438-SS31C	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SS31	LDW-SS2029-D	11-8439-SS31D	SW8270D	2,4-Dimethylphenol	19	ug/kg	U	UJ	10
SS31	LDW-SS2029-D	11-8439-SS31D	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	R	5B,10
SS31	LDW-SS2029-D	11-8439-SS31D	SW8270D	Butylbenzylphthalate	22	ug/kg	Q	J	5B
SS31	LDW-SS2029-D	11-8439-SS31D	SW8270DSIM	2,4-Dimethylphenol	6.8	ug/kg		J	10
SS31	LDW-SS2029-D	11-8439-SS31D	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
SS31	LDW-SS2029-A	11-8440-SS31E	SW8270D	2,4-Dimethylphenol	20	ug/kg	U	UJ	10
SS31	LDW-SS2029-A	11-8440-SS31E	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	R	5B,10
SS31	LDW-SS2029-A	11-8440-SS31E	SW8270D	Butylbenzylphthalate	13	ug/kg	JQ	J	5B
SS31	LDW-SS2029-A	11-8440-SS31E	SW8270D	bis(2-Ethylhexyl)phthalate	82	ug/kg	B	U	7
SS31	LDW-SS2029-A	11-8440-SS31E	SW8270DSIM	2,4-Dimethylphenol	3.6	ug/kg	J	J	10
SS31	LDW-SS2029-A	11-8440-SS31E	SW8270DSIM	Pentachlorophenol	25	ug/kg	U	UJ	5B
SS31	LDW-SS2030-A	11-8441-SS31F	SW8270D	2,4-Dimethylphenol	19	ug/kg	U	UJ	10
SS31	LDW-SS2030-A	11-8441-SS31F	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	R	5B,10
SS31	LDW-SS2030-A	11-8441-SS31F	SW8270D	Butylbenzylphthalate	17	ug/kg	JQ	J	5B
SS31	LDW-SS2030-A	11-8441-SS31F	SW8270DSIM	2,4-Dimethylphenol	4.8	ug/kg		J	10
SS31	LDW-SS2030-A	11-8441-SS31F	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SS31	LDW-SS2030-U	11-8442-SS31G	SW8270D	2,4-Dimethylphenol	20	ug/kg	U	UJ	10
SS31	LDW-SS2030-U	11-8442-SS31G	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	R	5B,10
SS31	LDW-SS2030-U	11-8442-SS31G	SW8270D	Butylbenzylphthalate	33	ug/kg	Q	J	5B
SS31	LDW-SS2030-U	11-8442-SS31G	SW8270DSIM	2,4-Dimethylphenol	10	ug/kg		J	10
SS31	LDW-SS2030-U	11-8442-SS31G	SW8270DSIM	Pentachlorophenol	28	ug/kg	Q	J	5B
SS31	LDW-SS2032-A	11-8443-SS31H	SW8270D	2,4-Dimethylphenol	19	ug/kg	U	UJ	10
SS31	LDW-SS2032-A	11-8443-SS31H	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	R	5B,10
SS31	LDW-SS2032-A	11-8443-SS31H	SW8270D	Butylbenzylphthalate	20	ug/kg	Q	J	5B
SS31	LDW-SS2032-A	11-8443-SS31H	SW8270DSIM	2,4-Dimethylphenol	6.0	ug/kg		J	10
SS31	LDW-SS2032-A	11-8443-SS31H	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
SS31	LDW-SSUNK-D	11-8444-SS31I	SW8082	Aroclor 1260	14	ug/kg	Y	U	22
SS31	LDW-SSUNK-D	11-8444-SS31I	SW8270D	2,4-Dimethylphenol	18	ug/kg	U	UJ	10
SS31	LDW-SSUNK-D	11-8444-SS31I	SW8270D	2,4-Dinitrophenol	190	ug/kg	U	R	5B,10
SS31	LDW-SSUNK-D	11-8444-SS31I	SW8270DSIM	2,4-Dimethylphenol	4.5	ug/kg	U	UJ	10
SS31	LDW-SSUNK-D	11-8444-SS31I	SW8270DSIM	Benzyl Alcohol	8.3	ug/kg	B	U	7
SS31	LDW-SSUNK-D	11-8444-SS31I	SW8270DSIM	Pentachlorophenol	23	ug/kg	U	UJ	5B
SS31	LDW-SSUNK-A	11-8445-SS31J	SW8082	Aroclor 1248	17	ug/kg	Y	U	22
SS31	LDW-SSUNK-A	11-8445-SS31J	SW8270D	2,4-Dimethylphenol	19	ug/kg	U	UJ	10
SS31	LDW-SSUNK-A	11-8445-SS31J	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	R	5B,10
SS31	LDW-SSUNK-A	11-8445-SS31J	SW8270DSIM	2,4-Dimethylphenol	4.7	ug/kg	U	UJ	10
SS31	LDW-SSUNK-A	11-8445-SS31J	SW8270DSIM	Benzyl Alcohol	28	ug/kg	B	U	7
SS31	LDW-SSUNK-A	11-8445-SS31J	SW8270DSIM	Pentachlorophenol	13	ug/kg	JQ	J	5B
SS31	LDW-SS2115-D	11-8446-SS31K	SW8082	Aroclor 1248	16	ug/kg	Y	U	22
SS31	LDW-SS2115-D	11-8446-SS31K	SW8270D	2,4-Dimethylphenol	18	ug/kg	U	UJ	10
SS31	LDW-SS2115-D	11-8446-SS31K	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	R	5B,10
SS31	LDW-SS2115-D	11-8446-SS31K	SW8270D	Butylbenzylphthalate	10	ug/kg	JQ	J	5B
SS31	LDW-SS2115-D	11-8446-SS31K	SW8270D	bis(2-Ethylhexyl)phthalate	46	ug/kg	B	U	7
SS31	LDW-SS2115-D	11-8446-SS31K	SW8270DSIM	2,4-Dimethylphenol	4.6	ug/kg	U	UJ	10
SS31	LDW-SS2115-D	11-8446-SS31K	SW8270DSIM	Pentachlorophenol	36	ug/kg	Q	J	5B
SS31	LDW-SS2115-A	11-8447-SS31L	SW8082	Aroclor 1248	19	ug/kg	Y	U	22
SS31	LDW-SS2115-A	11-8447-SS31L	SW8270D	2,4-Dimethylphenol	19	ug/kg	U	UJ	10
SS31	LDW-SS2115-A	11-8447-SS31L	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	R	10
SS31	LDW-SS2115-A	11-8447-SS31L	SW8270D	Pentachlorophenol	18	ug/kg	JQ	J	5B
SS31	LDW-SS2115-A	11-8447-SS31L	SW8270D	bis(2-Ethylhexyl)phthalate	63	ug/kg	B	U	7
SS31	LDW-SS2115-A	11-8447-SS31L	SW8270D	Benzo(a)pyrene	130	ug/kg	Q	J	5B
SS31	LDW-SS2115-A	11-8447-SS31L	SW8270DSIM	2,4-Dimethylphenol	4.8	ug/kg	U	UJ	10
SS31	LDW-SS2115-A	11-8447-SS31L	SW8270DSIM	Benzyl Alcohol	22	ug/kg	B	U	7
SS31	LDW-SS2115-A	11-8447-SS31L	SW8270DSIM	Pentachlorophenol	20	ug/kg	JQ	J	5B
SS31	LDW-SS2115-U	11-8448-SS31M	SW8270D	2,4-Dimethylphenol	20	ug/kg	U	UJ	10
SS31	LDW-SS2115-U	11-8448-SS31M	SW8270D	2,4-Dinitrophenol	210	ug/kg	U	R	10
SS31	LDW-SS2115-U	11-8448-SS31M	SW8270D	Pentachlorophenol	17	ug/kg	JQ	J	5B
SS31	LDW-SS2115-U	11-8448-SS31M	SW8270D	Butylbenzylphthalate	24	ug/kg	Q	J	5B
SS31	LDW-SS2115-U	11-8448-SS31M	SW8270D	Benzo(a)pyrene	190	ug/kg	Q	J	5B
SS31	LDW-SS2115-U	11-8448-SS31M	SW8270DSIM	2,4-Dimethylphenol	4.9	ug/kg	U	UJ	10
SS31	LDW-SS2115-U	11-8448-SS31M	SW8270DSIM	Benzyl Alcohol	40	ug/kg	B	U	7
SS31	LDW-SS2115-U	11-8448-SS31M	SW8270DSIM	Pentachlorophenol	19	ug/kg	JQ	J	5B
SS31	LDW-SS041511-RB	11-8449-SS31N	SW8270D	4-Nitroaniline	5.0	ug/L	U	UJ	5B
SS31	LDW-SS041511-RB	11-8449-SS31N	SW8270D	Aniline	1.0	ug/L	U	UJ	5B

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
ST00	LDW-SS2149-A	11-8867-ST00A	SW6010B	Chromium	49	mg/kg		J	8,9
ST00	LDW-SS2149-A	11-8867-ST00A	SW6010B	Copper	116	mg/kg		J	8
ST00	LDW-SS2149-A	11-8867-ST00A	SW6010B	Zinc	478	mg/kg		J	8,9
ST00	LDW-SS2149-A	11-8867-ST00A	SW8082	Aroclor 1248	39	ug/kg	Y	U	22
ST00	LDW-SS2149-A	11-8867-ST00A	SW8270D	Benzyl Alcohol	100	ug/kg	M	NJ	4
ST00	LDW-SS2149-A	11-8867-ST00A	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	10
ST00	LDW-SS2149-A	11-8867-ST00A	SW8270D	Butylbenzylphthalate	200	ug/kg	Q	J	5B
ST00	LDW-SS2149-A	11-8867-ST00A	SW8270D	Aniline	120	ug/kg	U	UJ	10
ST00	LDW-SS2149-A	11-8867-ST00A	SW8270DSIM	Butylbenzylphthalate	220	ug/kg	Q	J	5B
ST00	LDW-SS2149-A	11-8867-ST00A	SW8270DSIM	Pentachlorophenol	30	ug/kg	Q	J	5B
ST00	LDW-SS2149-A	11-8867-ST00A	SW8270DSIM	N-Nitroso-Di-N-Propylamine	29	ug/kg	M	J	2
ST00	LDW-SS2148-A	11-8868-ST00B	SW6010B	Chromium	19.0	mg/kg		J	8,9
ST00	LDW-SS2148-A	11-8868-ST00B	SW6010B	Copper	43.4	mg/kg		J	8
ST00	LDW-SS2148-A	11-8868-ST00B	SW6010B	Zinc	190	mg/kg		J	8,9
ST00	LDW-SS2148-A	11-8868-ST00B	SW8082	Aroclor 1248	7.6	ug/kg	Y	U	22
ST00	LDW-SS2148-A	11-8868-ST00B	SW8270D	2,4-Dinitrophenol	190	ug/kg	U	UJ	10
ST00	LDW-SS2148-A	11-8868-ST00B	SW8270D	Butylbenzylphthalate	33	ug/kg	Q	J	5B
ST00	LDW-SS2148-A	11-8868-ST00B	SW8270D	Aniline	120	ug/kg	U	UJ	10
ST00	LDW-SS2148-A	11-8868-ST00B	SW8270DSIM	Butylbenzylphthalate	37	ug/kg	Q	J	5B
ST00	LDW-SS2148-A	11-8868-ST00B	SW8270DSIM	Benzyl Alcohol	22	ug/kg	B	U	7
ST00	LDW-SS2148-A	11-8868-ST00B	SW8270DSIM	Pentachlorophenol	23	ug/kg	U	UJ	5B
ST00	LDW-SS2148-A-2	11-8869-ST00C	SW6010B	Chromium	22.5	mg/kg		J	8,9
ST00	LDW-SS2148-A-2	11-8869-ST00C	SW6010B	Copper	45.9	mg/kg		J	8
ST00	LDW-SS2148-A-2	11-8869-ST00C	SW6010B	Zinc	206	mg/kg		J	8,9
ST00	LDW-SS2148-A-2	11-8869-ST00C	SW8082	Aroclor 1248	9.5	ug/kg	Y	U	22
ST00	LDW-SS2148-A-2	11-8869-ST00C	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	10
ST00	LDW-SS2148-A-2	11-8869-ST00C	SW8270D	Butylbenzylphthalate	28	ug/kg	Q	J	5B
ST00	LDW-SS2148-A-2	11-8869-ST00C	SW8270D	Aniline	120	ug/kg	U	UJ	10
ST00	LDW-SS2148-A-2	11-8869-ST00C	SW8270DSIM	Butylbenzylphthalate	34	ug/kg	Q	J	5B
ST00	LDW-SS2148-A-2	11-8869-ST00C	SW8270DSIM	Benzyl Alcohol	26	ug/kg	B	U	7
ST00	LDW-SS2148-A-2	11-8869-ST00C	SW8270DSIM	Pentachlorophenol	23	ug/kg	U	UJ	5B
ST00	LDW-SS2150-A	11-8870-ST00D	SW6010B	Chromium	17.0	mg/kg		J	8,9
ST00	LDW-SS2150-A	11-8870-ST00D	SW6010B	Copper	40.0	mg/kg		J	8
ST00	LDW-SS2150-A	11-8870-ST00D	SW6010B	Zinc	183	mg/kg		J	8,9
ST00	LDW-SS2150-A	11-8870-ST00D	SW8082	Aroclor 1248	19	ug/kg	Y	U	22
ST00	LDW-SS2150-A	11-8870-ST00D	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	10
ST00	LDW-SS2150-A	11-8870-ST00D	SW8270D	Butylbenzylphthalate	11	ug/kg	JQ	J	5B
ST00	LDW-SS2150-A	11-8870-ST00D	SW8270D	Aniline	120	ug/kg	U	UJ	10
ST00	LDW-SS2150-A	11-8870-ST00D	SW8270DSIM	Butylbenzylphthalate	16	ug/kg	Q	J	5B
ST00	LDW-SS2150-A	11-8870-ST00D	SW8270DSIM	Benzyl Alcohol	14	ug/kg	B	U	7
ST00	LDW-SS2150-A	11-8870-ST00D	SW8270DSIM	Pentachlorophenol	24	ug/kg	U	UJ	5B
ST00	LDW-SS2233-U	11-8871-ST00E	SW6010B	Chromium	25.6	mg/kg		J	8,9
ST00	LDW-SS2233-U	11-8871-ST00E	SW6010B	Copper	44.2	mg/kg		J	8
ST00	LDW-SS2233-U	11-8871-ST00E	SW6010B	Zinc	190	mg/kg		J	8,9
ST00	LDW-SS2233-U	11-8871-ST00E	SW8082	Aroclor 1248	7.6	ug/kg	Y	U	22
ST00	LDW-SS2233-U	11-8871-ST00E	SW8270D	2,4-Dimethylphenol	18	ug/kg	U	R	8
ST00	LDW-SS2233-U	11-8871-ST00E	SW8270D	4-Chloroaniline	91	ug/kg	U	R	8
ST00	LDW-SS2233-U	11-8871-ST00E	SW8270D	Hexachlorocyclopentadiene	91	ug/kg	U	UJ	8
ST00	LDW-SS2233-U	11-8871-ST00E	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	8,10
ST00	LDW-SS2233-U	11-8871-ST00E	SW8270D	Phenanthrene	18	ug/kg		J	9
ST00	LDW-SS2233-U	11-8871-ST00E	SW8270D	Fluoranthene	29	ug/kg		J	9
ST00	LDW-SS2233-U	11-8871-ST00E	SW8270D	3,3'-Dichlorobenzidine	91	ug/kg	U	R	8
ST00	LDW-SS2233-U	11-8871-ST00E	SW8270D	Aniline	120	ug/kg	U	R	8,10
ST00	LDW-SS2233-U	11-8871-ST00E	SW8270DSIM	Butylbenzylphthalate	2.7	ug/kg	JQ	J	5B
ST00	LDW-SS2233-U	11-8871-ST00E	SW8270DSIM	2,4-Dimethylphenol	4.6	ug/kg	U	R	8
ST00	LDW-SS2233-U	11-8871-ST00E	SW8270DSIM	Benzyl Alcohol	7.0	ug/kg	B	U	7
ST00	LDW-SS2233-U	11-8871-ST00E	SW8270DSIM	Pentachlorophenol	23	ug/kg	U	UJ	5B
ST00	LDW-SS2233-D	11-8872-ST00F	SW6010B	Chromium	14.0	mg/kg		J	8,9
ST00	LDW-SS2233-D	11-8872-ST00F	SW6010B	Copper	27.6	mg/kg		J	8

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
ST00	LDW-SS2233-D	11-8872-ST00F	SW6010B	Zinc	128	mg/kg		J	8,9
ST00	LDW-SS2233-D	11-8872-ST00F	SW8082	Aroclor 1248	12	ug/kg	Y	U	22
ST00	LDW-SS2233-D	11-8872-ST00F	SW8270D	2,4-Dinitrophenol	190	ug/kg	U	UJ	10
ST00	LDW-SS2233-D	11-8872-ST00F	SW8270D	Aniline	120	ug/kg	U	UJ	10
ST00	LDW-SS2233-D	11-8872-ST00F	SW8270DSIM	Butylbenzylphthalate	4.5	ug/kg	Q	J	5B
ST00	LDW-SS2233-D	11-8872-ST00F	SW8270DSIM	Benzyl Alcohol	6.7	ug/kg	B	U	7
ST00	LDW-SS2233-D	11-8872-ST00F	SW8270DSIM	Pentachlorophenol	22	ug/kg	U	UJ	5B
ST00	LDW-SS2232-D	11-8873-ST00G	SW6010B	Chromium	13.3	mg/kg		J	8,9
ST00	LDW-SS2232-D	11-8873-ST00G	SW6010B	Copper	17.3	mg/kg		J	8
ST00	LDW-SS2232-D	11-8873-ST00G	SW6010B	Zinc	46	mg/kg		J	8,9
ST00	LDW-SS2232-D	11-8873-ST00G	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	10
ST00	LDW-SS2232-D	11-8873-ST00G	SW8270D	Aniline	120	ug/kg	U	UJ	10
ST00	LDW-SS2232-D	11-8873-ST00G	SW8270DSIM	Butylbenzylphthalate	4.2	ug/kg	JQ	J	5B
ST00	LDW-SS2232-D	11-8873-ST00G	SW8270DSIM	Benzyl Alcohol	5.8	ug/kg	B	U	7
ST00	LDW-SS2232-D	11-8873-ST00G	SW8270DSIM	Pentachlorophenol	23	ug/kg	U	UJ	5B
ST00	LDW-SS2232-A	11-8874-ST00H	SW6010B	Chromium	21.7	mg/kg		J	8,9
ST00	LDW-SS2232-A	11-8874-ST00H	SW6010B	Copper	38.7	mg/kg		J	8
ST00	LDW-SS2232-A	11-8874-ST00H	SW6010B	Zinc	57	mg/kg		J	8,9
ST00	LDW-SS2232-A	11-8874-ST00H	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	10
ST00	LDW-SS2232-A	11-8874-ST00H	SW8270D	Aniline	120	ug/kg	U	UJ	10
ST00	LDW-SS2232-A	11-8874-ST00H	SW8270DSIM	Benzyl Alcohol	6.2	ug/kg	B	U	7
ST00	LDW-SS2232-A	11-8874-ST00H	SW8270DSIM	Pentachlorophenol	23	ug/kg	U	UJ	5B
ST00	LDW-SS2232-U	11-8875-ST00I	SW6010B	Chromium	16.7	mg/kg		J	8,9
ST00	LDW-SS2232-U	11-8875-ST00I	SW6010B	Copper	37.9	mg/kg		J	8
ST00	LDW-SS2232-U	11-8875-ST00I	SW6010B	Zinc	73	mg/kg		J	8,9
ST00	LDW-SS2232-U	11-8875-ST00I	SW8270D	2,4-Dinitrophenol	200	ug/kg	U	UJ	10
ST00	LDW-SS2232-U	11-8875-ST00I	SW8270D	Aniline	120	ug/kg	U	UJ	10
ST00	LDW-SS2232-U	11-8875-ST00I	SW8270DSIM	Butylbenzylphthalate	4.8	ug/kg	Q	J	5B
ST00	LDW-SS2232-U	11-8875-ST00I	SW8270DSIM	Benzyl Alcohol	6.0	ug/kg	B	U	7
ST00	LDW-SS2232-U	11-8875-ST00I	SW8270DSIM	Pentachlorophenol	23	ug/kg	U	UJ	5B
SW12	LDW-SS2025-A	11-10394-SW12A	SW6010B	Chromium	62	mg/kg		J	9
SW12	LDW-SS2025-A	11-10394-SW12A	SW6010B	Copper	201	mg/kg		J	8,9
SW12	LDW-SS2025-A-2	11-10395-SW12B	SW6010B	Chromium	63	mg/kg		J	9
SW12	LDW-SS2025-A-2	11-10395-SW12B	SW6010B	Copper	209	mg/kg		J	8,9
SW12	LDW-SS2019-A	11-10396-SW12C	SW6010B	Chromium	23.9	mg/kg		J	9
SW12	LDW-SS2019-A	11-10396-SW12C	SW6010B	Copper	73.7	mg/kg		J	8,9
SW12	LDW-SS2029-D	11-10397-SW12D	SW6010B	Chromium	33	mg/kg		J	9
SW12	LDW-SS2029-D	11-10397-SW12D	SW6010B	Copper	52.9	mg/kg		J	8,9
SW12	LDW-SS2029-A	11-10398-SW12E	SW6010B	Chromium	32.6	mg/kg		J	9
SW12	LDW-SS2029-A	11-10398-SW12E	SW6010B	Copper	52.1	mg/kg		J	8,9
SW12	LDW-SS2030-A	11-10399-SW12F	SW6010B	Chromium	31.1	mg/kg		J	9
SW12	LDW-SS2030-A	11-10399-SW12F	SW6010B	Copper	52.9	mg/kg		J	8,9
SW12	LDW-SS2030-U	11-10400-SW12G	SW6010B	Chromium	43	mg/kg		J	9
SW12	LDW-SS2030-U	11-10400-SW12G	SW6010B	Copper	79.5	mg/kg		J	8,9
SW12	LDW-SS2032-A	11-10401-SW12H	SW6010B	Chromium	32	mg/kg		J	9
SW12	LDW-SS2032-A	11-10401-SW12H	SW6010B	Copper	55.7	mg/kg		J	8,9
SW12	LDW-SSUNK-D	11-10402-SW12I	SW6010B	Chromium	10.9	mg/kg		J	9
SW12	LDW-SSUNK-D	11-10402-SW12I	SW6010B	Copper	10.7	mg/kg		J	8,9
SW12	LDW-SSUNK-A	11-10403-SW12J	SW6010B	Chromium	15.5	mg/kg		J	9
SW12	LDW-SSUNK-A	11-10403-SW12J	SW6010B	Copper	35.2	mg/kg		J	8,9
SW12	LDW-SS2115-D	11-10404-SW12K	SW6010B	Chromium	25.0	mg/kg		J	9
SW12	LDW-SS2115-D	11-10404-SW12K	SW6010B	Copper	36.5	mg/kg		J	8,9
SW12	LDW-SS2115-A	11-10405-SW12L	SW6010B	Chromium	22.2	mg/kg		J	9
SW12	LDW-SS2115-A	11-10405-SW12L	SW6010B	Copper	40.9	mg/kg		J	8,9
SW12	LDW-SS2115-U	11-10406-SW12M	SW6010B	Chromium	21.9	mg/kg		J	9
SW12	LDW-SS2115-U	11-10406-SW12M	SW6010B	Copper	68.1	mg/kg		J	8,9
WG36100	LDW-SS2090-A	L16285-15 RL	E1613	1,2,3,7,8,9-HXCDF	0.056	PG/G	KJ	U	22
WG36100	LDW-SS2090-A	L16285-15 RL	E1613	2,3,7,8-TCDD	0.313	PG/G	J	J	12
WG36100	LDW-SS2200-A	L16285-17 RL	E1613	2,3,7,8-TCDD	0.202	PG/G	KJ	U	22

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
WG36100	LDW-SS2200-A	L16285-17 RL	E1613	1,2,3,7,8-PECDF	0.1	PG/G	KJ	U	22
WG36100	LDW-SS2200-A	L16285-17 RL	E1613	1,2,3,4,6,7,8-HPCDF	4.66	PG/G	BJ	U	7
WG36100	LDW-SS2200-A	L16285-17 RL	E1613	OCDF	11.5	PG/G	B	U	7
WG36131	LDW-SS3037-A	L16285-1	E1613	2,3,7,8-TCDD	0.168	PG/G	KJ	U	22
WG36131	LDW-SS3037-A	L16285-1	E1613	1,2,3,4,7,8-HXCDD	0.556	PG/G	KJ	U	22
WG36131	LDW-SSPSF-A	L16285-10	E1613	2,3,7,8-TCDD	0.445	PG/G	KJ	U	22
WG36131	LDW-SS2122-A	L16285-11	E1613	2,3,7,8-TCDD	0.355	PG/G	J	J	12
WG36131	LDW-SS2122-D	L16285-12 (A)	E1613	2,3,7,8-TCDD	0.405	PG/G	J	J	12
WG36131	LDW-SS2122-D	L16285-12 (A)	E1613	2,3,7,8-TCDF	0.658	PG/G	J	J	9
WG36131	LDW-SS2122-D	L16285-12 (A)	E1613	TOTAL TETRA-FURANS	17.1	PG/G		J	9
WG36131	LDW-SS2008-A	L16285-13	E1613	2,3,7,8-TCDD	0.428	PG/G	J	J	12
WG36131	LDW-SS2082-U	L16285-14	E1613	2,3,7,8-TCDD	0.44	PG/G	J	J	12
WG36131	LDW-SS2082-U	L16285-14	E1613	1,2,3,7,8,9-HXCDF	0.106	PG/G	KJ	U	22
WG36131	LDW-SS2091-U	L16285-16	E1613	2,3,7,8-TCDD	0.186	PG/G	KJ	U	22
WG36131	LDW-SS2201-A	L16285-18	E1613	2,3,7,8-TCDD	0.252	PG/G	KJ	U	22
WG36131	LDW-SS2201-A	L16285-18	E1613	2,3,7,8-TCDF	0.174	PG/G	KJ	U	22
WG36131	LDW-SS2201-A	L16285-18	E1613	1,2,3,7,8-PECDF	0.177	PG/G	KJ	U	22
WG36131	LDW-SS6146-A	L16285-19	E1613	2,3,7,8-TCDD	0.323	PG/G	J	J	12
WG36131	LDW-SS2099-A	L16285-2	E1613	2,3,7,8-TCDD	0.11	PG/G	KJ	U	22
WG36131	LDW-SS2099-A	L16285-2	E1613	2,3,7,8-TCDF	0.089	PG/G	KJ	U	22
WG36131	LDW-SS2099-A	L16285-2	E1613	1,2,3,7,8-PECDF	0.083	PG/G	KJ	U	22
WG36131	LDW-SS2021-A	L16285-20	E1613	2,3,7,8-TCDD	0.081	PG/G	KJ	U	22
WG36131	LDW-SS2021-A	L16285-20	E1613	1,2,3,7,8-PECDD	0.226	PG/G	KJ	U	22
WG36131	LDW-SS2021-A	L16285-20	E1613	1,2,3,7,8-PECDF	0.087	PG/G	KJ	U	22
WG36131	LDW-SS2098-A	L16285-3	E1613	2,3,7,8-TCDD	0.086	PG/G	KJ	U	22
WG36131	LDW-SS2098-A	L16285-3	E1613	1,2,3,7,8-PECDD	0.085	PG/G	KJ	U	22
WG36131	LDW-SS2098-A	L16285-3	E1613	1,2,3,4,7,8-HXCDD	0.118	PG/G	KJ	U	22
WG36131	LDW-SS2098-A	L16285-3	E1613	1,2,3,7,8,9-HXCDD	0.329	PG/G	KJ	U	22
WG36131	LDW-SS2098-A	L16285-3	E1613	2,3,4,7,8-PECDF	0.066	PG/G	KJ	U	22
WG36131	LDW-SS2098-A	L16285-3	E1613	1,2,3,6,7,8-HXCDF	0.065	PG/G	KJ	U	22
WG36131	LDW-SS2098-A	L16285-3	E1613	2,3,4,6,7,8-HXCDF	0.08	PG/G	KJ	U	22
WG36131	LDW-SS2103-A	L16285-4	E1613	2,3,7,8-TCDD	0.178	PG/G	KJ	U	22
WG36131	LDW-SS2106-A	L16285-5	E1613	2,3,7,8-TCDD	0.34	PG/G	KJ	U	22
WG36131	LDW-SS2106-A	L16285-5	E1613	2,3,7,8-TCDF	0.372	PG/G	KJ	U	22
WG36131	LDW-SS2106-A	L16285-5	E1613	1,2,3,7,8,9-HXCDF	0.085	PG/G	KJ	U	22
WG36131	LDW-SS2040-A	L16285-6	E1613	2,3,7,8-TCDD	0.058	PG/G	KJ	U	22
WG36131	LDW-SS2040-A	L16285-6	E1613	1,2,3,4,7,8-HXCDD	0.143	PG/G	KJ	U	22
WG36131	LDW-SS2040-A	L16285-6	E1613	2,3,4,7,8-PECDF	0.097	PG/G	KJ	U	22
WG36131	LDW-SS2040-A	L16285-6	E1613	1,2,3,6,7,8-HXCDF	0.107	PG/G	KJ	U	22
WG36131	LDW-SS2036-A	L16285-7	E1613	2,3,7,8-TCDD	0.382	PG/G	KJ	U	22
WG36131	LDW-SS2036-A	L16285-7	E1613	1,2,3,7,8-PECDF	0.436	PG/G	KJ	U	22
WG36131	LDW-SS2036-A	L16285-7	E1613	1,2,3,7,8,9-HXCDF	0.107	PG/G	KJ	U	22
WG36131	LDW-SSPSF-U	L16285-8	E1613	2,3,7,8-TCDD	0.358	PG/G	J	J	12
WG36131	LDW-SS2035-A	L16285-9	E1613	2,3,7,8-TCDD	0.306	PG/G	KJ	U	22
WG36417	LDW-SS2150-A	L16394-1 (A)	E1613	2,3,7,8-TCDD	0.086	PG/G	J	J	12
WG36417	LDW-SS2150-A	L16394-1 (A)	E1613	1,2,3,7,8,9-HXCDD	1.81	PG/G	J	J	12
WG36417	LDW-SS2150-A	L16394-1 (A)	E1613	1,2,3,7,8-PECDF	0.244	PG/G	KJ	U	22
WG36417	LDW-SS2150-A	L16394-1 (A)	E1613	2,3,4,6,7,8-HXCDF	0.607	PG/G	KJ	U	22
WG36417	LDW-SS2139-A	L16394-10	E1613	2,3,7,8-TCDD	0.235	PG/G	KJ	U	22
WG36417	LDW-SS2139-A	L16394-10	E1613	1,2,3,7,8-PECDD	1.01	PG/G	KJ	U	22
WG36417	LDW-SS2139-A	L16394-10	E1613	1,2,3,7,8,9-HXCDD	6.16	PG/G		J	12
WG36417	LDW-SS2139-A	L16394-10	E1613	1,2,3,7,8,9-HXCDF	0.132	PG/G	KJ	U	22
WG36417	LDW-SS2013-A	L16394-11	E1613	2,3,7,8-TCDD	0.292	PG/G	J	J	12
WG36417	LDW-SS2013-A	L16394-11	E1613	1,2,3,7,8,9-HXCDD	10.4	PG/G		J	9,12
WG36417	LDW-SS2013-A	L16394-11	E1613	1,2,3,7,8-PECDF	0.543	PG/G	KJ	U	22
WG36417	LDW-SS2013-A	L16394-11	E1613	1,2,3,7,8,9-HXCDF	0.085	PG/G	KJ	U	22
WG36417	LDW-SS2013-A	L16394-11	E1613	TOTAL TETRA-DIOXINS	3.17	PG/G		J	9
WG36417	LDW-SS2013-A	L16394-11	E1613	TOTAL PENTA-DIOXINS	8.98	PG/G		J	9
WG36417	LDW-SS2013-A	L16394-11	E1613	TOTAL HEXA-DIOXINS	77.7	PG/G		J	9

QUALIFIED DATA SUMMARY TABLE
Lower Duwamish Waterway Outfall Surface Sediment Sampling

SDG	Sample ID	Laboratory ID	Method	Analyte	Result	Units	Lab Qual	DV Qual	DV Reason
WG36417	LDW-SS5000-A	L16394-12	E1613	2,3,7,8-TCDD	0.449	PG/G	KJ	U	22
WG36417	LDW-SS5000-A	L16394-12	E1613	1,2,3,7,8,9-HXCDD	8.32	PG/G		J	12
WG36417	LDW-SSPSF-U-2	L16394-2	E1613	2,3,7,8-TCDD	0.308	PG/G	KJ	U	22
WG36417	LDW-SSPSF-U-2	L16394-2	E1613	1,2,3,4,7,8-HXCDD	1.4	PG/G	KJ	U	22
WG36417	LDW-SSPSF-U-2	L16394-2	E1613	1,2,3,7,8,9-HXCDD	4.18	PG/G	J	J	12
WG36417	LDW-SSPSF-U-2	L16394-2	E1613	2,3,7,8-TCDF	0.493	PG/G	KJ	U	22
WG36417	LDW-SSPSF-U-2	L16394-2	E1613	1,2,3,7,8,9-HXCDF	0.069	PG/G	KJ	U	22
WG36417	LDW-SSUNK-D	L16394-3	E1613	2,3,7,8-TCDD	0.06	PG/G	KJ	U	22
WG36417	LDW-SSUNK-D	L16394-3	E1613	1,2,3,7,8,9-HXCDD	0.595	PG/G	J	J	12
WG36417	LDW-SSUNK-D	L16394-3	E1613	2,3,7,8-TCDF	0.062	PG/G	KJ	U	22
WG36417	LDW-SSUNK-D	L16394-3	E1613	1,2,3,4,7,8,9-HPCDF	0.132	PG/G	KJ	U	22
WG36417	LDW-SS2115-A	L16394-4	E1613	2,3,7,8-TCDD	0.143	PG/G	KJ	U	22
WG36417	LDW-SS2115-A	L16394-4	E1613	1,2,3,6,7,8-HXCDD	13.3	PG/G	G	J	14
WG36417	LDW-SS2115-A	L16394-4	E1613	1,2,3,7,8,9-HXCDD	4.48	PG/G	J	J	12
WG36417	LDW-SS2022-D	L16394-5	E1613	2,3,7,8-TCDD	0.401	PG/G	KJ	U	22
WG36417	LDW-SS2022-D	L16394-5	E1613	1,2,3,6,7,8-HXCDD	5.99	PG/G	G	J	14
WG36417	LDW-SS2022-D	L16394-5	E1613	1,2,3,7,8,9-HXCDD	4.94	PG/G	J	J	12
WG36417	LDW-SS2022-A	L16394-6	E1613	2,3,7,8-TCDD	0.357	PG/G	J	J	12
WG36417	LDW-SS2022-A	L16394-6	E1613	1,2,3,7,8,9-HXCDD	4.52	PG/G	J	J	12
WG36417	LDW-SS2022-A	L16394-6	E1613	1,2,3,7,8-PECDF	0.465	PG/G	KJ	U	22
WG36417	LDW-SS2022-A	L16394-6	E1613	1,2,3,7,8,9-HXCDF	0.077	PG/G	KJ	U	22
WG36417	LDW-SS2022-A	L16394-6	E1613	1,2,3,4,7,8,9-HPCDF	2.15	PG/G	KJ	U	22
WG36417	LDW-SS2022-A-2	L16394-7	E1613	2,3,7,8-TCDD	0.306	PG/G	KJ	U	22
WG36417	LDW-SS2022-A-2	L16394-7	E1613	1,2,3,7,8,9-HXCDD	4.2	PG/G	J	J	12
WG36417	LDW-SS2022-A-2	L16394-7	E1613	1,2,3,7,8-PECDF	0.426	PG/G	KJ	U	22
WG36417	LDW-SS2022-A-2	L16394-7	E1613	2,3,4,7,8-PECDF	1.02	PG/G	KJ	U	22
WG36417	LDW-SS2022-A-2	L16394-7	E1613	1,2,3,7,8,9-HXCDF	0.085	PG/G	KJ	U	22
WG36417	LDW-SSSP3-D	L16394-8	E1613	2,3,7,8-TCDD	0.218	PG/G	KJ	U	22
WG36417	LDW-SSSP3-D	L16394-8	E1613	1,2,3,7,8,9-HXCDD	1.11	PG/G	J	J	12
WG36417	LDW-SSSP3-D	L16394-8	E1613	2,3,7,8-TCDF	0.233	PG/G	KJ	U	22
WG36417	LDW-SSSP3-D	L16394-8	E1613	1,2,3,7,8-PECDF	0.106	PG/G	KJ	U	22
WG36417	LDW-SS2157-A	L16394-9	E1613	2,3,7,8-TCDD	0.438	PG/G	J	J	12
WG36417	LDW-SS2157-A	L16394-9	E1613	1,2,3,7,8,9-HXCDD	7.27	PG/G		J	12
WG36417	LDW-SS2157-A	L16394-9	E1613	1,2,3,7,8,9-HXCDF	0.13	PG/G	KJ	U	22
	LDW-SS2246-A	11-6353-SO23ADL	SW8270D	Bis-(2-Chloroethyl) Ether	94	ug/kg	U	DNR	11

EcoChem, INC.
Environmental Data Quality

APPENDIX C
COMMUNICATION RECORDS

christina mott

From: Elysebeth Joshi [ejoshi@arilabs.com]
Sent: Wednesday, May 04, 2011 3:39 PM
To: christina mott
Subject: LDW Outfall sampling COC Mismatch

Attachments: SR19_Page_12.pdf

SR19_Page_12.pdf
(36 KB)

Hi Christina,

Attached is the corrected Cross Reference report for ARI job SR19. This page replaces page number 12 in the original data package.

--

Elysebeth Joshi
Client Services
Analytical Resources, Inc.
(206)695-6216
ejoshi@arilabs.com

christina mott

From: Elysebeth Joshi [ejoshi@arilabs.com]
Sent: Friday, May 06, 2011 3:40 PM
To: christina mott; Cheronne Oreiro
Subject: TOC Bench Sheets

Attachments: SR19_TOC.pdf; SL76_TOC.pdf; SL77_TOC.pdf; SM58_TOC.pdf; SN88_TOC.pdf; SO11_TOC.pdf; SO23_TOC.pdf; SO80_TOC.pdf; SO83_TOC.pdf

SR19_TOC.pdf (164 KB) SL76_TOC.pdf (101 KB) SL77_TOC.pdf (81 KB) SM58_TOC.pdf (116 KB) SN88_TOC.pdf (285 KB) SO11_TOC.pdf (110 KB) SO23_TOC.pdf (107 KB) SO80_TOC.pdf (118 KB) SO83_TOC.pdf (99 KB)

Hi Christina,
Attached are the TOC data that you requested.

--
Elysebeth Joshi
Client Services
Analytical Resources, Inc.
(206)695-6216
ejoshi@arilabs.com

christina mott

From: Elysebeth Joshi [ejoshi@arilabs.com]
Sent: Tuesday, May 10, 2011 12:43 PM
To: christina mott
Subject: LDW Outfall Surface Sediment, SL77, TOC by Method Plumb (1981), TOC raw data

Attachments: SL77_TOC_031411.pdf

SL77_TOC_031411.pdf (75 KB)

Hi Christina,

Attached please find the TOC bench sheet for SL77 analyzed on March 14, 2011.
My apologies for missing this one.

--

Elysebeth Joshi
Client Services
Analytical Resources, Inc.
(206)695-6216
ejoshi@arilabs.com

christina mott

From: Cheronne Oreiro [cheronneo@arilabs.com]
Sent: Tuesday, May 10, 2011 12:49 PM
To: christina mott
Subject: Re: FW: LDW Outfall Surface Sed, SDG SN88, conventionals
Attachments: SN88_rev_pg338.pdf

Here is the revised page!
-C

christina mott wrote:

> Thank you!
>
> ---
>
> **From:** Cheronne Oreiro [mailto:cheronneo@arilabs.com]
> **Sent:** Tuesday, May 10, 2011 12:13 PM
> **To:** christina mott
> **Cc:** Mitchell, Marina I.
> **Subject:** Re: FW: LDW Outfall Surface Sed, SDG SN88, conventionals
>
> Hi Christina,
>
> This was just a typo that got copied down the sheet. I'll have if fixed and send you the revised page. :-)
> -Cheronne
>
> I will be out of the office on Friday, June 3rd.
>
> Cheronne Oreiro
> Project Manager
> Analytical Resources, Inc.
> 4611 S. 134th Place, Suite 100
> Tukwila, WA 98168-3240
> cheronneo@arilabs.com
> (206)-695-6214
>
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>
> If you have received this correspondence in error, please notify sender immediately. Thank you.
>
> christina mott wrote:
> Hello, Cheronne!
>
> Can look into the issue with dates that our chemist describes in his email and let me know which dates are correct?

Thanks!
Christina

Christina Mott
EcoChem, Inc.
Senior Project Chemist

710 Second Ave, Suite 660, Seattle, WA 98104
DIRECT: 206.233.9332 ext. 110x • FAX: 206.233.0114
EMAIL: cmott@ecochem.net

From: Jeremy Maute
Sent: Tuesday, May 03, 2011 11:54 AM
To: christina mott
Subject: LDW Outfall Surface Sed, SDG SN88, conventionals, notes on data package

Hi Christina,

For SDG SN88 conventional methods, the summary forms list an analysis date of 3/3/2011 for several grain size results. The same samples were not sampled until 3/14/2011 or 3/17/2011. It is possible that the samples in question were analyzed with the remainder of the other samples on 3/30/2011, and the 3/3/2011 entries are just typos. I cannot say for sure because we have not yet received any raw data. Could you look into this for me?

Regards,

Jeremy Maute

christina mott

From: Cheronne Oreiro [cheronneo@arilabs.com]
Sent: Wednesday, May 11, 2011 3:50 PM
To: christina mott
Cc: Marina Mitchell
Subject: SO11 Revised Case Narrative Pages

Attachments: SO11_rev_pg7-9.pdf

SO11_rev_pg7-9.pdf (182 KB)

Hi Christina,

Please see attached. I added a comment in the PCB section stating that samples L and M were extracted from frozen sample volume.
Thanks!
-Cheronne

--
I will be out of the office on Friday, June 3rd.

Cheronne Oreiro
Project Manager
Analytical Resources, Inc.
4611 S. 134th Place, Suite 100
Tukwila, WA 98168-3240
cheronneo@arilabs.com
(206)-695-6214

christina mott

From: Cheronne Oreiro [cheronneo@arilabs.com]
Sent: Friday, May 13, 2011 12:24 PM
To: christina mott
Cc: Marina Mitchell
Subject: Re: SVOC Water Control Limits
Attachments: SN88_rev_pg10-12.pdf

Sure thing! Please see attached.
-Cheronne

christina mott wrote:

> That's a good thing! At least it means the extraction was in control!
>
> Can you send an updated Narrative?
>
> Thanks!
>
> ---
>
> **From:** Cheronne Oreiro [mailto:cheronneo@arilabs.com]
> **Sent:** Friday, May 13, 2011 12:03 PM
> **To:** christina mott
> **Subject:** Re: SVOC Water Control Limits
>
> Hi Christina,
>
> This one is my bad. I was looking at the liquid/liquid control limits when I was writing the narrative. The sample was extracted by Sep Funnel therefore the Sep Funnel limits apply and recoveries are in control.
> Sorry about that!
> -Cheronne
>
> I will be out of the office on Friday, June 3rd.
>
> Cheronne Oreiro
> Project Manager
> Analytical Resources, Inc.
> 4611 S. 134th Place, Suite 100
> Tukwila, WA 98168-3240
> cheronneo@arilabs.com
> (206)-695-6214
>
>

christina mott wrote:

Hi, Cheronne!

Can you tell me which limits to use for the RB sample in SDG SN88. The case narrative says that Phenol (31.6%R) and N-nitrosodimethylamine (47.6%R) out outside of acceptance limits, but I am not sure if that is the case.

I know the control limits on the website are outdated, but it is obvious that you are not evaluating the samples using the 30-160%R limits since the recoveries are within those limits.

The method reported in the EDD for the extraction is SW3510C which is a separatory funnel procedure. If I use the sep funnel limits from the website, the recoveries are in control, but if I use the CLLE limits, they are not.

So, can you point me in the right direction, please?

Thanks!

Christina

Christina Mott
EcoChem, Inc.
Senior Project Chemist

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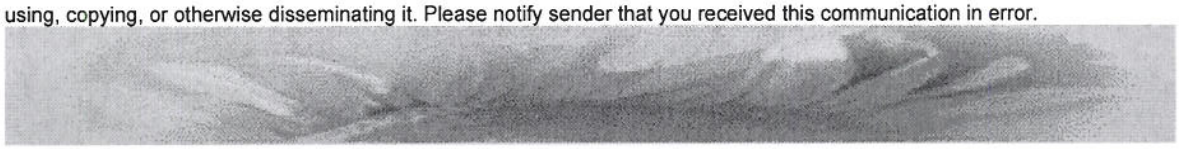
EMAIL: cmott@ecochem.net



christina mott

From: Cheronne Oreiro [cheronneo@arilabs.com]
Sent: Friday, May 13, 2011 3:43 PM
To: christina mott
Subject: Re: LDW Outfall
Attachments: SM01_ICP-MS_Data.pdf; SN88_ICP-MS_Data.pdf; SO23_ICP-MS_Data.pdf; SR19_ICP-MS_Data.pdf; SS31_ICP-MS_Data.pdf

Hi Christina,

I was finally able to pull ICP-MS raw data for the RB samples (see attached).
Internal standards are marked with a ">" on the raw data sheets. The difference between the Meas. Intens. and the Blank Intens. should be 60-120% (but you probably already knew that...).
Happy Friday and have a great weekend!
-Cheronne

christina mott wrote:

> Thanks so much for your help, Cheronne! I understand about the internal standard summaries not being a usual thing for reporting metals data – I hope the lab can come up with something that is not too painful!
>
> ---
>
> **From:** Cheronne Oreiro [mailto:cheronneo@arilabs.com]
> **Sent:** Wednesday, May 11, 2011 12:06 PM
> **To:** christina mott
> **Subject:** Re: LDW Outfall
>
> Hi Christina,
> Happy Wednesday!
> I shot an email to the metals dept to see what we could come up with regarding the ICP-MS data. I'll let you know as soon as I hear from them.
> I will have Liz start sending you Mercury calibration data today.
> Thanks,
> -Cheronne
>
> I will be out of the office on Friday, June 3rd.
>
> Cheronne Oreiro
> Project Manager
> Analytical Resources, Inc.
> 4611 S. 134th Place, Suite 100
> Tukwila, WA 98168-3240
> cheronneo@arilabs.com
> (206)-695-6214
>
>

christina mott wrote:

Hi, Cheronne!

Hope your week is going well! At least we are half way through now!

Do you have any suggestions on how to resolve verifying the internal standard recoveries for the ICP-MS data? Since the method has acceptance limits for internal standards, we have to verify them....

Also, we have not received calibration correlation info for mercury yet.

Thanks!

Christina

From: Cheronne Oreiro [mailto:cheronneo@arilabs.com]
Sent: Monday, May 09, 2011 1:44 PM
To: christina mott
Subject: Re: LDW Outfall

Hi Christina,

I had to double check with the metals dept, but we do not have a form that summarizes internal standard info for ICP-MS data. .
I can have Liz send you the calibration correlation info for mercury (that part will be easy).
-Cheronne

christina mott wrote:

Happy Monday, Cheronne!

We are completing EPA Stage 2B validation of the data, but it does include verifying the calibration and internal standard recoveries, just not recalculating them!

Thanks!

Christina

From: Cheronne Oreiro [mailto:cheronneo@arilabs.com]
Sent: Monday, May 09, 2011 10:31 AM
To: christina mott
Subject: Re: LDW Outfall

Happy Monday Christina,

Marina didn't say in her last email, but what level of validation are you doing for this

project? (2B or 3?) Hg calibration and internal standards are included in the raw data and are not included in an ARI Level III data package.
-Cheronne

christina mott wrote:

Hi, Cheronne!

Our chemist still needs the calibration correlation info for the mercury analyses and internal standard summary info for the ICP-MS for the SAIC LDW Outfall project. Will we be getting these from you?

Thanks!

Christina

Christina Mott
EcoChem, Inc.
Senior Project Chemist

710 Second Ave, Suite 660, Seattle, WA 98104
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EMAIL: cmott@ecochem.net

christina mott

From: Cheronne Oreiro [cheronneo@arilabs.com]
Sent: Wednesday, May 18, 2011 2:31 PM
To: christina mott
Cc: Marina Mitchell
Subject: Re: FW: SAIC LDW SDG SM01 SIM SVOC
Attachments: SM01_SIMABN_6and7.pdf

Hi Christina,

Here are the revised Forms for SM01. Please let me know if you have any questions.
Thanks,
-Cheronne

christina mott wrote:

> Thank you!
>
> ---
>
> **From:** Cheronne Oreiro [mailto:cheronneo@arilabs.com]
> **Sent:** Wednesday, May 18, 2011 11:19 AM
> **To:** christina mott
> **Subject:** Re: FW: SAIC LDW SDG SM01 SIM SVOC
>
> Hi Christina,
>
> I have Liz looking into it. She should get back to you today. :-)
> -Cheronne
>
> I will be out of the office on Friday, June 3rd.
>
> Cheronne Oreiro
> Project Manager
> Analytical Resources, Inc.
> 4611 S. 134th Place, Suite 100
> Tukwila, WA 98168-3240
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> prohibited.
>
> If you have received this correspondence in error, please
> notify sender immediately. Thank you.
>
> christina mott wrote:
> Hi, Cheronne!

Can you check into the situation relayed by our chemist doing the validation on the SIM data for the SLD Outfall project?

Thanks!
Christina

Christina Mott
EcoChem, Inc.
Senior Project Chemist

710 Second Ave, Suite 660, Seattle, WA 98104
DIRECT: 206.233.9332 ext. 110x • FAX: 206.233.0114
EMAIL: cmott@ecochem.net

From: Ben Frans
Sent: Wednesday, May 18, 2011 11:17 AM
To: christina mott
Subject: SAIC LDW SDG SM01 SIM SVOC

Christina

There were actually 2 CCVs with this data package
The first CCV starting on page 00211 ran on 4/19/11 has the same RFs as the ICAL. This CCV has the full list and is likely incorrect.
The next CCV on page 00214 ran on 4/20/11 is the one with different RFs. This may be the correct CCV.

The bottom line is; the SIM SVOC package SM01 has the wrong ICAL and wrong CCV for the date 04/19/11 for Instrument NT10

Ben

From: Ben Frans
Sent: Wednesday, May 18, 2011 11:03 AM
To: christina mott
Subject: SAIC LDW SDG SM01 SIM SVOC

Christina

One more piece of the puzzle.

The RFs on the CCV do not match the RFs on the ICAL

Ben

From: Ben Frans
Sent: Wednesday, May 18, 2011 10:55 AM
To: christina mott
Subject: SAIC LDW SDG SM01 SIM SVOC

Christina

SDG SM01 SIM SVOC
The calibration form 6B for SIM in the PDF has the exact same analyte list and RFs as the full scan form 6B SVOC package. (pages 00208 and 00076 respectively)
In previous SDGs the SIM calibration form 6B was a subset of the SVOC list and had different RFs which we would expect from SIM and fullscan.

It appears the lab has the wrong calibration in their SIM package.

Ben Frans
EcoChem, Inc.
Environmental Chemist

710 Second Ave, Suite 660, Seattle, WA 98104
DIRECT: 206.233.9332 • CELL: 253-576-3799 • FAX: 206.233.0114
EMAIL: bfrans@ecochem.net

christina mott

From: Cheronne Oreiro [cheronneo@arilabs.com]
Sent: Thursday, May 19, 2011 12:42 PM
To: christina mott
Cc: Marina Mitchell
Subject: Re: FW: LDW SAIC SDG SS31 MS/MSD n-nitrosodiphenylamine
Attachments: SS31_rev_pg12_13.pdf

Hi Christina,

Please see attached the revised pages for SS31.
-Cheronne

christina mott wrote:

> Thanks so much!
>
> ---
>
> **From:** Cheronne Oreiro [mailto:cheronneo@arilabs.com]
> **Sent:** Thursday, May 19, 2011 9:44 AM
> **To:** christina mott
> **Subject:** Re: FW: LDW SAIC SDG SS31 MS/MSD n-nitrosodiphenylamine
>
> I do agree. I will get you a revised case narrative today. :-)
>
> christina mott wrote:
> Good morning, Cheronne!
>
> Would you mind confirming this situation for us and update the narrative if you come to the same conclusion?
>
> Thank you!
> Christina
>
> **Christina Mott**
> **EcoChem, Inc.**
> ***Senior Project Chemist***
>
> 710 Second Ave, Suite 660, Seattle, WA 98104
> DIRECT: 206.233.9332 ext. 110x • FAX: 206.233.0114
> EMAIL: cmott@ecochem.net
>
>
>
> ---
>
> **From:** Ben Frans

Sent: Wednesday, May 18, 2011 3:39 PM
To: christina mott
Subject: LDW SAIC SDG SS31 MS/MSD n-nitrosodiphenylamine

Christina

In SAIC SDG SS31

The following is missing from the case narrative.
RPD failure for the MS/MSD for butylbenzylphthalate and N-nitrosodiphenylamine
MS/MSD failure low for N-nitrosodiphenylamine

Ben Frans
EcoChem, Inc.
Environmental Chemist

710 Second Ave, Suite 660, Seattle, WA 98104
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EMAIL: bfrans@ecochem.net

christina mott

From: Cheronne Oreiro [cheronneo@arilabs.com]
Sent: Thursday, May 19, 2011 12:45 PM
To: christina mott
Cc: Marina Mitchell
Subject: Re: Narrative for SR19
Attachments: SR19_rev_pg6.pdf

Hi Christina,

Please see attached the revised page for SR19.
-Cheronne

I will be out of the office on Friday, June 3rd.

Cheronne Oreiro
Project Manager
Analytical Resources, Inc.
4611 S. 134th Place, Suite 100
Tukwila, WA 98168-3240
cheronneo@arilabs.com
(206)-695-6214

christina mott wrote:

> Hi, Cheronne!
>
> The narrative for SR19 says that thirteen sediment samples were received, but it was actually 12 sediments and 1 rinse blank.
>
> Can you correct the narrative please?
>
> Thanks!
> Christina
>
> **Christina Mott**
> **EcoChem, Inc.**
> ***Senior Project Chemist***
>
> 710 Second Ave, Suite 660, Seattle, WA 98104
> DIRECT: 206.233.9332 ext. 110x • FAX: 206.233.0114
> EMAIL: cmott@ecochem.net
>
>

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christina mott

From: Elysebeth Joshi [ejoshi@arilabs.com]
Sent: Wednesday, May 11, 2011 1:05 PM
To: christina mott; marina.i.mitchell@saic.com
Subject: LDW Outfall Hg Calibration Data

Attachments: SL76_Hg_CAL.pdf; SL77_Hg_CAL.pdf; SM01_Hg_CAL.pdf; SM05_Hg_CAL.pdf; SM58_Hg_CAL.pdf; SN88_Hg_CAL.pdf; SO11_Hg_CAL.pdf; SO23_Hg_CAL.pdf; SO80_Hg_CAL.pdf; SO83_Hg_CAL.pdf; SR19_Hg_CAL.pdf; SS31_Hg_CAL.pdf


SL76_Hg_CAL.pdf (130 KB)


SL77_Hg_CAL.pdf (134 KB)


SM01_Hg_CAL.pdf (309 KB)


SM05_Hg_CAL.pdf (202 KB)


SM58_Hg_CAL.pdf (127 KB)


SN88_Hg_CAL.pdf (257 KB)


SO11_Hg_CAL.pdf (193 KB)


SO23_Hg_CAL.pdf (136 KB)


SO80_Hg_CAL.pdf (139 KB)


SO83_Hg_CAL.pdf (207 KB)


SR19_Hg_CAL.pdf (135 KB)


SS31_Hg_CAL.pdf (134 KB)

Attached are the mercury calibration data for the LDW Outfall project.

--
Elysebeth Joshi
Client Services
Analytical Resources, Inc.
(206)695-6216
ejoshi@arilabs.com

christina mott

From: Cheronne Oreiro [cheronneo@arilabs.com]
Sent: Friday, May 20, 2011 3:59 PM
To: christina mott
Cc: Marina Mitchell
Subject: Re: PCB HT
Attachments: SM01_SM05_rev_pg13.pdf

Have a great weekend!
-Cheronne

christina mott wrote:

> Excellent! I will email you when I run across them! I will try to send them all in one email!
>
> Thanks, Cheronne! Have a great weekend! I hope the weather is as nice as today! :-)

From: Cheronne Oreiro [mailto:cheronneo@arilabs.com]
Sent: Friday, May 20, 2011 3:03 PM
To: christina mott
Subject: Re: PCB HT

> This is another one of those narratives that I need to revise for PCBs. We did analyze from frozen aliquots, so no worries there. :-)
> -Cheronne
>
> christina mott wrote:
>
> 
>
> Hi, Cheronne!

Can you take a look at holding time in SDG SM01 for PCBs for me? The CoCs say the samples were collected 3/7/11 and extracted on 4/14/11, however, the narrative doesn't state that the sediments were held frozen. At the moment, it looks like samples were extracted outside of holding time, but I'm thinking they were actually frozen aliquots.

Can you confirm, please?

Thanks!

Christina

Christina Mott
EcoChem, Inc.
Senior Project Chemist

710 Second Ave, Suite 660, Seattle, WA 98104
DIRECT: 206.233.9332 ext. 110x • FAX: 206.233.0114
EMAIL: cmott@ecochem.net

christina mott

From: Cheronne Oreiro [cheronneo@arilabs.com]
Sent: Tuesday, May 24, 2011 2:44 PM
To: christina mott
Cc: Marina Mitchell
Subject: Re: PCB HT
Attachments: SO80_rev_pg5B.pdf

Hi Christina,

Please see attached.
Thanks,
-Cheronne

I will be out of the office on Friday, June 3rd.

Cheronne Oreiro
Project Manager
Analytical Resources, Inc.
4611 S. 134th Place, Suite 100
Tukwila, WA 98168-3240
cheronneo@arilabs.com
(206)-695-6214

christina mott wrote:

> Hi, Cheronne!
>
> I think that SO80 is the only other PCB SDG that needs the narrative updated to include that the sediment was frozen.
>
> Thanks!
>
> Christina

> **From:** Cheronne Oreiro [mailto:cheronneo@arilabs.com]
> **Sent:** Friday, May 20, 2011 3:59 PM
> **To:** christina mott
> **Cc:** Marina Mitchell
> **Subject:** Re: PCB HT

Have a great weekend!
-Cheronne

christina mott wrote:

Excellent! I will email you when I run across them! I will try to send them all in one email!

Thanks, Cheronne! Have a great weekend! I hope the weather is as nice as today! :-)

From: Cheronne Oreiro [mailto:cheronneo@arilabs.com]
Sent: Friday, May 20, 2011 3:03 PM
To: christina mott
Subject: Re: PCB HT

This is another one of those narratives that I need to revise for PCBs. We did analyze from frozen aliquots, so no worries there. :-)
-Cheronne

christina mott wrote:

Hi, Cheronne!

Can you take a look at holding time in SDG SM01 for PCBs for me? The CoCs say the samples were collected 3/7/11 and extracted on 4/14/11, however, the narrative doesn't state that the sediments were held frozen. At the moment, it looks like samples were extracted outside of holding time, but I'm thinking they were actually frozen aliquots.

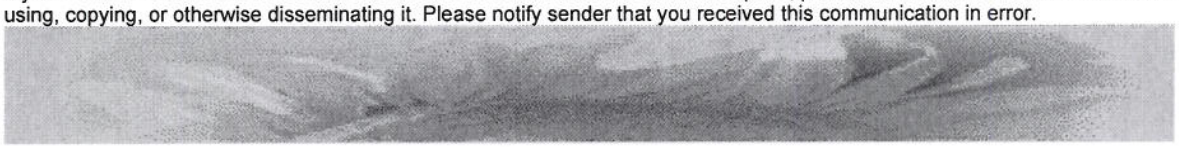
Can you confirm, please?

Thanks!

Christina

Christina Mott
EcoChem, Inc.
Senior Project Chemist

710 Second Ave, Suite 660, Seattle, WA 98104
DIRECT: 206.233.9332 ext. 110x • FAX: 206.233.0114
EMAIL: cmott@ecochem.net



christina mott

From: Cheronne Oreiro [cheronneo@arilabs.com]
Sent: Tuesday, May 24, 2011 2:48 PM
To: christina mott
Cc: Marina Mitchell
Subject: Re: FW: LDW SAIC SDG SS31 MS/MSD n-nitrosodiphenylamine
Attachments: SS31_rev2_pg12.pdf

Hi Christina,

Please see attached.
Thanks,
-Cheronne

christina mott wrote:

> Hello, Cheronne!
>
> We reviewed the updated narrative and the RPD failure for n-nitrosdiphenylamine still needs to be included.
>
> Thanks!
> Christina
>
> ---
>
> **From:** Cheronne Oreiro [mailto:cheronneo@arilabs.com]
> **Sent:** Thursday, May 19, 2011 12:42 PM
> **To:** christina mott
> **Cc:** Marina Mitchell
> **Subject:** Re: FW: LDW SAIC SDG SS31 MS/MSD n-nitrosodiphenylamine
>
> Hi Christina,
>
> Please see attached the revised pages for SS31.
> -Cheronne
>
> christina mott wrote:
> Thanks so much!
>
> ---
>
> **From:** Cheronne Oreiro [mailto:cheronneo@arilabs.com]
> **Sent:** Thursday, May 19, 2011 9:44 AM
> **To:** christina mott
> **Subject:** Re: FW: LDW SAIC SDG SS31 MS/MSD n-nitrosodiphenylamine
>
> I do agree. I will get you a revised case narrative today. :-)
>
> christina mott wrote:
> Good morning, Cheronne!
>
> Would you mind confirming this situation for us and update the narrative if you come to the

same conclusion?

Thank you!
Christina

Christina Mott
EcoChem, Inc.
Senior Project Chemist

710 Second Ave, Suite 660, Seattle, WA 98104
DIRECT: 206.233.9332 ext. 110x • FAX: 206.233.0114
EMAIL: cmott@ecochem.net

From: Ben Frans
Sent: Wednesday, May 18, 2011 3:39 PM
To: christina mott
Subject: LDW SAIC SDG SS31 MS/MSD n-nitrosodiphenylamine

Christina

In SAIC SDG SS31

The following is missing from the case narrative.
RPD failure for the MS/MSD for butylbenzylphthalate and N-nitrosodiphenylamine
MS/MSD failure low for N-nitrosodiphenylamine

Ben Frans
EcoChem, Inc.
Environmental Chemist

710 Second Ave, Suite 660, Seattle, WA 98104
DIRECT: 206.233.9332 • CELL: 253-576-3799 • FAX: 206.233.0114
EMAIL: bfrans@ecochem.net

Appendix D
Field Sample Collection Forms

(Included on CD)

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2003 - A

Sampled By: CW + JW **Date:** 3 / 14 / 2011

Grab: # 1	**Bottom depth:** 9.0 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1331
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1267343.40 Longitude: 207898.61 water
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 7.6 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1335
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1267348.96 Longitude: 207908.52 water
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 7.8 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1337
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1267342.93 Longitude: 207904.98 water
Grab: # 4 *or* **N/A** ☐	**Bottom depth:** 5.2 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1343
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1267336.21 Longitude: 207923.43 rocks

yes

only getting rip rap → heading out further away from 50'

yes

yes

yes

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/14/11 **Reviewed By/Date:** [signature] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2003 - D

Sampled By: CW & JW **Date:** 3 / 14 / 2011

Grab: # 1	Bottom depth: ~~4~~ 5.0 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1308
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267389.31 Longitude: 207929.57 rocks

Grab: # 2 or N/A ☐	Bottom depth: 5.4 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1317
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267367.98 Longitude: 207940.75 rocks

Grab: # 3 or N/A ☐	Bottom depth: 5-6 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1324
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267364.08 Longitude: 207942.27 rocks

Grab: # 4 or N/A ☐	Bottom depth: 7.1 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1328
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267354.56 Longitude: 207935.82 rocks

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/14/11 **Reviewed By/Date:** [signature] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2003 -U

Sampled By: CW + JS **Date:** 3 /14 / 2011

Grab: # 1	**Bottom depth:** 8.1 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1395
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267365.75 Longitude: 207871.65 water
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 9.4 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1348
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267365.91 Longitude: 207864.82 Water
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 10.0 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1350
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267360.11 Longitude: 207866.23 Water
Grab: # 4 *or* **N/A** ☐	**Bottom depth:** 10.0 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1352
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267350.26 Longitude: 207857.42 Water

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MP 3/14/11 **Reviewed By/Date:** 7/18/11

Version3 -030311

Youngs

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2005 - A

Sampled By: MAP/ASW **Date:** 3 / 21 / 2011

Grab: # 1	Bottom depth: 11.0 ft	Penetration Depth: \ cm	Acceptable / Rejected (circle one) Time: 1010
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207036.53 Longitude: 1367646.58 Rocks

Grab: # 2 or N/A ☐	Bottom depth: 11.1 ft	Penetration Depth: \ cm	Acceptable / Rejected (circle one) Time: 1012
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207040.17 Longitude: 1367643.21 Rocks

Grab: # 3 or N/A ☐	Bottom depth: 12.8 ft	Penetration Depth: \ cm	Acceptable / Rejected (circle one) Time: 1015
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207048.01 Longitude: 1367631.76 Water Grab due to Rocks

Grab: # 4 or N/A ☐	Bottom depth: 12.5 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1016
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207040.62 Longitude: 1367629.86 Unable to collect Sample after 4 attempts, due to rocky substrate

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/21/11 **Reviewed By/Date:** 7/18/11

Version3 -030311

Coordinates Switched mm 7.21.11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2005 - 4

Sampled By: MAP/AJW **Date:** 3 / 21 / 2011

Grab: # 1	**Bottom depth:** 9.8 ft	**Penetration Depth:** ~ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1020
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207010.24 Longitude: 1267671.24 Rocks
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 11.3 ft	**Penetration Depth:** ~ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1022
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207010.28 Longitude: 1267664.62 Rocks
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 9.1 ft	**Penetration Depth:** ~ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1023
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207019.30 Longitude: 1267667.52 Rocks
Grab: # 4 *or* **N/A** ☐	**Bottom depth:** 8.7 ft	**Penetration Depth:** ~ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1025
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207029.47 Longitude: 1267669.13 Unable to collect samples after 4 attempts due to rocky substrate

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/21/11 **Reviewed By/Date:** 7/18/11

Version3 -030311

① Lat/Long switched. mem 7.21.11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2006 -A

Sampled By: MAP/AJW **Date:** 3 / 21 / 2011

Grab: # 1	Bottom depth: 9.8 ft	Penetration Depth: \ cm	Acceptable / **Rejected** (circle one) Time: 0941
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207754.73 ① Longitude: 1267421.99 Rocks
Grab: # 2 *or* N/A ☐	**Bottom depth:** 11.3 ft	**Penetration Depth:** \ cm	**Acceptable / Rejected** (circle one) **Time:** 0943
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207746.94 ① Longitude: 1267422.54 Rocks, Silt, Barnacles
Grab: # 3 *or* N/A ☐	**Bottom depth:** 9.1 ft	**Penetration Depth:** \ cm	**Acceptable / Rejected** (circle one) **Time:** 0945
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207761.36 ① Longitude: 1267433.72 Rocks
Grab: # 4 *or* N/A ☐	**Bottom depth:** 10.9 ft	**Penetration Depth:** \ cm	**Acceptable / Rejected** (circle one) **Time:** 0946
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207746.83 ① Longitude: 1267408.93 Rocks Unable to collect samples after 4 attempts due to Rocky Substrate

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] 3/21/11 **Reviewed By/Date:** [signature] 7/8/11

Version3 -030311

① Lat/long switched. mm 7/12/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2006 - A

Sampled By: MAP/ASU **Date:** 3 / 21 / 2011

Grab: # 5	**Bottom depth:** 23.2 ft	**Penetration Depth:** ~ cm	**Acceptable / Rejected** *(circle one)* **Time:** 0948
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207746.42 Longitude: 1267386.42 Sampled at ~75 ft adjacent to out fall and still unable to collect samples due to rocks
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/21/11 **Reviewed By/Date:** 7/18/11

Version3 -030311

Lat/long switched. mm 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2006 - D

Sampled By: MAP/AJW **Date:** 3 / 21 / 2011

Grab: # 1	Bottom depth: 8.3 ft	Penetration Depth: ____ cm	Acceptable / Rejected (circle one) Time: 0934
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207795.13 ① Longitude: 1267421.60 Rocks
Grab: # 2 *or* N/A ☐	**Bottom depth:** 9.0 ft	**Penetration Depth:** \ cm	**Acceptable / Rejected** *(circle one)* **Time:** 0935
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207789.67 ① Longitude: 1267411.80 Water Grab Rocks prevent close
Grab: # 3 *or* N/A ☐	**Bottom depth:** 8.6 ft	**Penetration Depth:** \ cm	**Acceptable / Rejected** *(circle one)* **Time:** 0936
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207781.24 ① Longitude: 1267412.26 Rocks
Grab: # 4 *or* N/A ☐	**Bottom depth:** 11.1 ft	**Penetration Depth:** \ cm	**Acceptable / Rejected** *(circle one)* **Time:** 0938
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207791.55 ① Longitude: 1267391.68 Rocks

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 7/21/11 **Reviewed By/Date:** 7/18/11

Version3 -030311

① Lat/Long switched. mary 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2006 - U

Sampled By: MAP/AJW **Date:** 3 / 21 / 2011

Grab: # 1	Bottom depth: 13.7 ft	Penetration Depth: \ cm	Acceptable / Rejected (circle one) Time: 0956
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207714.45 Longitude: 1267493.65 Rocks

Grab: # 2 or N/A ☐	Bottom depth: 13.4 ft	Penetration Depth: \ cm	Acceptable / Rejected (circle one) Time: 0958
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207717.46 Longitude: 1267421.27 Rocks

Grab: # 3 or N/A ☐	Bottom depth: 10.9 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1000
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207721.85 Longitude: 1267438.17 Rocks

Grab: # 4 or N/A ☐	Bottom depth: 12.1 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1001
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 207706.44 Longitude: 1267439.27 Unable to collect samples after 4 attempts due to Rocky Substrate

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] 3/21/11 **Reviewed By/Date:** [signature] 7/18/11

Version3 -030311

① Lat/Long Swapped. Fixed 7-21-11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2007 - D

Sampled By: CW + JS **Date:** 3 / 8 / 2011

Grab: # 1	**Bottom depth:** 12.7 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1406
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268257.50 Longitude: 205332.49 rocks
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 11.1 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1410
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268261.11 Longitude: 205327.60 Water
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 12.9 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1411
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268260.92 Longitude: 205317.83 Water
Grab: # 4 *or* **N/A** ☐	**Bottom depth:** 12.9 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1414
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268264.99 Longitude: 205311.07 rocks

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P- 3/8/11 **Reviewed By/Date:** [signature] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2008 - A

Sampled By: CW + JS **Date:** 3 / 8 / 2011

Grab: # 1	**Bottom depth:** 8.3 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1426
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268283.65 Longitude: 205259.62 water
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 15.0 ft	**Penetration Depth:** 7.0 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1428
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268272.99 Longitude: 205261.66
Grab: # 3 (1) *or* **N/A** ☒	**Bottom depth:** ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab: # 4 (1) *or* **N/A** ☒	**Bottom depth:** ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MP 3/8/11 **Reviewed By/Date:** 7/18/11

Version3 -030311

(1) N/A. MP 7/18/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2008 - D

Sampled By: CW & JS **Date:** 3 / 8 / 2011

Grab: # 1	**Bottom depth:** 11.1 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1417
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268278.83 Longitude: 205286.47 water
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 9.1 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1420
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268276.22 Longitude: 205279.23 water
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 10.8 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1421
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268275.88 Longitude: 205282.58 rock!
Grab: # 4 *or* **N/A** ☐	**Bottom depth:** 10.4 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1424
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268276.55 Longitude: 205296.24 water

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/8/11 **Reviewed By/Date:** [signature] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

MR 3/14/11

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** ~~2005~~ 2008 - ~~D~~ V

Sampled By: CW + JS **Date:** 3 / 14 / 2011

Grab: # 1	Bottom depth: 21.0 ft	Penetration Depth: 712 cm	Acceptable / Rejected (circle one) Time: 1423
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 126873.21 Longitude: 205222.42 over penetration

Grab: # 2 or N/A ☐	Bottom depth: — ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1925
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268304.65 Longitude: 205217.86 water

Grab: # 3 or N/A ☐	Bottom depth: — ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1434 1440
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:*** MR 3/14/11
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268282.69 Longitude: 205235.88 water

Grab: # 4 or N/A ☐	Bottom depth: 19.0 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1449
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268295.85 Longitude: 205232.67 rocks

Pumps

Power

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MR 3/14/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2009 - A

Sampled By: CW + JS **Date:** 3 / 8 / 2011

Grab: # 1	**Bottom depth:** 11.8 ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1332
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:* ____	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 268356.69 Longitude: 204995.51 tubwater
Grab: # 2 *or* N/A ☐	**Bottom depth:** ~~11.4~~ 14.0 ft	**Penetration Depth:** ~~7.0~~ cm	**Acceptable / Rejected** *(circle one)* **Time:** ~~1333~~ 1334
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:* ____	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 268347.65 Longitude: 204996.30 no odor
Grab: # 3 *or* N/A ☐	**Bottom depth:** ____ ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:** ____
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:* ____	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: ____ Longitude: ____ MR 3/8/11
Grab: # 4 *or* N/A ☐	**Bottom depth:** ____ ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:** ____
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:* ____	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: ____ Longitude: ____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MR 3/8/11 **Reviewed By/Date:** 3/11/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2009 - D

Sampled By: CW & SS **Date:** 3 / 8 / 2011

Grab: # 1	Bottom depth: 6.7 ft	Penetration Depth: ___ cm	Acceptable / Rejected (circle one) Time: 1320
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ___	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268345.85 Longitude: 205009.10 rocks

Grab: # 2 or N/A ☐	Bottom depth: 12.6 ft	Penetration Depth: ___ cm	Acceptable / Rejected (circle one) Time: 1324
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ___	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268335.56 Longitude: 205009.30 rocks w/ some sandy silt

Grab: # 3 or N/A ☐	Bottom depth: 8.9 ft	Penetration Depth: ___ cm	Acceptable / Rejected (circle one) Time: 1327
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ___	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268343.39 Longitude: 205009.76 rocks

Grab: # 4 or N/A ☐	Bottom depth: 10.0 ft	Penetration Depth: ___ cm	Acceptable / Rejected (circle one) Time: 1329
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ___	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268349.76 Longitude: 205019.97 water

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MP 3/8/11 **Reviewed By/Date:** [signature] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2009 - U

Sampled By: CW & JS **Date:** 3 / 8 / 2011

Grab: # 1	Bottom depth: 8.4 ft	Penetration Depth: — cm	Acceptable / Rejected *(circle one)* Time: 1349
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268369.00 Longitude: 204972.16 Water

Grab: # 2 *or* N/A ☐	Bottom depth: 9.5 ft	Penetration Depth: 40 cm	Acceptable / Rejected *(circle one)* Time: 1350
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268367.32 Longitude: 204970.37 Under-penetration but will composite Keep

Grab: # 3 *or* N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____ MP 3/8/11

Grab: # 4 *or* N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/8/11 **Reviewed By/Date:** [signature] 3/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2010 - A

Sampled By: MAP/AJW **Date:** 3 / 21 / 2011

Grab: # 1	Bottom depth: 9.5 ft	Penetration Depth: 9.5 cm	Acceptable / Rejected *(circle one)* Time: 1335
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum Sheen	Latitude: 204515.81 Longitude: 1268509.95 ①
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] 3/21/11 **Reviewed By/Date:** [signature] 7/18/11

Version3 -030311

① Lat/long switched. MAM 7/14/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2010 - D

Sampled By: MAP/AJW **Date:** 3 / 21 / 2011

Grab: # 1	Bottom depth: 8.0 ft	Penetration Depth: ____ cm	Acceptable / Rejected (circle one) Time: 1315
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel ~~Sand~~ C M (F) ~~Silt/clay~~ cw 3/21/11 Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface ~~Gray~~ cw 3/21/11 ~~Black~~ *Other:* ~~Tan~~	None Slight Moderate Strong Overwhelming H_2S Petroleum Slight Sheen	Latitude: 204548.55 Longitude: 1268515.36 Over Penetration Switch Youngs to Ponar

Grab: # 2 or N/A ☐	Bottom depth: 7.7 ft	Penetration Depth: ____ cm	Acceptable / Rejected (circle one) Time: 1321
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 204554.44 Longitude: 1268516.70 Rocks

Grab: # 3 or N/A ☐	Bottom depth: 9.0 ft	Penetration Depth: 9.5 cm	Acceptable / Rejected (circle one) Time: 1324
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel (Sand) C M (F) (Silt/clay) Organic matter Woody debris Shell debris Worms (Polychaetes)	Drab olive Brown Brown surface Gray (Black) *Other:* Tan	None Slight Moderate Strong Overwhelming H_2S Petroleum Slight Sheen	Latitude: 204564.32 Longitude: 1268509.35

Grab: # ____ or N/A ☒	Bottom depth: ____ ft	Penetration Depth: ____ cm	Acceptable / Rejected (circle one) Time: ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/21/11 **Reviewed By/Date:** 7/18/11

Version3 -030311

① Lat/Long switched 7.21.11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2010 - 4

Sampled By: MAP/AJW **Date:** 3 /21 / 2011

Grab: # 1	Bottom depth: 9.6 ft	Penetration Depth: 10.5 cm	Acceptable / Rejected *(circle one)* Time: 1353
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum Slight Sheen	Latitude: 204485.16 Longitude: 1268522.79
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/21/11 **Reviewed By/Date:** 7/18/11

Version3 -030311

Coordinates switched - MPM 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2011 - A

Sampled By: MAP / AJW **Date:** 3 / 21 / 2011

Grab: # 1	**Bottom depth:** 3.9 ft	**Penetration Depth:** 5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1421
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Brick Worms Debris Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 204315.26 Longitude: 126894.19 ①
Grab: #_____ *or* **N/A** ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/21/11 **Reviewed By/Date:** 7/15/11

Version3 -030311

① Lat/Long switched. mam 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2011 - D

Sampled By: MAP / AJW **Date:** 3 / 21 / 2011

Grab: # 1	Bottom depth: 4.7 ft	Penetration Depth: ~ cm	Acceptable / Rejected (circle one) Time: 1404
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 204330.39 ① Longitude: 1268581.03 Rocks

Grab: # 2 or N/A ☐	Bottom depth: 5.2 ft	Penetration Depth: X cm	Acceptable / Rejected (circle one) Time: 1406
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 204328.93 ① Longitude: 1268578.87 Rocks

Grab: # 3 or N/A ☐	Bottom depth: 4.6 ft	Penetration Depth: ~ cm	Acceptable / Rejected (circle one) Time: 1408
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 204333.00 ① Longitude: 1268581.47 Rocks

Grab: # 4 or N/A ☐	Bottom depth: 5.3 ft	Penetration Depth: 6 cm	Acceptable / Rejected (circle one) Time: 1410
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum Slight Sheen	Latitude: 204332.79 ① Longitude: 1268577.28

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/21/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

① Lat/Long switched. more 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2011 - 4

Sampled By: MAP/AJW **Date:** 3 / 21 / 2011

Grab: # 1	Bottom depth: 4.2 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1430
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 204275.87 (1) Longitude: 1268608.65 Rocks
Grab: # 2 *or* N/A ☐	**Bottom depth:** 4.5 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1432
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 204277.48 (1) Longitude: 1268603.74 Rocks
Grab: # 3 *or* N/A ☐	**Bottom depth:** 4.4 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1434
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 204276.38 (1) Longitude: 1268606.54 Rocks
Grab: # 4 *or* N/A ☐	**Bottom depth:** 5.1 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1436
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 204269.16 (1) Longitude: 1268603.36 Unable to collect samples after 4 attempts due to rocky substrates

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/21/11 **Reviewed By/Date:** 7/18/11

Version3 -030311

(1) Lat/long switched. mwm 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2013 - A

Sampled By: MAP/AMK **Date:** 4 / 18 / 2011

Grab: # 1	Bottom depth: Surface ft	Penetration Depth: 10 cm	Acceptable / Rejected *(circle one)* Time: 1343
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:*** See Photos estimate
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude: ~36' Downstream of 2013-U Grabbed by

Grab: #_____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Grab: #_____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Grab: #_____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 4/7/11 **Reviewed By/Date:** 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2013 - D

Sampled By: MAP/AMK **Date:** 4 / 8 / 2011

Grab: # 1	**Bottom depth:** Surface ft	**Penetration Depth:** 10 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 1332
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:*** See photos est. mate
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Glass Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude: ~60' Downstream of 2013-U Grabbed by foot
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 4/8/11 **Reviewed By/Date:** 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2013 - U

Sampled By: MAP/AMK **Date:** 4 / 8 / 2011

Grab: # 1	Bottom depth: Surface ft	Penetration Depth: 10 cm	Acceptable / Rejected *(circle one)* Time: 1357
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:*** See photo
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	(2) Latitude: 204129.98 (1) cw 4/8/11 Longitude: ~~2041~~ 268680.0 GPS is 20' off to West Grabbed by foot

Grab: #_____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 4/8/11 **Reviewed By/Date:** 7/18/11

Version3 -030311

(1) Longitude. mcm 7-18-11
(2) Latitude. mcm 7-18-11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2014 - A

Sampled By: CW + SS **Date:** 3 / 8 / 2011

Grab: # 1	Bottom depth: 9.4 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1226
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 268822.16 Longitude: 203537.40 rocks
Grab: # 2 or N/A ☐	**Bottom depth: 7.1 ft**	**Penetration Depth: — cm**	**Acceptable / Rejected (circle one) Time: 1228**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 268318.09 Longitude: 203539.91 rocks
Grab: # 3 or N/A ☐	**Bottom depth: 5.8 ft**	**Penetration Depth: — cm**	**Acceptable / Rejected (circle one) Time: 1230**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 268817.65 Longitude: 203538 10 rocks
Grab: # 4 or N/A ☐	**Bottom depth: 9.3 ft**	**Penetration Depth: — cm**	**Acceptable / Rejected (circle one) Time: 1232**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 268815.58 Longitude: 203537 53 water

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P 3/8/11 **Reviewed By/Date:** 7.18.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2014 - D

Sampled By: CW & JS **Date:** 3 / 8 / 2011

Grab: # 1	**Bottom depth:** 6.4 ft	**Penetration Depth:** 3.0 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1154
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1268816.61 Longitude: 203569.13 under-penetration
Grab: # 2 *or* N/A ☐	**Bottom depth:** 8.0 ft	**Penetration Depth:** 2.0 cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1268815.69 Longitude: 203564.28 under-penetration
Grab: # 3 *or* N/A ☐	**Bottom depth:** 6.6 ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:** 1221
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1268811.15 Longitude: 203563.76 rocks
Grab: # 4 *or* N/A ☐	**Bottom depth:** 7.6 ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:** 1229
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1268810.40 Longitude: 203567.42 water only

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/8/11 **Reviewed By/Date:** 7.18.11

Version3 -030311

poor

poor

Young's grab

Young's grab

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2014 - U

Sampled By: CW + JS **Date:** 3 / 8 / 2011

Grab: # 1	Bottom depth: 8.1 ft	Penetration Depth: ___ cm	Acceptable / Rejected (circle one) Time: 1235
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ___	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268536.48 Longitude: 203511.58 water

Grab: # 2 or N/A ☐	Bottom depth: 8.1 ft	Penetration Depth: ___ cm	Acceptable / Rejected (circle one) Time: 1236
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ___	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268841.26 Longitude: 203503.58 water

Grab: # 3 or N/A ☐	Bottom depth: 7.6 ft	Penetration Depth: ___ cm	Acceptable / Rejected (circle one) Time: 1236
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ___	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268536.53 Longitude: 203508.53 water

Grab: # 4 or N/A ☐	Bottom depth: 6.9 ft	Penetration Depth: 1.0 cm	Acceptable / Rejected (circle one) Time: 1237
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ___	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268537.60 Longitude: 203506.09 under-penetration

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/8/11 **Reviewed By/Date:** [signature] 7.18.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2015 - A

Sampled By: CW & JS **Date:** 3 / 8 / 2011

Grab: # 1	Bottom depth: 14.3 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1135
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268866.30 Longitude: 203415.53 rocks
Grab: # 2 *or* N/A ☐	**Bottom depth: 11.7 ft**	**Penetration Depth: — cm**	**Acceptable / Rejected (circle one) Time: 1140**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268867.25 Longitude: 203422.20 rocks
Grab: # 3 *or* N/A ☐	**Bottom depth: 9.7 ft**	**Penetration Depth: — cm**	**Acceptable / Rejected (circle one) Time: 1142**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268868.03 Longitude: 203419.76 rocks
Grab: # 4 *or* N/A ☐	**Bottom depth: 11.7 ft**	**Penetration Depth: — cm**	**Acceptable / Rejected (circle one) Time: —**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268870.10 Longitude: 203399.65 rocks

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/9/11 **Reviewed By/Date:** [signature] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

(MP) 3/8/11

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** ~~2016~~ 2015 - D

Sampled By: CW + JS **Date:** 3 / 8 / 2011

Grab: #1	**Bottom depth:** 13.0 ft	**Penetration Depth:** 6.0 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1104
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris ~~Shell debris~~ Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268869.02 Longitude: 203428.25
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate (MP) 3/8/11 Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MP 3/8/11 **Reviewed By/Date:** [signature] 3/11/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2016 - D

Sampled By: CW / MAP **Date:** 03 / 07 / 2011

Grab: # ~~1~~	**Bottom depth:** 7.0 ft	**Penetration Depth:** 9 cm	**Acceptable / Rejected** *(circle one)* **Time:** 0942
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1272555.99 Longitude: 198213.58
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wilks **Reviewed By/Date:** [illegible] 7/21/11

Version3 -030311

~~VOID~~ already collected AOW 3/7/11 FOOTNOTE INACCURATE. TMOM 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2017 - A

Sampled By: CW + JS **Date:** 3 / 8 / 2011

Grab: # 1	**Bottom depth:** 4.2 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1253
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268752.62 Longitude: 203686.52 rocks
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 4.3 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1254
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268752.97 Longitude: 203683.47 rocks w/ sand crs. sand
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 4.3 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1255
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268752.57 Longitude: 203684.09 rocks w/ miner crs. sand
Grab: # 4 *or* **N/A** ☐	**Bottom depth:** 7.1 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1257
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268737.57 Longitude: 203695.93 rocks

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/8/11 **Reviewed By/Date:** 7-18-11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2017 - D

Sampled By: CW & JS **Date:** 3 / 8 / 2011

Grab: # 1	**Bottom depth:** 4.3 ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1245
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268745.8 Longitude: 203717.7 rocks
Grab: # 2 *or* N/A ☐	**Bottom depth:** 4.1 ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1247
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268743.14 Longitude: 203725.05 rocks
Grab: # 3 *or* N/A ☐	**Bottom depth:** 4.8 ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1249
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268741.44 Longitude: 203704.37 rocks
Grab: # 4 *or* N/A ☐	**Bottom depth:** 5.2 ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1251
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268746.05 Longitude: 203708.54 rocks

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.R. 3/8/11 **Reviewed By/Date:** [signature] 7.18.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2017 - U

Sampled By: CW & TS **Date:** 3 / 8 / 2011

Grab: # 1	Bottom depth: 5.0 ft	Penetration Depth: ~~30~~ cm	Acceptable / Rejected (circle one) Time: 1300
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268750.49 Longitude: 203682.91 rocks under-penetration
Grab: # 2 *or* N/A ☐	**Bottom depth:** 4.5 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1304
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268755.47 Longitude: 203663.96 rocks
Grab: # 3 *or* N/A ☐	**Bottom depth:** 4.2 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1306
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268752.97 Longitude: 203662.19 rocks
Grab: # 4 *or* N/A ☐	**Bottom depth:** 4.3 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1308
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268751.82 Longitude: 203666.47 rocks

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MP 3/8/11 **Reviewed By/Date:** [signature] 7-18-11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2018 - D

Sampled By: CW & JS **Date:** 3 / 8 / 2011

Grab: # 1	Bottom depth: 10.0 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1015
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 126934.43 Longitude: 203023.70 rocks
Grab: # 2 *or* N/A ☐	**Bottom depth:** 10.20 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1020
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 126903.43 Longitude: 203026.78 rocks
Grab: # 3 *or* N/A ☐	**Bottom depth:** 10.2 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1022
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 126902.16 Longitude: 203039.77 rocks
Grab: # 4 *or* N/A ☐	**Bottom depth:** 9.1 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1024
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 126919.86 Longitude: 203036.75 rocks

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.T. 3/8/11 **Reviewed By/Date:** [signature] 7.18.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2018 - U

Sampled By: CW & JS **Date:** 3 / 8 / 2011

Grab: # 1	**Bottom depth:** 8.6 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1030
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269051.94 Longitude: 202971.67 caught on bottom
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 11.0 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1044
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269042.40 Longitude: 202968.21 rocks
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 13.4 ft	**Penetration Depth:** 5.5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1049
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269036.23 Longitude: 202968.33
Grab: #_____ *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

3/8/11

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MR 3/8/11 **Reviewed By/Date:** 7.18.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2019 - A

Sampled By: MAP / AK **Date:** 4 / 15 / 2011

Grab: # 1	Bottom depth: 4.5 ft	Penetration Depth: ____ cm	Acceptable / ~~Rejected~~ (circle one) Time: 0945
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269577.63 Longitude: 205361.03
Grab: # 2 *or* N/A ☐	**Bottom depth:** 5.0 ft	**Penetration Depth:** 8.5 cm	**Acceptable** / Rejected (circle one) Time: 0949
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay ~~Organic matter~~ Woody debris ~~Shell debris~~ Worms Polychaetes	Drab olive ~~Brown~~ Dark Brown surface Gray ~~Black~~ *Other:* ____	~~None~~ Slight Moderate Strong Overwhelming H_2S Petroleum slight sheen	Latitude: 1269581.63 Longitude: 20349.03
Grab: # ____ *or* N/A ☒	**Bottom depth:** ____ ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** (circle one) Time: ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____
Grab: # ____ *or* N/A ☒	**Bottom depth:** ____ ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** (circle one) Time: ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wiles 4/15/11 **Reviewed By/Date:** [signature] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2021 - A

Sampled By: MAP / CW **Date:** 3 / 24 / 2011

Grab: #1	**Bottom depth:** – ft ①	**Penetration Depth:** 10 cm	**Acceptable** / Rejected *(circle one)* **Time:** 1433
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: — Longitude: — See photos (marked GPS location from boat ~30' out)
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/24/11 **Reviewed By/Date:** [signature] 3/24/11

Version3 -030311

① Collected by hand. mm 3/24/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2021 - 3/24/11 D ASW

Sampled By: MAP / MW **Date:** 3 / 24 / 2011

Grab: # 1	Bottom depth: – (1) ft	Penetration Depth: 10 cm	Acceptable / Rejected *(circle one)* Time: 1448
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: – Longitude: – See photos (approx 30' downstream upstream of 2021-A)
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____ MP 3/24/11
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MP 3/24/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

(1) Collected by hand @ surface. [signature] 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

AJW 3/24/11

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2021 - D

Sampled By: MAP / CW **Date:** 3 / 24 / 2011

Grab: #1	**Bottom depth:** — ft (1)	**Penetration Depth:** 10 cm	**Acceptable** / Rejected *(circle one)* **Time:** 1432
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay @ 5cm, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:* brick fragments	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: — Longitude: — See photos (approx 30' upstream from 2021-A)
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: Longitude: MP 3/24/11
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: Longitude:
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/24/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

(1) Collected by hand @ surface. MEM 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2022 - A

Sampled By: CW / MAP **Date:** 3 / 24 / 2011

Grab: # 1	**Bottom depth:** 16.2 ft	**Penetration Depth:** 8.5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1211
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269302.10 Longitude: 202034.67 FD collected

Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Anna Wells 3/24/11 **Reviewed By/Date:** [signature] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2022 - D

Sampled By: CW/MAP **Date:** 3 / 24 / 2011

Grab: # 1	**Bottom depth:** 16.5 ft	**Penetration Depth:** 9.5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1158
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum slight sheen	Latitude: 1269292.33 Longitude: 2020 53.23
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wilk 3/24/11 **Reviewed By/Date:** [signature] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

2025

Surface Sediment Collection Form 840

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2025 - A

Sampled By: MAP **Date:** 4 / 15 / 2011

Grab: # 1	**Bottom depth:** ASV 10 cm ft 3/D/11	**Penetration Depth:** 10 cm	**Acceptable / Rejected** *(circle one)* **Time:** 0840
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay minor Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 4732.545 Longitude: 122 19.795 *See photos Field Duplicate collected from 7-18-11
Grab: #_____ *or* **N/A** ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alicia Wells 4/15/11 **Reviewed By/Date:** [illegible] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2027 - A

Sampled By: CW / MAP **Date:** 3 / 24 / 2011

Grab: # 1	Bottom depth: 11.2 ft	Penetration Depth: 7.5 cm	Acceptable / Rejected *(circle one)* Time: 0951
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* slight sheen	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 127278.06 Longitude: 200320.18
Grab: #_____ *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alexa Wells 3/24/11 **Reviewed By/Date:** [signature] 7/10/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2029 - A

Sampled By: MAP / AK **Date:** 4 / 15 / 2011

Grab: # 1	**Bottom depth:** 7.1 ft	**Penetration Depth:** 11.5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 7.1 4/15/11 1043
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____ Sheen	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 127090.44 Longitude: 200376.66
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 4/15/11 **Reviewed By/Date:** [signature] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2029 - D

Sampled By: AK MAP **Date:** 4 / 15 / 2011

Grab: # 1	**Bottom depth:** 7.2 ft	**Penetration Depth:** – cm	**Acceptable / Rejected** *(circle one)* **Time:** 1028
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271124.82 Longitude: 200371.30
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 7.0 ft	**Penetration Depth:** 10.5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1031
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* Slight sheen	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271059.11 Longitude: 200381.48
Grab: #_____ *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 4/15/11 **Reviewed By/Date:** [signature] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2030 - A

Sampled By: MAP/AK **Date:** 4/15/2011

Grab: # 1	**Bottom depth:** 7.4 ft	**Penetration Depth:** 10 cm	**Acceptable** / Rejected *(circle one)* **Time:** 1053
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* Sheen	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 12711125.57 Longitude: 200371.95
Grab: #____ *or* **N/A** ☐	**Bottom depth:** ____ ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:** ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____
Grab: #____ *or* **N/A** ☒	**Bottom depth:** ____ ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:** ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____
Grab: #____ *or* **N/A** ☐	**Bottom depth:** ____ ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:** ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 4/15/11 **Reviewed By/Date:** [signature] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2030 - U

Sampled By: MAP / IAK **Date:** 4 / 15 / 2011

Grab: # 1	Bottom depth: 6.4 ft	Penetration Depth: _____ cm	Acceptable / ~~Rejected~~ *(circle one)* Time: 1109
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 127173.30 Longitude: 200382.14 Rock
Grab: # 2 *or* N/A ☐	**Bottom depth:** 7.0 ft	**Penetration Depth:** 11 cm	~~Acceptable~~ / **Rejected** *(circle one)* Time: 1106
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F ~~Silt~~/clay Organic matter ~~Woody debris~~ ~~Shell debris~~ Worms Polychaetes	Drab olive ~~Brown~~ Brown surface Gray ~~Black~~ *Other:* _____ NO sheen	None ~~Slight~~ Moderate Strong Overwhelming H_2S Petroleum	Latitude: 127189.73 Longitude: 200377.93
Grab: #_____ *or* N/A ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MM for MAP on 4/15/11 **Reviewed By/Date:** 7/21/11

7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2032 - A

Sampled By: MAP / AK **Date:** 4 / 15 / 2011

Grab: # 1	Bottom depth: 7.1 ft	Penetration Depth: 9 cm	Acceptable / Rejected *(circle one)* Time: 1123
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* slight sheen	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 12 71135.74 Longitude: 200384.33
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Mike Wells 4/15/11 **Reviewed By/Date:** [illegible] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2034 - D

Sampled By: CWIMAP **Date:** 03 / 24 / 2011

Grab: # 1	Bottom depth: 14.3 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1008
Sediment type:	**Sediment color:**	**Sediment Odor:**	**Comments:**
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271356.53 Longitude: 19970.42 Rock grab

Grab: # 2 or N/A ☐	Bottom depth: 11.9 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1010
Sediment type:	**Sediment color:**	**Sediment Odor:**	**Comments:**
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271362.00 Longitude: ~~199978~~ AJW 3/24/11 199979.02 Water Grab

Grab: # 3 or N/A ☐	Bottom depth: 12.1 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1012
Sediment type:	**Sediment color:**	**Sediment Odor:**	**Comments:**
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271355.97 Longitude: 19982.92 Water

Grab: # 4 or N/A ☐	Bottom depth: 14.3 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1014
Sediment type:	**Sediment color:**	**Sediment Odor:**	**Comments:**
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271355.39 Longitude: 19970.89 Rock

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wills 3/24/11 **Reviewed By/Date:** [signature] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 3034 - D (2)

Sampled By: CW / MAP **Date:** 3 / 24 / 2011

Grab: # 5	Bottom depth: 15.1 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1017
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271357.30 Longitude: 199965.24
Grab: # 6 or N/A ☐	**Bottom depth:** 16.1 ft	**Penetration Depth:** 8.5 cm	**Acceptable / Rejected** (circle one) Time: 1020
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown/gray silt Brown surface Gray Black *Other:* oxidation	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271354.47 Longitude: 199962.35
Grab: #_____ or N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** (circle one) Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ or N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** (circle one) Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [illegible] 3/24/11 **Reviewed By/Date:** [illegible] 7/18/11

Version3 -030311

(1) correction by AOW on 3/24/11.
MOM 7/18/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** (1)2034 - U

Sampled By: CW / MAP **Date:** 3 / 24 / 2011

Grab: # 1	Bottom depth: 15.3 ft	Penetration Depth: 10 cm	Acceptable / Rejected *(circle one)* Time: 1036
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* red brick debris	None Slight Moderate Strong Overwhelming H_2S Petroleum slight sheen	Latitude: 127398.41 Longitude: 199930.02 Field Dup collected. MAP 7.18.11
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alison Wells 3/24/11 **Reviewed By/Date:** [signature] 7/18/11

Version3 -030311

(1) Correction made by AJW on 3/24/11. MAP 7.18.11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2035 - A

Sampled By: CW / MAP **Date:** 03 / 07 / 2011

Grab: # 1	**Bottom depth:** 13.8 ft	**Penetration Depth:** 12.5 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 1218
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1271474.02 Longitude: 199752.87 slight surface disturbance
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/7/11 **Reviewed By/Date:** [illegible] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2035 - D

Sampled By: CW / MP **Date:** 2 / 28 / 2011

Grab #1	**Bottom depth:** 19 ~~cm~~ FT JW 2/28/11	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1045
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 127432.51 Longitude: 199804.68 over penetration
Grab #2 *or* **N/A** ☒	**Bottom depth:** _____ ~~cm~~ FT JW 2/28/11	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab #3 *or* **N/A** ☒	**Bottom depth:** _____ ~~cm~~ FT JW 2/28/11	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab #4 *or* **N/A** ☒	**Bottom depth:** _____ ~~cm~~ FT JW 2/28/11	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [illegible] on 7/21/11 for JW on 2/28/11 **Reviewed By/Date:** [illegible] 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2035 - D

Sampled By: CW / MAP **Date:** 03 / 03 / 2011

Grab #1	**Bottom depth:** 17.5 cm	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1006
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 127448.32 Longitude: 199841.08 Over penetration
Grab #2 *or* **N/A** ☐	**Bottom depth:** 16.2 cm	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1012
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 127443.33 Longitude: 199847.71 Over penetration
Grab #3 *or* **N/A** ☐	**Bottom depth:** 14.3 cm	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1022
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 127422.48 Longitude: 199834.13 over penetration
Grab #4 *or* **N/A** ☐	**Bottom depth:** cm	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alia Wells 3/3/11 **Reviewed By/Date:** 7/18/11

Water exiting out of outfall at time of sampling

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** ①2035 - D

Sampled By: CW / MAP **Date:** 03 / 07 / 2011

Grab: # 1	Bottom depth: 12.9 ft	Penetration Depth: 11 cm	Acceptable / Rejected *(circle one)* Time: 1206
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271471.17 Longitude: 199775.42
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] 3/7/11 **Reviewed By/Date:** [signature] 7/18/11

Version3 -030311

① Correction made by ASW on 3/7/11. mwm 7.18.11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 3035 - U (2)

Sampled By: MAP / CW **Date:** 03 / 07 / 2011

Grab: # 1	Bottom depth: 12.8 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1230
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms mucles Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S (1) Petroleum sheen	Latitude: 1271501.34 Longitude: 199738.96 twigs in sampler
Grab: # 2 *or* N/A ☐	**Bottom depth:** 12.0 ft	**Penetration Depth:** 9.5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1235
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel minor Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms mucles Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271507.19 Longitude: 199743.11
Grab: # _____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: # _____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/7/11 **Reviewed By/Date:** [signature] 7/18/11

Version3 -030311

(1) Logged material for grab 2 on line grab 1 (ASW, 3/7/11 - permanent 7/28/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2036 - A

Sampled By: MAP / CW **Date:** 03 / 03 / 2011

Grab #1	**Bottom depth:** 14.5 ~~ft~~ cm NAD	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1253
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271723.22 Longitude: 199502.38 Over pentrated
Grab #2 *or* **N/A** ☐	**Bottom depth:** 14.5 ~~ft~~ cm NAD	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1258
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271723.18 Longitude: 199500.56 0 NAD water grab
Grab #3 *or* **N/A** ☐	**Bottom depth:** 14.7 ~~ft~~ cm NAD	**Penetration Depth:** cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1259
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271722.67 Longitude: 199495.09 Over pentration
Grab #4 *or* **N/A** ☒	**Bottom depth:** ~~ft~~ cm NAD	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 03/03/11 **Reviewed By/Date:** [signature] 7/18/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2036 - A

Sampled By: CW / MAP **Date:** 03 / 07 / 2011

Grab: # 1	**Bottom depth:** 9.3 ft	**Penetration Depth:** 11 cm	**Acceptable** / Rejected *(circle one)* **Time:** 1151
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum slight sheen	Latitude: 1271742.47 Longitude: 199475.86
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/7/11 **Reviewed By/Date:** [signature] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2036 - D

Sampled By: MAP/CW **Date:** 03 / 03 / 2011

Grab #1	**Bottom depth:** 14.9 ft cm MSW	**Penetration Depth:** — cm	**Acceptable / Rejected** (circle one) **Time:** 1236
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 121708.79 Longitude: 199522.72 ~~Over penetration~~ AJW 3/3/11
Grab #2 *or* **N/A** ☐	**Bottom depth:** 14.8 ft cm MSW	**Penetration Depth:** — cm	**Acceptable / Rejected** (circle one) **Time:** 1238
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271712.39 Longitude: 199517.18 Over penetration Ponar
Grab #3 *or* **N/A** ☐	**Bottom depth:** 14.6 ft cm MSW	**Penetration Depth:** — cm	**Acceptable / Rejected** (circle one) **Time:** 1240
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271705.60 Longitude: 199528.26 Over penetration sheen
Grab #4 *or* **N/A** ☐	**Bottom depth:** 14.3 ft cm MSW	**Penetration Depth:** — cm	**Acceptable / Rejected** (circle one) **Time:** 1244
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271706.96 Longitude: 199534.31 Water Grab

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alexa Wells 3/3/11 **Reviewed By/Date:** T Shephard 7/18/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2036 - D

Sampled By: CW / MAP **Date:** 03 / 03 / 2011

Grab #1 5 ADV	Bottom depth: 14.8 ft cm ADV	Penetration Depth: — cm	Acceptable / ~~Rejected~~ (circle one) Time: 1271700.42 AW 1247
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*_____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271700.42 Longitude: 199536.87 over penetration sheen
Grab #2 *or* N/A ☒	**Bottom depth:** ft cm ADV	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*_____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab #3 *or* N/A ☒	**Bottom depth:** ft cm ADV	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*_____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab #4 *or* N/A ☒	**Bottom depth:** ft cm ADV	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*_____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Anna Wells 3/03/11 **Reviewed By/Date:** [illegible] 7/18/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** ~~30376~~ 2036 (Pe) - D (KW 3/7/11)

Sampled By: CW / MAP **Date:** 03 / 07 / 2011

Grab: # 1	**Bottom depth:** 9.4 ft	**Penetration Depth:** 10 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 1140
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F (Silt/clay) Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive (Brown) Brown surface Gray (Black) *Other:*	None (Slight) Moderate Strong Overwhelming H_2S Petroleum slight sheen	Latitude: 1271722.97 Longitude: 199510.90
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alissa Wells 3/7/11 **Reviewed By/Date:** [illegible] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** ~~20~~ AD-3171 2037- A

Sampled By: CW / MAP **Date:** 03 / 07 / 2011

Grab: # 1	Bottom depth: 8.6 ft	Penetration Depth: 10 cm	~~Acceptable~~ / Rejected *(circle one)* Time: 1322
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel (Sand) C M (F) top Silt/clay Organic matter (Woody debris) Shell debris Worms (Polychaetes)	Drab olive (Brown) Brown surface Gray (Black) *Other:*	None (Slight) Moderate Strong Overwhelming (~~H_2S~~) Petroleum	Latitude: 1271754.601 Longitude: 199464.68

Grab: #_____ or N/A ☑	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ or N/A ☑	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ or N/A ☑	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] 3/7/11 **Reviewed By/Date:** [signature] 7.18.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2037 - D (1)

Sampled By: CW / MAS **Date:** 03 / 07 / 2011

Grab: # 1	**Bottom depth:** 7.2 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1246
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1271755.05 Longitude: 199487.78 No grab sampler did not close
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 9.2 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1247
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1271734.99 Longitude: 199493.64
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 7.8 ft	**Penetration Depth:** 9 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1254
Sediment type: Cobble, Gravel, Sand C M F, (Silt/clay), Organic matter, (Woody debris), Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, (Brown), Brown surface, (Gray), Black, *Other:*	***Sediment Odor:*** None, (Slight), Moderate, Strong, Overwhelming, (H_2S), Petroleum slight sheen	***Comments:*** Latitude: 1271754.85 Longitude: 199477.44
Grab: # _____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Risa Wells 3/7/11 **Reviewed By/Date:** [illegible] 7.18.11

Version3 -030311

(1) Correction made by AJW on 3/7/11. mwm 7.18.11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2037 - 4

Sampled By: CW / MAP **Date:** 03 / 07 / 2011

Grab: # 1	Bottom depth: 4.8 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1335
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F minor Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271793.10 Longitude: 199453.60 Rock in sampler

Grab: # 2 or N/A ☐	Bottom depth: 4.9 ft	Penetration Depth: 7.5 cm	Acceptable / Rejected (circle one) Time: 1340
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271793.57 Longitude: 199456.53

Grab: # _____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected (circle one) Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: # _____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected (circle one) Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Lisa Wells 3/7/11 **Reviewed By/Date:** [signature] 3/8/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2038 - A

Sampled By: MHP / CW **Date:** 03 / 03 / 2011

Grab #1	**Bottom depth:** 6.7 ft cm ADJ	**Penetration Depth:** 7 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 1220
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel - F Sand C M (F) Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* Red/tan	None Slight Moderate Strong Overwhelming H_2S Petroleum slight sheen	Latitude: 127840.15 Longitude: 199395.53

Grab #2 *or* **N/A** ☒	**Bottom depth:** ft cm ADJ	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Grab #3 *or* **N/A** ☒	**Bottom depth:** ft cm ADJ	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Grab #4 *or* **N/A** ☒	**Bottom depth:** ft cm ADJ	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/3/11 **Reviewed By/Date:** [illegible] 7/18/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2038 - D

Sampled By: MAP / CW **Date:** 03 / 03 / 2011

Grab #1	**Bottom depth:** 7.0 ~~ft~~ cm ADW	**Penetration Depth:** 7.0 cm	~~**Acceptable**~~ / **Rejected** *(circle one)* **Time:** 1204
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel - F Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown / tan Brown surface Gray Black *Other:*	~~None~~ ADW 3/3/11 Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 127829.22 Longitude: 199405.47
Grab #2 *or* **N/A** ☒	**Bottom depth:** ft cm ADW	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab #3 *or* **N/A** ☒	**Bottom depth:** ft cm ADW	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab #4 *or* **N/A** ☒	**Bottom depth:** ft cm ADW	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/3/11 **Reviewed By/Date:** [signature] 7/18/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2038-U

Sampled By: CW & JW **Date:** 3 / 14 / 2011

new Power

Grab: # 1	Bottom depth: 5.5 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 0925
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271882.59 Longitude: 199353.27 rocks

Grab: # 2 or N/A ☐	Bottom depth: 5.5 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 0931
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271851.09 Longitude: 199371.30 water

Grab: # 3 or N/A ☐	Bottom depth: 5.4 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 0933
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271879.35 Longitude: 199374.02 water

Grab: # 4 or N/A ☐	Bottom depth: 6.2 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 0943
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271869.03 Longitude: 199343.22 rocks

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/14/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

Note: LDW-SS2038-U was not originally intended for collection in SAP/QAPP. jmm 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2038 - U

Sampled By: CW + JW **Date:** 3 / 14 / 2011

new Power i took grounds off

Grab: # 5	**Bottom depth:** 7.6 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 0950
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1271869.45 Longitude: 199356.11 rocks
Grab: # 6 *or* **N/A** ☐	**Bottom depth:** 7.9 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 0954
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1271867.27 Longitude: 199348.69 rocks
Grab: # 7 *or* **N/A** ☐	**Bottom depth:** ~~9.2~~ (HP) 8.4 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 0956
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1271849.92 Longitude: 199359.31 rocks
Grab: # 8 *or* **N/A** ☒	**Bottom depth:** ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.F. 3/14/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

Note: Sample not planned for collection per SAP/QAPP. Name 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** ~~2038~~ 2039 ~~ADW~~ ADW 3/11/11 - A

Sampled By: MAP / CW **Date:** 03 / 03 / 2011

Grab #1	**Bottom depth:** 7 ft / cm ADW	**Penetration Depth:** 5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1050
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271834.86 Longitude: 199398.67 Water grab
Grab #2 *or* **N/A** ☐	**Bottom depth:** 6.4 ft / cm ADW	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:** 1054
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271842.14 Longitude: 199391.84 not enough sediment
Grab #3 *or* **N/A** ☐	**Bottom depth:** ~~6.4~~ 4.2 ft / cm ADW	**Penetration Depth:** – cm	**Acceptable / Rejected** *(circle one)* **Time:** 1100
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms gravel Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	1271862.05 Latitude: ~~1271860.38~~ ADW Longitude: ~~199392.29~~ ADW 199378.08 rock – water grab
Grab #4 *or* **N/A** ☐	**Bottom depth:** 7.5 ft / cm ADW	**Penetration Depth:** 10.5 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 1105
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms in gravel Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271827.42 Longitude: 199376.31

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Mira Welly 3/3/11 **Reviewed By/Date:** [illegible] 7.18.11

Moved further than 50' to avoid riprap & cobbles

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** ~~2038~~ 2039 ~~ASW~~ ASW 3/3/11 - D

Sampled By: CW / MAP **Date:** 03 / 03 / 2011

Grab #1	**Bottom depth:** 9.2 ~~ft~~ cm ASW	**Penetration Depth:** 11 cm	**Acceptable / Rejected** *(circle one)* **Time:** ~~1035~~ 1035
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:*** ASW 3/03/11
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	~~None~~ Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 127832.88 Longitude: 199402.96
Grab #2 ***or*** **N/A** ☒	**Bottom depth:** cm	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab #3 ***or*** **N/A** ☒	**Bottom depth:** cm	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab #4 ***or*** **N/A** ☒	**Bottom depth:** cm	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alison Willis 3/3/11 **Reviewed By/Date:** 7.18.11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2039 - U

Sampled By: MAP / CW **Date:** 03 / 03 / 2011

Grab #1	Bottom depth: 7.0 ft / cm (circle one)	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1148
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271847.52 Longitude: 199350.99 Balder in sampler jaw

Grab #2 or N/A ☐	Bottom depth: 7.3 ft / cm (circle one)	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1150
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271857.41 Longitude: 199351.41 Rocks, gravel

Grab #3 or N/A ☐	Bottom depth: 6.1 ft / cm (circle one)	Penetration Depth: 1 cm	Acceptable / Rejected (circle one) Time: 1152
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271859.79 Longitude: 199346.50 gravel rejected

Grab #4 or N/A ☐	Bottom depth: 5.8 ft / cm (circle one)	Penetration Depth: 2 cm	Acceptable / Rejected (circle one) Time: 1154
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271862.61 Longitude: 199343.41

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alex Wells 3/3/11 **Reviewed By/Date:** [signature] 7/18/11

No sample collected after 8 grab attempts @ 2039-U

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2039 - U

Sampled By: MLP / CW **Date:** 03 / 03 / 2011

Grab #1 (KTW) 5	Bottom depth: 4.9 ft / cm (AJW)	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1139
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271862.81 Longitude: 199353.74 Rock in jaws

Grab #2 (KTW) 6 or N/A ☐	Bottom depth: 4.2 ft / cm (AJW)	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1142
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271852.58 Longitude: 199356.98 Water grab

Grab #3 (KTW) 7 or N/A ☐	Bottom depth: 5.8 ft / cm (AJW)	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1143
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271854.15 Longitude: 199353.91 Chunk of asphalt

Grab #4 (KTW) 8 or N/A ☐	Bottom depth: 5.6 ft / cm (AJW)	Penetration Depth: 2-3 cm	Acceptable / Rejected (circle one) Time: 1145
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271864.23 Longitude: 199342.16 Not enough sediment for sample

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alison Wiebe 3/3/11 **Reviewed By/Date:** [signature] 7/18/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2040 - A

Sampled By: CW / MAP **Date:** 03 / 04 / 2011

Grab: # 1	Bottom depth: 4.7 ft	Penetration Depth: 2 cm	Acceptable / Rejected (circle one) Time: 1433
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1272006.89 Longitude: 199203.19 Insufficient recovery
Grab: # 2 *or* N/A ☐	**Bottom depth:** 5.2 ft	**Penetration Depth:** 6 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1437
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Dark Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1272018.15 Longitude: 199210.27
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Dark Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S 3/24/11 Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/4/11 **Reviewed By/Date:** [illegible] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2040 - D

Sampled By: CW / **Date:** 03 / 04 / 2011

Grab: # 1	Bottom depth: 4.1 ft	Penetration Depth: 6 cm	Acceptable / Rejected *(circle one)* Time: 1421
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:*** 1271994.89
Cobble	Drab olive	None	Latitude: ~~did not record~~ APW
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	Longitude: 199221.05
Silt/clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	*Other:*	H_2S	
Shell debris		Petroleum	
Worms			
Polychaetes			

Grab: # _____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	Latitude: _____
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	Longitude: _____
Silt/clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	*Other:*	H_2S	
Shell debris		Petroleum	
Worms			
Polychaetes			

Grab: # _____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	Latitude: _____
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	Longitude: _____
Silt/clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	*Other:*	H_2S	
Shell debris		Petroleum	
Worms			
Polychaetes			

Grab: # _____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	Latitude: _____
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	Longitude: _____
Silt/clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	*Other:*	H_2S	
Shell debris		Petroleum	
Worms			
Polychaetes			

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alix Wells 3/4/10 **Reviewed By/Date:** [illegible] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2040 - U

Sampled By: CW / MAP **Date:** 03 / 04 / 2011

Grab: # 1	**Bottom depth:** 5.7 ft	**Penetration Depth:** 4.5 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 1457
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Dark Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1272043.44 Longitude: 199176.94
Grab: **#**____ *or* **N/A** ☐	**Bottom depth:** ____ ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:** ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____
Grab: **#**____ *or* **N/A** ☐	**Bottom depth:** ____ ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:** ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____
Grab: **#**____ *or* **N/A** ☐	**Bottom depth:** ____ ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:** ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [illegible] 3/4/11 **Reviewed By/Date:** [illegible] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2078 - A

Sampled By: MAP/AJW **Date:** 3 / 21 / 2011

Grab: # 1	Bottom depth: 11.6 ft	Penetration Depth: 8 cm	Acceptable / Rejected *(circle one)* Time: 1657
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum Slight Sheen	① Longitude ~~Latitude~~: 192986.34 ① Latitude ~~Longitude~~: 1277325.44

Grab: # _____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: # _____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: # _____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/21/11 **Reviewed By/Date:** 7/18/11 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2078 - D

Sampled By: MAP/AJW **Date:** 3 / 21 / 2011

Grab: # 1	**Bottom depth:** 9.2 ft	**Penetration Depth:** 10 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1709
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter ~~Woody debris~~ Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* Tan	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 192968.32 Longitude: 1277281.94 ①
Grab: #_____ *or* **N/A** ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] 3/21/11 **Reviewed By/Date:** [signature] 7/1/11

Version3 -030311

① Lat/long switched - mm 7/1/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2078 - U

Sampled By: MAP / AJW **Date:** 3 / 21 / 2011

Grab: #1	**Bottom depth:** 8.9 ft	**Penetration Depth:** – cm	**Acceptable / Rejected** *(circle one)* **Time:** 1643
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 192996.73 Longitude: 1277350.72 Rocks

Grab: #2 *or* N/A ☐	**Bottom depth:** 9.2 ft	**Penetration Depth:** 11 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1646
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum Sheen	Latitude: 192994.77 Longitude: 1277346.63

Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/21/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

① LAT/LONG switched. 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2080 - A

Sampled By: MAP/AJW **Date:** 3 /21 / 2011

Grab: # 1	Bottom depth: 12.6 ft	Penetration Depth: ____ cm	Acceptable / Rejected *(circle one)* Time: 1627
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 193032.39 Longitude: 1277426.95 Rocks

Grab: # Q or N/A ☐	Bottom depth: 7.1 ft	Penetration Depth: ____ cm	Acceptable / Rejected *(circle one)* Time: 1630
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 193043.67 Longitude: 1277423.66 Water Grab

Grab: # 3 or N/A ☐	Bottom depth: 10.6 ft	Penetration Depth: 9 cm	Acceptable / Rejected *(circle one)* Time: 1631
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 193028.48 Longitude: 1277430.65

Grab: # ____ or N/A ☒	Bottom depth: ____ ft	Penetration Depth: ____ cm	Acceptable / Rejected *(circle one)* Time: ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: ~~3/16~~ 3/21/11 CW **Reviewed By/Date:** 7/21/11

Version3 -030311

① Lat/long switched - MOM 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2052 - U

Sampled By: MAP / CW **Date:** 03 / 17 / 2011

Grab: # 1	**Bottom depth:** 5.5 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 0914
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277066.90 Longitude: 192624.89 No release
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 4.0 ft	**Penetration Depth:** cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 0915
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277069.62 Longitude: 192623.78 Water Grab
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 5.5 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 0918
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277067.07 Longitude: 192627.58 No release
Grab: # 4 *or* **N/A** ☐	**Bottom depth:** 8.5 ft	**Penetration Depth:** 11 cm	**Acceptable / Rejected** *(circle one)* **Time:** 0922
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive AMW 3/17/11 ~~Brown~~ Brown surface Gray ~~Black~~ *Other:*	~~None~~ Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1279071.60 Longitude: 192433.99

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/17/11 **Reviewed By/Date:** [signature] 7.18.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2083 - A

Sampled By: MAP / CW **Date:** 03 / 17 / 2011

Grab: # 1	**Bottom depth:** 8.1 ft	**Penetration Depth:** 11.5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 0947
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277027.46 Longitude: 192615.55
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alex Wells 3/17/11 **Reviewed By/Date:** [illegible] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2085 - A

Sampled By: MAP / CW **Date:** 3 / 17 / 2011

Grab: # 1	Bottom depth: 3.7 ft	Penetration Depth: 9 cm	Acceptable / Rejected *(circle one)* Time: 1053
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black silt *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 127694.56 Longitude: 191329.81
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alexa Wells 3/17/11 **Reviewed By/Date:** [signature] 7.18.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2089 - A

Sampled By: MAP / CW **Date:** 03 / 17 / 2011

Grab: # 1	Bottom depth: 6.1 ft	Penetration Depth: 12 cm	Acceptable / Rejected *(circle one)* Time: 1038
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1276917.48 Longitude: 191869.74
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alora Wells 3/17/11 **Reviewed By/Date:** [signature] 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2089 - D

Sampled By: MAP / LW **Date:** 3 / 17 / 2011

Grab: # 1	Bottom depth: 5.7 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1009
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1276916.32 Longitude: 191903.42 Debris hairicles
Grab: # 2 *or* N/A ☐	**Bottom depth:** 5.6 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1013
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1276910.73 Longitude: 191918.21 Rock grab
Grab: # 3 *or* N/A ☐	**Bottom depth:** 6.0 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1014
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1276912.57 Longitude: 191916.72 Rocks
Grab: # 4 *or* N/A ☐	**Bottom depth:** 5.9 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1017
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1276913.27 Longitude: 191918.43

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alexa Wells 3/17/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2089 - D

Sampled By: MAP / CW **Date:** 3 / 17 / 2011

Grab: # 5	Bottom depth: 5.7 ft	Penetration Depth: 11 cm	Acceptable / Rejected *(circle one)* Time: 1019
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*_____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1276901.34 Longitude: 191905.67

Grab: #_____ *or* N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*_____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*_____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*_____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/17/11 **Reviewed By/Date:** [signature] 7.18.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2090 - A

Sampled By: MAP / CW **Date:** 3 / 17 / 2011

Grab: # 1	Bottom depth: est 5' No data ft	Penetration Depth: 9 cm	Acceptable / Rejected *(circle one)* Time: 11.26
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F minor Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277137.02 Longitude: 190855.16
Grab: #_____ *or* N/A ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wills 3/17/11 **Reviewed By/Date:** [illegible] 7.18.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2090 - D

Sampled By: MAP / CW **Date:** 3 / 17 / 2011

Grab: # 1	Bottom depth: 3.2 ft	Penetration Depth: 8 cm	Acceptable / Rejected *(circle one)* Time: 1111
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F mica Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*_____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 127119.18 Longitude: 190882.69

Grab: #_____ *or* N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*_____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*_____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*_____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/17/11 **Reviewed By/Date:** 7.18.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2091 - 0

Sampled By: MAP / CW **Date:** 03 / 17 / 2011

Grab: # 1	**Bottom depth:** 18.5 ft	**Penetration Depth:** 6 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 1449
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277930.13 Longitude: 190472.54
Grab: #_____ *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] 3/17/11 **Reviewed By/Date:** [signature] 7.18.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2092 - A

Sampled By: CW / MAP **Date:** 03 / 18 / 2011

Grab: # 1	**Bottom depth:** 4.4 ft	**Penetration Depth:** 8 cm	**Acceptable / Rejected** *(circle one)* **Time:** 0847
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 127820.65 Longitude: 190418.81
Grab: # _____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: # _____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: # _____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Chris Wells 3/18/11 **Reviewed By/Date:** 7/18/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2093 - D

Sampled By: MAP / MW **Date:** 3 / 18 / 2011

AOW 3/18/11

Grab #1	**Bottom depth:** 4.3 ft	**Penetration Depth:** ___ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1028
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ___	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1278481.31 Longitude: 190255.67 Hold sample for Composite AOW 3/18/11
Grab #2 *or* **N/A** ☐	**Bottom depth:** 3.2 ft	**Penetration Depth:** 7 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1036
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface silt Gray Black *Other:* ___	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1278489.58 Longitude: 190251.19
Grab #3 *or* **N/A** ☒	**Bottom depth:** ___ ft	**Penetration Depth:** ___ cm	**Acceptable / Rejected** *(circle one)* **Time:** ___
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ___	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ___ Longitude: ___
Grab #4 *or* **N/A** ☒	**Bottom depth:** ___ ft	**Penetration Depth:** ___ cm	**Acceptable / Rejected** *(circle one)* **Time:** ___
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ___	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ___ Longitude: ___

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Mira Wees 3/18/11 **Reviewed By/Date:** [illegible] 3/18/11

Version2 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2094 - A

Sampled By: MAP / LW **Date:** 03 / 18 / 2011

Grab #1	**Bottom depth:** 11.4 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 0952
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1278310.05 Longitude: 190349.65 water
Grab #2 *or* **N/A** ☐	**Bottom depth:** 10.1 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 0953
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1278320.03 1703 46.18 Longitude: ~~190361~~8 AJN 3/18/11 Rock
Grab #3 *or* **N/A** ☐	**Bottom depth:** 11.1 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 0954
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1278317.41 Longitude: 190344.82 water
Grab #4 *or* **N/A** ☐	**Bottom depth:** 13.0 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 0956
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1278316.23 Longitude: 190336.38

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alex Wilcox 3/18/11 **Reviewed By/Date:** [signature] 7/18/11

Version2 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2094 - A

Sampled By: MAP / CW **Date:** 03 / 18 / 2011

Grab #1	**Bottom depth:** 12.0 ft	**Penetration Depth:** _____ cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 0957
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1278321.28 Longitude: 190325.75 water
Grab #2 *or* **N/A** ☐	**Bottom depth:** 13.0 ft	**Penetration Depth:** _____ cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 0959
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1278325.62 Longitude: 190330.93 water
Grab #3 *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab #4 *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alicia Wells 3/18/11 **Reviewed By/Date:** [signature] 7/18/11

Version2 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2094 - D

Sampled By: MAP / CW **Date:** 03 / 18 / 2011

Grab #1	**Bottom depth:** 10.2 ft	**Penetration Depth:** 9 cm	**Acceptable / Rejected** *(circle one)* **Time:** 0935
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface silt Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1278286.85 Longitude: 190362.31
Grab #2 *or* **N/A** ☒	**Bottom depth:** ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab #3 *or* **N/A** ☒	**Bottom depth:** ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab #4 *or* **N/A** ☒	**Bottom depth:** ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Lisa Wells 3/18/11 **Reviewed By/Date:** 7/18/11

Version2 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2096 - A

Sampled By: CW / MAP **Date:** 03 / 18 / 2011

Grab #1	**Bottom depth:** 10.7 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1005
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	Latitude: 1278415.37
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	Longitude: 190308.33
Silt/clay	Gray	Strong	
Organic matter	Black	Overwhelming	water grab
Woody debris	*Other:*	H_2S	
Shell debris		Petroleum	
Worms			
Polychaetes			

Grab #2 *or* **N/A** ☐	**Bottom depth:** 6.9 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1006
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	Latitude: 127818.72
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	Longitude: 190299.27
Silt/clay	Gray	Strong	water grab
Organic matter	Black	Overwhelming	Note: sheen in sample
Woody debris	*Other:*	H_2S	
Shell debris		Petroleum	
Worms			
Polychaetes			

Grab #3 *or* **N/A** ☐	**Bottom depth:** 6.6 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1010
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	Latitude: 1278421.53
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	Longitude: 190297.76
Silt/clay	Gray	Strong	
Organic matter	Black	Overwhelming	water grab
Woody debris	*Other:*	H_2S	
Shell debris		Petroleum	
Worms			
Polychaetes			

Grab #4 *or* **N/A** ☐	**Bottom depth:** 6.8 ft	**Penetration Depth:** 2 cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1012
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:*** ADW 5/18/11
Cobble	Drab olive	None	Latitude: 10 1278394.97
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	Longitude: 190313.78
Silt/clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	*Other:*	H_2S	
Shell debris		Petroleum	
Worms			
Polychaetes			

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alan Wells 3/18/11 **Reviewed By/Date:** [illegible] 7-18-11

Version2 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** ~~2096~~ 2096 - A (3/18/11 AdW)

Sampled By: MAP / CW **Date:** 03 / 18 / 2011

Grab #1	**Bottom depth:** 2.8 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1018
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1278457.22 Longitude: 190286.23
Grab #2 *or* **N/A** ☐	**Bottom depth:** 3.0 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1022
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1278450.65 Longitude: 190282.08 water grab
Grab #3 *or* **N/A** ☐	**Bottom depth:** 10.2 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1055
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1278408.49 Longitude: 190309.52
Grab #4 *or* **N/A** ☐	**Bottom depth:** 10.0 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1057
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1278413.42 Longitude: 190304.83 No release

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Chris Wells 3/18/11 **Reviewed By/Date:** 3.18.11

Version2 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2096 - A

Sampled By: MAP / CW **Date:** 3 / 18 / 2011

Grab #1 5 ASW 3/18/11	**Bottom depth:** 10.2 ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1058
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1278413.32 Longitude: 190309.54 No release
Grab #2 6 *or* N/A ☐ ASW 3/18/11	**Bottom depth:** 9.8 ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1100
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1278412.666 Longitude: 190304.46
(1) **Grab #3** 7 *or* N/A ☐	**Bottom depth:** 11.3 ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1107
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum ASW 3/18/11 heavy ~~sheen~~ sheen	Latitude: 1278420.78 Longitude: 190310.37 Over penetrated
Grab #4 8 *or* N/A ☐ ASW 3/18/11	**Bottom depth:** 10.1 ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1105
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1278419.59 Longitude: 190305.28 Rock

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alan Wells 3/18/11 **Reviewed By/Date:** [signature] 7/18/11

Version2 -030311

(1) correction by ASW 3/18/11

[signature] 7-18-11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2096 - A

Sampled By: CW **Date:** 3 / 18 / 2011

Grab #1	Bottom depth: 8 ft	Penetration Depth: 10 cm	Acceptable / Rejected *(circle one)* Time: 1000
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel (shattered) Sand C M F Silt/clay (grass) Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum (Slight sheen nearby)	Latitude: _____ Longitude: _____ estimate from photos, collected by foot on shore
Grab #2 or N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab #3 or N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	MP 3/18/11 Latitude: _____ Longitude: _____
Grab #4 or N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/18/11 **Reviewed By/Date:** 7.18.11

Version2 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2096 - ~~QA~~

Sampled By: MAP / CW **Date:** 3 / 18 / 2011

Grab #1	**Bottom depth:** 4.1 ft	**Penetration Depth:** AOW 3/18/11 95 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1109
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1278450.50 Longitude: 190287.39 AOW 3/18/11
Grab #2 *or* **N/A** ☐	**Bottom depth:** 4.2 ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1112
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1278457.55 Longitude: 190281.69 Will need to collect via surface grab
Grab #3 *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab #4 *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] 3/18/11 **Reviewed By/Date:** [signature] 7/18/11

Version2 -030311

[signature] 7/18/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2086 - U

Sampled By: AW **Date:** 3 / 18 / 2011

Grab #1	**Bottom depth:** 0 ft	**Penetration Depth:** 10.36 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 1202
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	Latitude:
Sand C M F	Brown surface	Moderate	
Silt/clay	Gray	Strong	Longitude:
Organic matter	Black	Overwhelming	
Woody debris	*Other:*	H_2S	estimate from photos collected by diver on shore
Shell debris		Petroleum	
Worms			
Polychaetes			

Grab #2 *or* **N/A** ☐	**Bottom depth:** ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	Latitude:
Sand C M F	Brown surface	Moderate	
Silt/clay	Gray	Strong	Longitude:
Organic matter	Black	Overwhelming	
Woody debris	*Other:*	H_2S	
Shell debris		Petroleum	
Worms			
Polychaetes			

Grab #3 *or* **N/A** ☐	**Bottom depth:** ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	Latitude:
Sand C M F	Brown surface	Moderate (NP)	
Silt/clay	Gray	Strong	Longitude:
Organic matter	Black	Overwhelming	
Woody debris	*Other:*	H_2S 3/18/11	
Shell debris		Petroleum	
Worms			
Polychaetes			

Grab #4 *or* **N/A** ☐	**Bottom depth:** ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	Latitude:
Sand C M F	Brown surface	Moderate	
Silt/clay	Gray	Strong	Longitude:
Organic matter	Black	Overwhelming	
Woody debris	*Other:*	H_2S	
Shell debris		Petroleum	
Worms			
Polychaetes			

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/18/11 **Reviewed By/Date:** 7-18-11

Version2 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2097 - A

Sampled By: CW / MAP **Date:** 03 / 18 / 2011

Grab #1	**Bottom depth:** 5.3 ft	**Penetration Depth:** 6.5 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 0918
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____ Slight sheen	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1278249.02 Longitude: 190392.85 AJW 3/18/11 2 piles are right located directly adjacent from outfall
Grab #2 *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab #3 *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab #4 *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alora Wells 3/18/11 **Reviewed By/Date:** [signature] 7-18-11

Version2 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2097 - D

Sampled By: MAP / CW **Date:** 3 / 18 / 2011

Grab: # 1	Bottom depth: 5.2 ft	Penetration Depth: 8.5 cm	Acceptable / Rejected *(circle one)* Time: 0903
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1278231.00 Longitude: 190402.39
Grab: #_____ *or* N/A ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [illegible] 3/18/11 **Reviewed By/Date:** [illegible] 7.18.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2098 - A

Sampled By: MAP / CW **Date:** 3 / 4 / 2011

Grab: # 1	**Bottom depth:** 12.7 ft	**Penetration Depth:** 11 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 1014
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* minor black silt	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 12766 17.57 Longitude: 19090.51
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/4/11 **Reviewed By/Date:** [signature] 7.18.11

Version3 -030311

11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2098 - D

Sampled By: MAP / CW **Date:** 3 / 4 / 2011

Grab: # 1	**Bottom depth:** 11 ft	**Penetration Depth:** – cm	**Acceptable / Rejected** *(circle one)* **Time:** 0947
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1276590.94 Longitude: 191122.64 Not fully closed b/c of rock
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 11 ft	**Penetration Depth:** 10 cm	**Acceptable / Rejected** *(circle one)* **Time:** 0950
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* minor black silt	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1276594.98 Longitude: 191118.30
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wills 3/4/11 **Reviewed By/Date:** [signature] 7.18.11

Version3 -030311

(1)

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2098 - U

Sampled By: MAP / CW **Date:** 03 / 04 / 2011

Grab: # 1	**Bottom depth:** 12.8 ft	**Penetration Depth:** 12 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 1029
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* Minor black silt	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1276621.96 Longitude: 191043.00
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/4/11 **Reviewed By/Date:** 7-18-11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2099 - A

Sampled By: ATW CW MAP **Date:** 3 / 3 / 2011

Grab #1	**Bottom depth:** 16.8 ~~ft~~ cm ATW	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1602
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1276588.58 Longitude: 191257.67 Overpenetration
Grab #2 *or* **N/A** ☐	**Bottom depth:** 16.9 ~~ft~~ cm ATW	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1605
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1276572.29 Longitude: 191267.71 water grab Rock in sampler
Grab #3 *or* **N/A** ☐	**Bottom depth:** 16.8 ~~ft~~ cm ATW	**Penetration Depth:** 12 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1608
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive ~~Brown~~ ~~Brown surface~~ Gray ~~Black~~ *Other:*	~~None~~ ATW 3/3/11 Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1276578.65 Longitude: 191255.43 Surface slightly disturbed
Grab #4 *or* **N/A** ~~☐~~	**Bottom depth:** ~~ft~~ cm ATW	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/3/11 **Reviewed By/Date:** [signature] 7-21-11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2099 - D

Sampled By: CW / MAP **Date:** 03 / 03 / 2011

Grab #1	**Bottom depth:** 8.3 ~~cm~~ ft ①	**Penetration Depth:** 10 cm	**~~Acceptable~~ / Rejected** *(circle one)* **Time:** 1548
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter ~~Woody debris~~ Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* Black below surface	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1276547.56 Longitude: 191288.25
Grab #2 *or* **N/A** ☒	**Bottom depth:** _____ cm	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab #3 *or* **N/A** ☒	**Bottom depth:** _____ cm	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab #4 *or* **N/A** ☒	**Bottom depth:** _____ cm	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/3/11 **Reviewed By/Date:** [illegible] 7.21.11

① mum for MPW (3/3/11). mum 7.21.11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2099 - 4

Sampled By: CW / MAP **Date:** 03 / 03 / 2011

Grab #1	**Bottom depth:** 17.0 ft cm ASW	**Penetration Depth:** ~ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1624
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1276567.36 Longitude: 191237.02 Water Grab rock in sampler
Grab #2 *or* **N/A** ☐	**Bottom depth:** 16.2 ft cm ASW	**Penetration Depth:** 11 cm	~~Acceptable~~ / **Rejected** *(circle one)* **Time:** 1626
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive ~~Brown~~ Brown surface Gray Black *Other:* Minor black Silt	~~None~~ Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ~~1276~~ ASW 1276589.86 Longitude: 191240.08
Grab #3 *or* **N/A** ☒	**Bottom depth:** ft cm ASW	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab #4 *or* **N/A** ☒	**Bottom depth:** ft cm ASW	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/3/11 **Reviewed By/Date:** [signature] 7.21.11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2103 - A

Sampled By: MAP / CW **Date:** 3 / 04 / 2011

Grab: # 1	**Bottom depth:** 3 ft	**Penetration Depth:** 4 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1140
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275746.04 Longitude: 194902.07 Hold material for potential composite Collected sample
Grab: # 2 *or* N/A ☐	**Bottom depth:** 2.6 ft	**Penetration Depth:** ASW 4.2 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1148
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275744.40 Longitude: 194902.70 Insufficient sediment recovery (ASW)
Grab: # 3 *or* N/A ☐	**Bottom depth:** 2.7 ft	**Penetration Depth:** 2 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1151
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275744.85 (ASW) Longitude: 194904.52 Insufficient sediment recovery
Grab: # 4 *or* N/A ☐	**Bottom depth:** ASW 2.6 2.6 ft	**Penetration Depth:** 2 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1155
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275749.82 Longitude: 1950242

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/4/11 **Reviewed By/Date:** [illegible] 4/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS_____-_____**

Sampled By: MAP / CW **Date:** 03 / 04 / 2011

Grab: # 1	Bottom depth: 5 ft	Penetration Depth: — cm	Acceptable / Rejected *(circle one)* Time: 1127
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275749.84 Longitude: 194928.75 Tree in sampler
Grab: # 2 *or* N/A ☐	**Bottom depth:** 4 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1125
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275746.90 Longitude: 194925.76 Water Grab
Grab: # 3 *or* N/A ☐	**Bottom depth:** 4 ft	**Penetration Depth:** 4.5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1127
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris minor Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275753.11 Longitude: 194927.47 Keep grab for AJW / Composite w/ next sample once
Grab: # 4 AJW *or* N/A ☒	**Bottom depth:** ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/4/10 **Reviewed By/Date:** 7.21.11

Version3 -030311

9 AJW Enough sediment to collect 3 AJW ; sample no additional grabs

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From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2103 - 4

Sampled By: CW / MAP **Date:** 03 / 04 / 2011

Grab: # 1	Bottom depth: 2.7 ft	Penetration Depth: 2.5 cm	Acceptable / Rejected (circle one) Time: 12 08
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275743.88 Longitude: 194875.35 Insufficient sediment

Grab: # 2 or N/A ☐	Bottom depth: 2.5 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1215
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275750.95 Longitude: 194878.87 Rock in sampler

Grab: # 3 or N/A ☐	Bottom depth: 2 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1210
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275743.73 Longitude: 194889.34 Insufficient sediment

Grab: # 4 or N/A ☐	Bottom depth: surface ft	Penetration Depth: 10 cm	Acceptable / Rejected (circle one) Time: 1225
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel F-C Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* Minor silt	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275751.89 Longitude: 194863.65 Collect surface sediment grab sample b/c of low tide

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/4/11 **Reviewed By/Date:** [illegible] 7.21.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2106 - A

Sampled By: MAP / CW **Date:** 03 / 04 / 2011

Grab: # 1	Bottom depth: 10 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1319
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 272580.58 Longitude: 198165.07 overpenetration
Grab: # 2 *or* N/A ☐	**Bottom depth:** 10.9 ft	**Penetration Depth:** 11 cm	**Acceptable** / Rejected (circle one) Time: 1325
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F (Silt/clay) Organic matter (Woody debris) Shell debris Worms Polychaetes	Drab olive (Brown) Brown surface Gray (Black) *Other:* _____	(None) Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 272585.58 Longitude: 198168.01 biological organism creter shell
Grab: # _____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** (circle one) Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: # _____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** (circle one) Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/4/11 **Reviewed By/Date:** [illegible] 7.21.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** ~~2107~~ 2106 - D

Sampled By: MAP / CW **Date:** 03 / 04 / 2011

Grab: # 1	Bottom depth: 13.6 ft	Penetration Depth: ____ cm	Acceptable / Rejected *(circle one)* Time: 1259
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1272565.10 Longitude: 198237.73 over pentration
Grab: #____ *or* N/A ☐	**Bottom depth:** 14.0 ft	**Penetration Depth:** 11 cm	~~Acceptable~~ / Rejected *(circle one)* Time: 1302
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1272559.37 Longitude: 198260.95
Grab: #____ *or* N/A ☐	**Bottom depth:** ____ ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* Time: ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____
Grab: #____ *or* N/A ☐	**Bottom depth:** ____ ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* Time: ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/4/11 **Reviewed By/Date:** [illegible] 7.21.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2106 - U

Sampled By: MAP / CW **Date:** 03 / 04 / 2011

Grab: # 1	**Bottom depth:** 8.6 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1341
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1272583.66 Longitude: 198154.07 over penetrated
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 13.9 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1345
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1272586.14 Longitude: 198175.91 over penetrated
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 12.4 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1348
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1272577.54 Longitude: 198178.51 over penetration
Grab: # 4 *or* **N/A** ☐	**Bottom depth:** 11.5 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1351
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1272577.80 Longitude: 198170.60 over penetration will need to collect w/ Ponar

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/4/11 **Reviewed By/Date:** [illegible] 7.21.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2106 - U

Sampled By: CW / MAP **Date:** 03 / 07 / 2011

Grab: # 1	**Bottom depth:** 7.9 ft	**Penetration Depth:** 10.5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 0948
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Black Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1272579.78 Longitude: 198166.30 slight sheen

Grab: #_____ *or* **N/A** ☒ 2	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wills 3/7/11 **Reviewed By/Date:** 7.21.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2108 - A

Sampled By: MAP / CW **Date:** 03 / 07 / 2011

Grab: # 1	**Bottom depth:** 7.2 ft	**Penetration Depth:** 8 cm	**Acceptable** / Rejected *(circle one)* **Time:** 1003
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown ~~Black~~ Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum Slight sheen	Latitude: 1272572.79 Longitude: 198167.05
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/7/11 **Reviewed By/Date:** 7.21.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2108 - U

Sampled By: M+P / CW **Date:** 03 / 07 / 2011

Grab: # 1	**Bottom depth:** 6.7 ft	**Penetration Depth:** 11 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1013
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*_____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1272594.95 Longitude: 198141.69
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*_____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*_____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*_____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/7/11 **Reviewed By/Date:** 7.21.11

Version3 -030311

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From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2112 - A

Sampled By: MAP / AMK **Date:** 4 / 8 / 2011

Grab: # 1	Bottom depth: 2.9 ft	Penetration Depth: 10.5 cm	Acceptable / Rejected *(circle one)* Time: 1214
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 198604.28 Longitude: 1271964.73 ①
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 4/8/11 **Reviewed By/Date:** 7.21.11

Version3 -030311

① LAT/LONG switched mom 7.21.11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2113 - D A

Sampled By: CW / MAP **Date:** 3 / 07 / 2011

Grab: # 1	Bottom depth: 8.7 ft	Penetration Depth: 7.5 cm	Acceptable / Rejected *(circle one)* Time: 0858
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel (Sand) C M (F) Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive (Brown Dark) Brown surface Gray (Black) *Other:*	(None) Slight Moderate Strong Overwhelming H_2S Petroleum slight sheen	Latitude: 1271745.52 Longitude: 198911.52

Grab: # _____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: # _____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: # _____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/7/11 **Reviewed By/Date:** [signature] 7.21.11

Version3 -030311

(1) Field Duplicate collected MM 7.21.11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2113 - U

Sampled By: MAP / CW **Date:** 03 / 04 / 2011

Grab: # 1	Bottom depth: 9.5 ft	Penetration Depth: — cm	Acceptable / ~~Rejected~~ *(circle one)* Time: 1406
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271760.57 Longitude: 198922.79 ~~Bok~~ AJW Grab over pentration
Grab: # 2 *or* N/A ☐	**Bottom depth:** 8.7 ft	**Penetration Depth:** cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1411
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* Soft silt material	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1271746.11 Longitude: 198920.63 need to sample w/ Ponar
Grab: # ____ *or* N/A ☒	**Bottom depth:** ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab: # ____ *or* N/A ☒	**Bottom depth:** ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wills 3/4/4 **Reviewed By/Date:** [illegible] 7-21-11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2113 - U

Sampled By: CW / MAP **Date:** 03 / 07 / 2011

Grab: # 1	**Bottom depth:** 8.5 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 0912
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: could not get lat; long hypack malfunction Longitude: Can get w/in 50' b/c of rock rotain wall rock grab
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 8.4 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 0917
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1271756.85 Longitude: 158900.97
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 8.2 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 0920
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1271750.25 Longitude: 158900.49 Rock grab
Grab: # 4 *or* **N/A** ☐	**Bottom depth:** 7.4 ft	**Penetration Depth:** 1 cm	**Acceptable / Rejected** *(circle one)* **Time:** 0922
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1271749.29 Longitude: 15889.80 poor recovery

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/7/11 **Reviewed By/Date:** [illegible] 7.21.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2113 - U

Sampled By: CW / MAP **Date:** 07 / 07 / 2011

Grab: # 5	Bottom depth: 7.6 ft	Penetration Depth: 4 cm	Acceptable / Rejected *(circle one)* Time: 0928
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Dark Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 127754.87 Longitude: 198883.98 min. extent of gravel: pebbles in sample
Grab: # _____ *or* N/A ☒	**Bottom depth:** AJW 3/7/10 7. ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: # _____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: # _____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/7/11 **Reviewed By/Date:** [illegible] 7.21.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2115 - A

Sampled By: MAP/AK **Date:** 4 / 15 / 2011

Grab: # 1	Bottom depth: 5.1 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1230
Sediment type:	**Sediment color:**	**Sediment Odor:**	**Comments:**
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 127076.00 Longitude: 199873.06
Grab: # 2 *or* N/A ☐	**Bottom depth:** 4.0 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** (circle one) **Time:** 1251
Sediment type:	**Sediment color:**	**Sediment Odor:**	**Comments:**
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 127063.12 Longitude: 199872.30 Rock
Grab: # 3 *or* N/A ☐	**Bottom depth:** 4.0 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** (circle one) **Time:** 1233
Sediment type:	**Sediment color:**	**Sediment Odor:**	**Comments:**
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 127076.88 Longitude: 199874.20
Grab: # 4 *or* N/A ☐	**Bottom depth:** 5.2 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** (circle one) **Time:** 1234
Sediment type:	**Sediment color:**	**Sediment Odor:**	**Comments:**
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 127077.90 Longitude: 199874.73

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 4/5/11 **Reviewed By/Date:** [signature] 7.21.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2115 - A

Sampled By: MAP / AK **Date:** 4 / 15 / 2011

Grab: # 5	Bottom depth: 5.5 ft	Penetration Depth: 4 cm	Acceptable / Rejected (circle one) Time: 1236
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1270774.46 Longitude: 199850.45 under penetr

Grab: # 6 or N/A ☐	Bottom depth: 5.8 ft	Penetration Depth: 4.5 cm	Acceptable / Rejected (circle one) Time: 1241
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1270771.59 Longitude: 199859.66

Grab: #_____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected (circle one) Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected (circle one) Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 4/15/11 **Reviewed By/Date:** [signature] 7-21-11

Version3 -030311

Composite Grab 5 & Grab 6 sample time 1241

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2115 - D

Sampled By: MAP / AK **Date:** 4 / 15 / 2011

Grab: # 1	Bottom depth: 4.7 ft	Penetration Depth: — cm	Acceptable / ~~Rejected~~ (circle one) Time: 1217
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1270758.85 Longitude: 199898.45 Rock
Grab: # 2 *or* N/A ☐	**Bottom depth:** 4.2 ft	**Penetration Depth:** _____ cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1219
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1270752.05 Longitude: 199901.46
Grab: # 3 *or* N/A ☐	**Bottom depth:** 4.9 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1220
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1270754.23 Longitude: 199905.15 Rock
Grab: # 4 *or* N/A ☐	**Bottom depth:** 5.7 ft	**Penetration Depth:** 5 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 1222
Sediment type:	***Sediment color:***	***Sediment Odor:*** (1)	***Comments:***
Cobble ~~Gravel~~ minor ~~Sand~~ C M F ~~Silt/clay~~ surface Organic matter ~~Woody debris~~ Shell debris Worms Polychaetes	Drab olive ~~Brown~~ ~~Brown surface~~ Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1270764.30 Longitude: 199907.63

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 4/15/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

(1) Odor not recorded. mrm 7.21.11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2115 - U

Sampled By: MAP/ 4/15/11 AK **Date:** 4 / 15 / 2011

Grab: # 1	Bottom depth: 6.5 ft	Penetration Depth: 2 cm	Acceptable / Rejected (circle one) Time: 1251
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1270794.55 Longitude: 199861.81 low penetration
Grab: # 2 *or* N/A ☐	**Bottom depth:** 6.8 ft	**Penetration Depth:** 5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1254
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1270793.71 Longitude: 199870.27
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 4/15/11 **Reviewed By/Date:** 7-21-11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2122-A

Sampled By: C W & J S **Date:** 3 / 8 / 2011

Grab: # 1	Bottom depth: 22.1 ft	Penetration Depth: 7.5 cm	Acceptable / Rejected *(circle one)* Time: 1000
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269059.09 Longitude: 201796.79 Slight sheen

Grab: # _____ or N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: # _____ or N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	MP 3/8/11 Latitude: _____ Longitude: _____

Grab: # _____ or N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/8/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2122-D

Sampled By: CW & TS **Date:** 3 / 8 / 2011

Grab: # 1	**Bottom depth:** 11.2 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 0912
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1269049.3 Longitude: 201804.3 rock
Grab: # 2 *or* N/A ☐	**Bottom depth:** 13.3 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 0917
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1269038.21 Longitude: 201805.68 (no material) water grab
Grab: # 3 *or* N/A ☐	**Bottom depth:** 13.0 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 0921
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1269044.48 Longitude: 201810.43 rock
Grab: # 4 *or* N/A ☐	**Bottom depth:** 13.6 ft	**Penetration Depth:** 9.0 cm	**Acceptable** / Rejected *(circle one)* **Time:** 0924
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1269048.65 Longitude: 201813.39 slight sheen

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/8/11 **Reviewed By/Date:**

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2122 - V

Sampled By: CW + JS ① **Date:** 3 / 8 / 2011

Grab: # 1	Bottom depth: 13.6 ft	Penetration Depth: 9.5 cm	Acceptable / Rejected *(circle one)* Time: 0939
Sediment type:	***Sediment color:***	***Sediment Odor:*** ②	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269071.54 Longitude: 201762.47

Grab: # _____ *or* N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: # _____ *or* N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	MP 3/8/11 Latitude: _____ Longitude: _____

Grab: # _____ *or* N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/8/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

① Data recorded by mm 7/21/11

② Odor not recorded. mm 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2137 - A

Sampled By: MAP / cw **Date:** 3 / 24 / 2011

Grab: # 1	**Bottom depth:** 12.0 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1514 AW 3/24/11 1515
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1267815.77 Longitude: 205126.54 Rock
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 12.0 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1517
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: Longitude: Rock
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 14.3 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1519
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1267819.55 Longitude: 205131.62 Water
Grab: # 4 *or* **N/A** ☐	**Bottom depth:** 16.4 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1520
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1267821.60 Longitude: 205134.44 Rock

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Weks 3/24/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2139 - A

Sampled By: MAP/AMK **Date:** 4 / 8 / 2011

Grab: # 1	**Bottom depth:** 6.4 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1036
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 206202.21 Longitude: 1266697.30 No Release
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 5.8 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1037
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 206201.41 Longitude: 1266690.3 Rocks
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 11.2 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1039
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 206218.25 Longitude: 1266693.44 Over Penetration Switch to Ponar
Grab: # 4 *or* **N/A** ☐	**Bottom depth:** 11.5 ft	**Penetration Depth:** 7 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1046
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 206215.57 Longitude: 1266715.37

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 4/8/11 **Reviewed By/Date:** 4/8/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2144 - A

Sampled By: CW + JW **Date:** 3 / 14 / 2011

Grab: # 1	**Bottom depth:** 3.0 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1621
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1266187.69 Longitude: 209843.22 rocks
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 4.0 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1624
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:* MP 3/14/11	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1266184.19 Longitude: 209841.68 rocks
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 8.0 ft	**Penetration Depth:** 10.5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1627
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: ~~1266~~ 1266193.39 Longitude: 209836.76
Grab: # 4 *or* **N/A** ☐	**Bottom depth:** ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, MP 3/14/11, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/14/11 **Reviewed By/Date:** [signature] 3/14/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2144 - U

Sampled By: CW & JSS **Date:** 3 / 14 / 2011

Grab: # 1	**Bottom depth:** 7.3 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1640
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266189.00 Longitude: 209812.11 rocks
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 6.8 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1642
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266183.94 Longitude: 209812.45 rocks
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 3.1 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1644
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266187.95 Longitude: 209818.16 rocks
Grab: # 4 *or* **N/A** ☐	**Bottom depth:** 3.1 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1648
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266194.25 Longitude: 209810.61 rocks

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P 3/14/10 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2194 - V

Sampled By: CW & JS **Date:** 3 / 14 / 2011

Grab: # 5	**Bottom depth:** 5.8 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1649
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 266196.88 Longitude: 209801.74 rocks
Grab: # 6 *or* **N/A** ☐	**Bottom depth:** 6.0 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1651
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 266195.96 Longitude: 209821.08 rocks
Grab: # 7 *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum MP 3/14/11	Latitude: _____ Longitude: _____
Grab: # 8 *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P 3/14/10 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2146 - A

Sampled By: CW + JW **Date:** 3 / 14 / 2011

Grab: # 1	Bottom depth: 58 ft	Penetration Depth: 9.0 cm	Acceptable / Rejected *(circle one)* Time: 1608
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 126198.85 Longitude: 2098723
Grab: #_____ *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MP 3/14/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2147 - D

Sampled By: CW & JW **Date:** 3 / 14 / 2011

Grab: # 1	Bottom depth: 5.3 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1524
Sediment type:	**Sediment color:**	**Sediment Odor:**	**Comments:**
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266176.58 Longitude: 209936.83 rocks

Grab: # 2 or N/A ☐	Bottom depth: 6.6 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1527
Sediment type:	**Sediment color:**	**Sediment Odor:**	**Comments:**
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266189 Longitude: 209928.71 rocks

Grab: # 3 or N/A ☐	Bottom depth: 6.0 ft	Penetration Depth: ~~6.6~~ cm	Acceptable / Rejected (circle one) Time: 1529
Sediment type:	**Sediment color:**	**Sediment Odor:**	**Comments:**
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266180.91 Longitude: 209936.36 rocks

Grab: # 4 or N/A ☐	Bottom depth: 8.5 ft	Penetration Depth: 2 cm	Acceptable / Rejected (circle one) Time: 1532
Sediment type:	**Sediment color:**	**Sediment Odor:**	**Comments:**
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266201.36 Longitude: 209939.56 under-penetration

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/14/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

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From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2147 - D

Sampled By: CW & JW **Date:** 3 / 14 / 2011

Grab: # 5	Bottom depth: 6.2 ft	Penetration Depth: — cm	Acceptable / Rejected *(circle one)* Time: 1537
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266181.64 Longitude: 209923.82 rocks

Grab: # 6 or N/A ☐	Bottom depth: 6.1 ft	Penetration Depth: — cm	Acceptable / Rejected *(circle one)* Time: 1538
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266182.29 Longitude: 209917.92 rocks

Grab: # 7 or N/A ☐	Bottom depth: 8.0 ft	Penetration Depth: 7.0 cm	Acceptable / Rejected *(circle one)* Time: 1541
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266175.40 Longitude: 209924.59

Grab: # 8 (1) or N/A ☒ X	Bottom depth: ft	Penetration Depth: cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/14/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

(1) MPM 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2148 - A

Sampled By: MAP & AW **Date:** 4 / 20 / 2011

Grab: # 1	Bottom depth: 0 ft	Penetration Depth: 10 cm	Acceptable / Rejected *(circle one)* Time: 0845
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude: N - 47° 34.074' W - 122° 21.146'

Collected w/ Garmen +/- 8'

Grab: # _____ or N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Grab: # _____ or N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Grab: # _____ or N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MP 4/20/11 **Reviewed By/Date:** 4/21/11

Version3 -030311

Field Duplicate Collected. Num 4/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS 2149 -A** (1)

Sampled By: MAP / AJW **Date:** 4 / 20 / 2011

Grab: # 1 (MP 5/4/11)	Bottom depth: ~~cm~~ 10 ft (20 ft 4/20/11)	Penetration Depth: 10 cm	Acceptable / Rejected *(circle one)* Time: 0815
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive ~~Brown~~ Dark Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude: Collected w/ Garmen N - 47° 34.079' W - 122° 21.214' +/- 8'
Grab: #____ or N/A ☐	**Bottom depth:** ____ ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab: #____ or N/A ☐	**Bottom depth:** ____ ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab: #____ or N/A ☐	**Bottom depth:** ____ ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MP 4/20/11 **Reviewed By/Date:** [illegible] 7/21/11

Version3 -030311

(1) Write over. Sample ID = LDW-SS2149-A.

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2150 - A

Sampled By: MAP & AW **Date:** 4 / 20 / 2011

Grab: # 1	Bottom depth: 6 ft	Penetration Depth: 10 cm	Acceptable / Rejected *(circle one)* Time: 0903
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude: Collected w/ Garmen N - 47° 34.076' W - 122° 21.083 +/- 4'

Grab: # _____ or N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Grab: # _____ or N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Grab: # _____ or N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MAP 4/20/11 **Reviewed By/Date:**

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Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2151 - A

Sampled By: CW / MAP **Date:** 3 / 18 / 2011

Grab #1	**Bottom depth:** 9.5 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1516
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1265585.64 Longitude: 211283.49
Grab #2 *or* **N/A** ☐	**Bottom depth:** 9.7 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1517
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266589.73 Longitude: 211287.32
Grab #3 *or* **N/A** ☐	**Bottom depth:** 10.1 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1518
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266592.92 Longitude: 211284.17
Grab #4 *or* **N/A** ☐	**Bottom depth:** 10.1 ft	**Penetration Depth:** ~ cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1519
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266589.38 Longitude: 211284.52

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alex Wells 3/15/11 **Reviewed By/Date:** [signature] 7/21/11

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Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2151 - A

Sampled By: CW / MAP **Date:** 3 / 18 / 2011

Grab #1 ~~2~~ #5	Bottom depth: 16.4 ft	Penetration Depth: — cm	Acceptable / ~~Rejected~~ (circle one) Time: 1520
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266584.87 Longitude: 211252.95 Rock

(1) Grab ~~#2~~ #4 *or* N/A ☐	Bottom depth: 16.0 ft	Penetration Depth: — cm	Acceptable / ~~Rejected~~ (circle one) Time: 1522
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266588.93 Longitude: 211255.52 Water

Grab #3 *or* N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected (circle one) Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab #4 *or* N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected (circle one) Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alicia Wells 3/18/11 **Reviewed By/Date:** [signature] 7/21/11

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Omeara 7/21/11

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Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2154 - A

Sampled By: MAP / CW **Date:** 3 / 18 / 2011

Grab: # 1	Bottom depth: ~ ft	Penetration Depth: ~ cm	Acceptable / Rejected (circle one) Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267066.08 Longitude: 211351.13
Grab: # 2 *or* N/A ☐	**Bottom depth:** ~ ft	**Penetration Depth:** ~ cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267065.60 Longitude: 211354.18
Grab: # 3 *or* N/A ☐	**Bottom depth:** ~ ft	**Penetration Depth:** ~ cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267061.23 Longitude: 211346.29
Grab: # 4 *or* N/A ☐	**Bottom depth:** ~ ft	**Penetration Depth:** ~ cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267055.77 Longitude: 211351.18

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 7/21/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

* Original field form lost. This one re-created from GIS files + sample tracker.

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MP 3/14/11

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** ~~G46-A~~ 2154-D

Sampled By: CW + JW **Date:** 3 / 14 / 2011

Grab: # 1	Bottom depth: 19.2 ft	Penetration Depth: ____ cm	Acceptable / Rejected *(circle one)* Time: ~~1250~~ 1253
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267048.52 Longitude: 211367.56 ROCKS

MP 3/14/11 poor nav

Grab: # 2 or N/A ☐	Bottom depth: ____ ft	Penetration Depth: ____ cm	Acceptable / Rejected *(circle one)* Time: ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____

NO access due to wind

Grab: # 3 or N/A ☐	Bottom depth: ____ ft	Penetration Depth: ____ cm	Acceptable / Rejected *(circle one)* Time: ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum 3/14/11	Latitude: ____ Longitude: ____

Grab: # 4 or N/A ☐	Bottom depth: ____ ft	Penetration Depth: ____ cm	Acceptable / Rejected *(circle one)* Time: ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MP 3/14/11 **Reviewed By/Date:** [signature] 4/21/11

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Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2154 - D

Sampled By: MAP / CW **Date:** 3 / 18 / 2011

Grab #1	**Bottom depth:** 7.7 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1547
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267091.23 Longitude: 211385.63 water
Grab #2 *or* **N/A** ☐	**Bottom depth:** 9.1 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1549
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267080.48 Longitude: 211383.66 water
Grab #3 *or* **N/A** ☐	**Bottom depth:** 14.9 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1550
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267068.95 Longitude: 211381.55 water
Grab #4 *or* **N/A** ☐	**Bottom depth:** 12.5 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1551
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267080.16 Longitude: 211393.31 water

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alicia Wills 3/18/11 **Reviewed By/Date:** [illegible] 7/21/11

Version2 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2154 - 0

Sampled By: CW MAP **Date:** 3/18 / 2011

Grab #1	**Bottom depth:** 14.2 cm	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1557
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267063.12 Longitude: 211332.37 water
Grab #2 *or* **N/A** ☐	**Bottom depth:** 16.6 cm	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1558
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267061.13 Longitude: 211315.32 Water
Grab #3 *or* **N/A** ☐	**Bottom depth:** 17.0 cm	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1559
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267052.37 Longitude: 211307.31
Grab #4 *or* **N/A** ☐	**Bottom depth:** 16.5 cm	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1600
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267054.31 Longitude: 211307.83

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alora Wells 3/18/11 **Reviewed By/Date:** [signature] 7/21/11

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From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2156 - A

Sampled By: CW / MAP **Date:** 3 / 18 / 2011

Grab: # 1	**Bottom depth:** est. 10.6 **ft**	**Penetration Depth:** — **cm**	**Acceptable / Rejected** *(circle one)* **Time:** 1458
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1266293.84 Longitude: 211358.01 Rock grab
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** est. 15 **ft**	**Penetration Depth:** — **cm**	**Acceptable / Rejected** *(circle one)* **Time:** 1459
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1266298.30 Longitude: 211345.96 Rock
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** est 15 **ft**	**Penetration Depth:** — **cm**	**Acceptable / Rejected** *(circle one)* **Time:** 1501
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1266292.84 Longitude: 211350.34 Rock
Grab: # 4 *or* **N/A** ☐	**Bottom depth:** est. 15 **ft**	**Penetration Depth:** — **cm**	**Acceptable / Rejected** *(circle one)* **Time:** 1502
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1266291.25 Longitude: 211348.59 Rock

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alicia Weeks 3/18/11 **Reviewed By/Date:** [signature] 7/21/11

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From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2156 - A

Sampled By: CW / MAP **Date:** 3 / 18 / 2011

(1) **Grab** ~~#1~~ #5	**Bottom depth:** 15.7 cm	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1552
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1267066.08 Longitude: 211351.13 Rock
(1) **Grab** ~~#2~~ #16 *or* **N/A** ☐	**Bottom depth:** 16.2 cm	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1553
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1267065.60 Longitude: 211354.18 Rock
(1) **Grab** ~~#3~~ #7 *or* **N/A** ☐	**Bottom depth:** 16.9 cm	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1554
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1267061.23 Longitude: 211346.29 Rock
(1) **Grab** ~~#4~~ #18 *or* **N/A** ☐	**Bottom depth:** 19.1 cm	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1555
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1267055.77 Longitude: 211351.18 Water

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/18/11 **Reviewed By/Date:** [signature] 7/21/11

(1) MM 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2156 - D

Sampled By: CW / MAP **Date:** 3 / 18 / 2011

Grab: # 1	Bottom depth: estimate depth 8 ft	Penetration Depth: ___ cm	Acceptable / Rejected (circle one) Time: 1457
Sediment type:	**Sediment color:**	**Sediment Odor:**	**Comments:**
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ___	None Slight Moderate Strong Overwhelming H_2S Petroleum	Could not reload AOW 3/18/11 Latitude: Longitude:
Grab: # 2 *or* N/A ☐	**Bottom depth:** est. AOW 3/18/11 6.6 9.6 ft	**Penetration Depth:** ___ cm	**Acceptable / Rejected** (circle one) **Time:** 1456
Sediment type:	**Sediment color:**	**Sediment Odor:**	**Comments:**
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ___	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266240.10 Longitude: 211382.35
Grab: # 3 *or* N/A ☐	**Bottom depth:** est. 12.5 ft	**Penetration Depth:** ___ cm	**Acceptable / Rejected** (circle one) **Time:** 1454
Sediment type:	**Sediment color:**	**Sediment Odor:**	**Comments:**
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ___	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266248.04 Longitude: 211384.63
Grab: # 4 *or* N/A ☐	**Bottom depth:** 12.6 ft	**Penetration Depth:** ___ cm	**Acceptable / Rejected** (circle one) **Time:** 1455
Sediment type:	**Sediment color:**	**Sediment Odor:**	**Comments:**
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ___	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266249.91 Longitude: 211388.69

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alicia Wells 3/18/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

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Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2156 - U

Sampled By: CW / MAP **Date:** 3 / 18 / 2011

Grab: # 1	**Bottom depth:** 20.6 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1504
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1266318, 11 Longitude: 211325.33 Rocks
Grab: # ____ *or* **N/A** ☐	**Bottom depth:** 15.3 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1506
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1266322.30 Longitude: 211327.66 Rocks
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 14.1 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1507
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1266332.59 Longitude: 211333.31 Rock
Grab: # 4 *or* **N/A** ☐	**Bottom depth:** 21.4 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1508
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1266319.75 Longitude: 211319.45 Rock

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [illegible] 3/18/11 **Reviewed By/Date:** [illegible] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2157 - A @ 80'

Sampled By: EW / MAP **Date:** 3 / 24 / 2011

Grab: # 1	**Bottom depth:** 40.1 ft	**Penetration Depth:** 8 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1704
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F ~~Silt~~/clay ~~Organic matter~~ Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray ~~Black~~ *Other:* _____	~~None~~ Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 12606368.36 Longitude: 209505.61

Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/24/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2000 - A

Sampled By: CW / MAP **Date:** 3 / 18 / 2011

Grab #1	**Bottom depth:** 3.1 ft	**Penetration Depth:** 9.5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1258
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F minor Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown / tan Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 127606 19.66 Longitude: 1906 86.14
Grab #2 *or* N/A ☒	**Bottom depth:** ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab #3 *or* N/A ☒	**Bottom depth:** ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab #4 *or* N/A ☒	**Bottom depth:** ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/18/11 **Reviewed By/Date:** [signature] 7/21/11

Version2 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2200 - D

Sampled By: CW + MAP ① **Date:** 3 / 14 / 2011

Grab #1	**Bottom depth:** 6.2 ft	**Penetration Depth:** 7 cm	**Acceptable** / Rejected *(circle one)* **Time:** 1247
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F minor Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown → tan Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1276583.80 Longitude: 190776.76
Grab #2 *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab #3 *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab #4 *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/18/11 **Reviewed By/Date:** Maura McFall 7-21-11

Version2 -030311

① Recorded by MAP from field notes. MM 7-21-11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2201 - A

Sampled By: CW / MAP **Date:** 3 / 18 / 2011

Grab: # 1	Bottom depth: 4.3 ft	Penetration Depth: 9.5 cm	Acceptable / Rejected *(circle one)* Time: 1322
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F mina Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown / tan Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1276642.31 Longitude: 190534.88

Grab: # _____ *or* N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: # _____ *or* N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: # _____ *or* N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Lisa Wells 3/18/11 **Reviewed By/Date:** [illegible] 7.21.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2201 - D

Sampled By: CW / MAP **Date:** 3 / 18 / 2011

Grab: # 1	**Bottom depth:** 2.7 ft	**Penetration Depth:** 8 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1311
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown / tan Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1276376.36 Longitude: 190583.50
Grab: # _____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: # _____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: # _____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/18/11 **Reviewed By/Date:** [illegible] 7.21.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2201 - 0

Sampled By: CW / MAP **Date:** 3 / 18 / 2011

Grab: # 1	Bottom depth: 5.4 ft	Penetration Depth: 7.5 cm	Acceptable / Rejected *(circle one)* Time: 1333
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F mica Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum organic odor	Latitude: 1276661.87 Longitude: 190463.83
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Mia Wells 3/18/11 **Reviewed By/Date:** [illegible] 7.21.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

djw 3/7/11

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2214 - Ø A

Sampled By: CW / MAP **Date:** 03 / 07 / 2011

Grab: # 1	Bottom depth: 7.4 ft	Penetration Depth: 11 cm	Acceptable / Rejected *(circle one)* Time: 1045
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Light Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum slight sheen	Latitude: 1275093.19 Longitude: 195842.49
Grab: #_____ *or* N/A ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2214 - D

Sampled By: CW / MAP **Date:** 03 / 04 / 2011

Grab: # 1	Bottom depth: 5.6 ft	Penetration Depth: — cm	Acceptable / ~~Rejected~~ (circle one) Time: 1233
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	Latitude: 1275060.20
Sand C M F	Brown surface	Moderate	
Silt/clay	Gray	Strong	Longitude: 195861.97
Organic matter	Black	Overwhelming	
Woody debris	*Other:*	H_2S	Rock
Shell debris		Petroleum	
Worms			
Polychaetes			

Grab: # 2 or N/A ☐	Bottom depth: 9.2 ft	Penetration Depth: — cm	Acceptable / ~~Rejected~~ (circle one) Time: 1235
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	Latitude: 1275090.81
Sand C M F	Brown surface	Moderate	
Silt/clay	Gray	Strong	Longitude: 195847.40
Organic matter	Black	Overwhelming	
Woody debris	*Other:*	H_2S	Over pentration
Shell debris		Petroleum	
Worms			
Polychaetes			

Grab: # 3 or N/A ☐	Bottom depth: 9.1 ft	Penetration Depth: — cm	Acceptable / ~~Rejected~~ (circle one) Time: 1236
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	Latitude: 1275106.74
Sand C M F	Brown surface	Moderate	
Silt/clay	Gray	Strong	Longitude: 195840.41
Organic matter	Black	Overwhelming	
Woody debris	*Other:*	H_2S	Overpenetration
Shell debris		Petroleum	
Worms			
Polychaetes			

Grab: # 4 or N/A ☐	Bottom depth: 9.3 ft	Penetration Depth: — cm	Acceptable / ~~Rejected~~ (circle one) Time: 1241
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	
Gravel	Brown	Slight	Latitude: 1275103.34
Sand C M F	Brown surface	Moderate	
Silt/clay	Gray	Strong	Longitude: 195835.00
Organic matter	Black	Overwhelming	
Woody debris	*Other:*	H_2S	Over pentration
Shell debris		Petroleum	
Worms			
Polychaetes			

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/4/11 **Reviewed By/Date:** [illegible] 7/21/11

Version3 -030311

(4) Will need to sample w/ Ponar

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2214 - D

Sampled By: CW / MAP **Date:** 03 / 04 / 2011

Grab: # 1	Bottom depth: 5.1 ft	Penetration Depth: 11 cm	Acceptable / Rejected *(circle one)* Time: 1057
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F (Silt/clay) Organic matter (Woody debris) Shell debris Worms muscles Polychaetes	Drab olive (Brown) Brown surface Gray (Black) *Other:*	None (Slight) Moderate Strong Overwhelming H_2S Petroleum slight sheen	Latitude: 1275080.13 Longitude: 195848.82
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alissa Weis 3/7/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

① Attn! 3/07/11 - Incorrect date

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2214 - V

Sampled By: MAP / CW **Date:** 03 / 07 / 2011

Grab: # 1	**Bottom depth:** 6.3 ft	**Penetration Depth:** 9 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1108
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum slight sheen	Latitude: 1275133.51 Longitude: 958919.22
Grab: #_____ *or* N/A ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/7/11 **Reviewed By/Date:** [illegible] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2220 - U

Sampled By: MAP / AJW **Date:** 3 / 21 / 2011

Grab: # 1	Bottom depth: 9.2 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1557
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 202419.29 Longitude: 1268651.24 Rocks

Grab: # 2 or N/A ☐	Bottom depth: 11.1 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1558
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 202412.82 Longitude: 1268652.08 Rocks

Grab: # 3 or N/A ☐	Bottom depth: 8.3 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1559
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 202411.20 Longitude: 1268648.74 Rocks

Grab: # 4 or N/A ☐	Bottom depth: 9.3 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1602
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 202420.09 Longitude: 1268658.87 Unable to collect Samples after 4 attempts due to rocky substrate

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/21/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

LAT/LONG switched. MEM 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** ~~2223~~ 2223 - A
CW 3/21/11

Sampled By: MAP/AJW **Date:** 3 / 21 / 2011

Grab: # 5	**Bottom depth:** 5.3 ft	**Penetration Depth:** 5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1255
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 205958.88 Longitude: 1268117.96
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/21/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

Lat/Long switched. mem 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2223 - D

Sampled By: MAP / ATM **Date:** 3 / 21 / 2011

Grab: # 1	Bottom depth: ~ ft	Penetration Depth: ~ cm	Acceptable / Rejected (circle one) Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268118.05 Longitude: 205981.30 rocks
Grab: # 2 *or* N/A ☐	**Bottom depth:** ~ ft	**Penetration Depth:** ~ cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268125.12 Longitude: 205985.47 rocks
Grab: # 3 *or* N/A ☐	**Bottom depth:** ~ ft	**Penetration Depth:** ~ cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268119.56 Longitude: 205983.28 rocks
Grab: # 4 *or* N/A ☐	**Bottom depth:** ~ ft	**Penetration Depth:** ~ cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1268129.41 Longitude: 205984.57 rocks

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 7/21/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

* Original Field form lost. This one re-created from GIS files + sample track

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2232 - A

Sampled By: MAP + AW **Date:** 4 / 20 / 2011

Grab: # 1	Bottom depth: 6 ft	Penetration Depth: 10 cm	Acceptable / Rejected *(circle one)* Time: 1028
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: / Longitude: / Collected W/grapnel N - 47° 33.975' W - 122° 21.012' +/- 8'

Grab: # _____ or N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: # _____ or N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: # _____ or N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MDS 4/20/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2232 - D

Sampled By: MAP + AW **Date:** 4 / 20 / 2011

Grab: # 1	Bottom depth: 0 ft	Penetration Depth: 10 cm	Acceptable / Rejected *(circle one)* Time: 1006
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel (Sand C M F) Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive (Brown) Brown surface Gray Black *Other:*	(None) Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude: Collected w/ Grapnel N - 47° 33.978' +/- 8' W - 122° 21.015'
Grab: #_____ or (N/A) ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab: #_____ or (N/A) ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab: #_____ or (N/A) ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MAP 4/20/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2232 - U

Sampled By: MAP & AW **Date:** 4 / 20 / 2011

Grab: # 1	Bottom depth: 0 ft	Penetration Depth: 10 cm	Acceptable / Rejected *(circle one)* Time: 1054
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel (Sand) C (M F) (Silt/clay) Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive (Brown) Brown surface Gray Black *Other:*	(None) Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude: Collect w/ orientation N - 47° 33.973' +/- 8' W - 122° 21.012'

Grab: # _____ or (N/A) ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Grab: # _____ or (N/A) ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Grab: # _____ or (N/A) ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MAP 4/20/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2233 - A

Sampled By: MAP/AJW **Date:** 3 / 21 / 2011

Grab: # 1	Bottom depth: 5.6 ft	Penetration Depth: ~ cm	Acceptable / Rejected (circle one) Time: 1247
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 205953.93 Longitude: 1268135.33 Water Grab

Grab: # 2 or N/A ☐	Bottom depth: 5.4 ft	Penetration Depth: ~ cm	Acceptable / Rejected (circle one) Time: 1248
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 205943.11 Longitude: 1268142.79 Rocks Sheen

Grab: # 3 or N/A ☐	Bottom depth: 6.1 ft	Penetration Depth: ~ cm	Acceptable / Rejected (circle one) Time: 1249
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 205942.34 Longitude: 1268143.19 Rocks

Grab: # 4 or N/A ☐	Bottom depth: 7.0 ft	Penetration Depth: ~ cm	Acceptable / Rejected (circle one) Time: 1250
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 205939.53 Longitude: 1268142.21 Rocks Switch to Youngs

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] 3/21/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

NOTE: This sample not planned in SAP/QAPP. mm 7/21/11

Lat/Long switched. mm 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2233 - D

Sampled By: MAP / AJW **Date:** 3 / 21 / 2011

CW 3/21/11

Grab: # 1	Bottom depth: 8.8 ft	Penetration Depth: \ cm	~~Acceptable~~ / Rejected (circle one) Time: 1240
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 205981.30 Longitude: 1268118.05 Rocks

Grab: # 2 or N/A ☐	Bottom depth: 6.4 ft	Penetration Depth: \ cm	Acceptable / Rejected (circle one) Time: 1242
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	CW 3/21/11 Latitude: ~~12~~ 205985.47 Longitude: 1268125.12 Rocks

Grab: # 3 or N/A ☐	Bottom depth: 7.6 ft	Penetration Depth: \ cm	Acceptable / Rejected (circle one) Time: 1243
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 205983.28 Longitude: 1268119.56 Rocks

Grab: # 4 or N/A ☐	Bottom depth: 5.9 ft	Penetration Depth: \ cm	Acceptable / Rejected (circle one) Time: 1245
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 205984.57 Longitude: 1268129.41 Unable to collect samples after 4 attempts due to Rocky Substrate

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/21/11 **Reviewed By/Date:** 7.21.11

Version3 -030311

① Lat/Long Switched. Mom 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2233-D

Sampled By: MAP & AW **Date:** 4 / 20 / 2011

Grab: # 1	Bottom depth: 0 ft	Penetration Depth: 10 cm	Acceptable / Rejected *(circle one)* Time: 0950
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: / Longitude: collected w/ Grabmen N - 47° 34.047' W - 122° 21.011' +/- 8'

Grab: # _____ or N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Grab: # _____ or N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Grab: # _____ or N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MAP 4/20/11 **Reviewed By/Date:** 7.21.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2233 - U

Sampled By: MAP + AW **Date:** 4 / 20 / 2011

Grab: # 1	Bottom depth: 0 ft	Penetration Depth: 10 cm	Acceptable / Rejected *(circle one)* Time: 0916
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude: collected w/ grabmen N - 47° 33.986' W - 122° 21.059' +/- 8'

Grab: # _____ or N/A	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Grab: # _____ or N/A	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Grab: # _____ or N/A	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MAP 4/20/11 **Reviewed By/Date:** [illegible] 7/21.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2244 - A

Sampled By: MAP/AJW **Date:** 3 / 21 / 2011

Grab: # 1	**Bottom depth:** 17.6 ft	**Penetration Depth:** \ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1223
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 206022.78 Longitude: 1268040.67 Rocks / Woody debris
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 17.5 ft	**Penetration Depth:** \ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1226
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 206020.98 Longitude: 1268045.41 Water Grab
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 18.3 ft	**Penetration Depth:** 6.5 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 1229
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 206018.12 Longitude: 1268037.31
Grab: # _____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] 3/21/11 CW 3/21/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

① LAT/LONG SWITCHED. MKM 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2244 - AD CW 3/21/11

Sampled By: MAP / AJW **Date:** 3 / 21 / 2011

Grab: # 1	**Bottom depth:** 20.1 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1210
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 206039.76 Longitude: 1268004.21 Rocks

Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 19.2 ft	**Penetration Depth:** 7.5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1213
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* tan	None Slight Moderate Strong Overwhelming H_2S Petroleum Slight Sheen	Latitude: 206045.60 Longitude: 1268012.27

Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/21/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

① Lat/Long switched 7.21.11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2246 - A

Sampled By: MAP/AJW **Date:** 3 /21 / 2011

Grab: # 1	Bottom depth: 12.9 ft	Penetration Depth: ~ cm	Acceptable / Rejected (circle one) Time: 1030
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay ~~Organic matter~~ ~~Woody debris~~ Shell debris Worms ~~Polychaetes~~	Drab olive ~~Brown~~ Brown surface Gray ~~Black~~ *Other:*	None Slight ~~Moderate~~ Strong Overwhelming ~~H_2S~~ Petroleum	Latitude: 206971.49 Longitude: 1267699.91 Rocks

CHW 3/21/11

Grab: # 2 or N/A ☐	Bottom depth: 14.3 ft	Penetration Depth: ~ cm	Acceptable / Rejected (circle one) Time: CW 3/21/11 1034 1034
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 206963.77 Longitude: 1267681.14 Rocks

Grab: # 3 or N/A ☐	Bottom depth: 17.2 ft	Penetration Depth: 5.5 cm	Acceptable / Rejected (circle one) Time: 1039
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F ~~Silt/clay~~ ~~Organic matter~~ ~~Woody debris~~ Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray ~~Black~~ *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 206971.00 Longitude: 1267667.05

Grab: # _____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected (circle one) Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/21/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

① Lat/Long swapped. MOK 7-21-11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2246 - U

Sampled By: MAP/AJV **Date:** 3 / 21 / 2011

Grab: # 1	**Bottom depth:** 17.3 ft	**Penetration Depth:** ~~_____~~ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1053
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive ~~Brown~~ CW 3/21/11 Brown surface Gray ~~Black~~ CW 3/21/11 *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 206939.77 Longitude: 1267702.06 water Grab
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 17.7 ft	**Penetration Depth:** 3.5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1056
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 206946.32 Longitude: 1267691.82 Under penetration Switch to Youngs Grab
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 16.2 ft	**Penetration Depth:** 6 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1109
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 206953.62 Longitude: 1267682.77
Grab: # _____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

CW 3/21/11

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/21/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

① Lat/long switched. mem 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2247 - A

Sampled By: MAP/AJW **Date:** 3 / 21 / 2011

Grab: # 1	Bottom depth: 25.3 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1132
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 206851.63 Longitude: 1267735.25 over penetration

Grab: # 2 or N/A ☐	Bottom depth: 26.0 ft	Penetration Depth: 9.5 cm	Acceptable / Rejected (circle one) Time: 1138
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum Slight Sheen	Latitude: 206845.18 Longitude: 1267740.93

Grab: # _____ or N/A ☑	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected (circle one) Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: # _____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected (circle one) Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/21/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

(1) Nathan switched 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2247 - U

Sampled By: MAP/ASW **Date:** 3 / 21 / 2011

Grab: # 1	Bottom depth: 27.3 ft	Penetration Depth: 7.5 cm	Acceptable / Rejected *(circle one)* Time: 1152
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum Slight Sheen	Latitude: 206832.94 Longitude: 1267763.72 ①
Grab: #_____ *or* N/A ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: _____ 3/21/11 **Reviewed By/Date:** _____ 7/21/11

Version3 -030311

① Lat/long Swifted. mem 7-21-11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2503 - A

Sampled By: CW / MAP **Date:** 3 / 24 / 2011

Grab: # 1	Bottom depth: – ft	Penetration Depth: 21 cm	Acceptable / Rejected *(circle one)* Time: 1148
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: – Longitude: – On foot grab Sample not accessible via kayak • DGB
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Anisa Wells 3/24/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2505 - A

Sampled By: CW / MA **Date:** 03 / 07 / 2011

Grab: # 1	**Bottom depth:** surface ft	**Penetration Depth:** 10 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1414
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble 5% Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*_____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 126953.87 - GPS Longitude: 200926.57 Surface grab sample ↳ see photos for location
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*_____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*_____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*_____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] 3/7/11 **Reviewed By/Date:** [signature] 7/12/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 25016 - A

Sampled By: MAP / CW **Date:** 03 / 07 / 2011

Grab: # 1	Bottom depth: 7.7 ft	Penetration Depth: 7 cm	Acceptable / Rejected *(circle one)* Time: 1518
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269556.96 Longitude: 201171.69
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Melissa Wells 3/7/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

NAW 3/7/11

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2506 - A D

Sampled By: CW / MAP **Date:** 03 / 07 / 2011

Grab: # 1	**Bottom depth:** 9.7 ft	**Penetration Depth:** 8 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 1506
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 12695 33.67 Longitude: poor GPS connection

Grab: #_____ *or* N/A ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/7/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2512 - A

Sampled By: AJW/CHV **Date:** 03 / 07 / 2011

Grab: # 1	**Bottom depth:** Surface ft	**Penetration Depth:** 10 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1429
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel 10% Sand (C) M (F) Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 47.32.453 ± 20ft. Longitude: 122.20.105 ± 20ft. Surface grab sample
Grab: # _____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: # _____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: # _____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: _____ 3/7/11 **Reviewed By/Date:** _____ 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 2512 - 4

Sampled By: MAP / AJV **Date:** 03 / 07 / 2011

Grab: # 1	**Bottom depth:** Surface ft	**Penetration Depth:** 10 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 1436
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel 20% Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 47.32.451 ± 35ft. Longitude: 122.20.099 ± 35ft. Surface grab Sample

Grab: #_____ *or* **N/A** ☑	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/7/11 **Reviewed By/Date:** 3/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 3037 - A

Sampled By: CW / MAP **Date:** 03 / 03 / 2011

Grab #1	**Bottom depth:** 6.6 ~~ft~~ cm	**Penetration Depth:** 2 ~~6.6~~ ASW cm	**Acceptable / Rejected** *(circle one)* **Time:** 1347
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel - F Sand C M F Silt/clay Organic matter Woody debris Shell debris (VR) Worms Polychaetes 5/4/11	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1274033.52 Longitude: 196868.61 Water Grab
Grab #2 *or* **N/A** ☐	**Bottom depth:** 6 ~~ft~~ cm	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1350
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1274035.80 Longitude: 196858.83 Water Grab
Grab #3 *or* **N/A** ☐	**Bottom depth:** 6.6 ~~ft~~ cm	**Penetration Depth:** 2 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1351
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1274028.98 Longitude: 196868.09 Rocks in sampler
Grab #4 *or* **N/A** ☐	**Bottom depth:** 8.6 ~~ft~~ cm	**Penetration Depth:** 6 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 1354
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel - F Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1274034.63 Longitude: 196883.18 collected sample 1354

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Mia Wells 3/3/11 **Reviewed By/Date:** [signature] 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** ~~3106~~ AJW 3037 - D

Sampled By: MAP / CW **Date:** 03 / 03 / 2011

Grab #1	Bottom depth: 5.4 ft cm	Penetration Depth: ____ cm	Acceptable / Rejected (circle one) Time: 1318
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown / tan Brown surface Gray Black *Other:* ____ 3/3/11	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1274000.95 Longitude: 1968666.80 Water grab

Grab #2 or N/A ☐	Bottom depth: 6.5 ft cm	Penetration Depth: ~ cm	Acceptable / Rejected (circle one) Time: 1321
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1273999.56 Longitude: 1968880.21 Young sample grabbed heavy object; have to maneuver to release sample

Grab #3 or N/A ☒ OK	Bottom depth: 7.7 ft cm	Penetration Depth: 9.5 cm	Acceptable / Rejected (circle one) Time: 1325
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown / tan Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1274000.666 Longitude: 1968944.17 Field Duplicate collected. mom 7/21/11

Grab #4 or N/A ☒	Bottom depth: ____ ft cm	Penetration Depth: ____ cm	Acceptable / Rejected (circle one) Time: ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/3/11 **Reviewed By/Date:** [signature] 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 3037 - A U (ADW 3/3)

Sampled By: MAP / CW **Date:** 03 / 03 / 2011

Grab #1	**Bottom depth:** 10.1 cm (ADW)	**Penetration Depth:** 4.5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1410
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1274072.15 Longitude: 196864.21 Not enough sediment

Grab #2 *or* **N/A** ☐	**Bottom depth:** 9.3 cm (ADW)	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1414
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1274069.78 Longitude: 196869.73 Rock in sampler water sample

Grab #3 *or* **N/A** ☐	**Bottom depth:** 9.6 cm (ADW)	**Penetration Depth:** 7 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 1418
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel (Sand) C M F (Silt/clay) (Organic matter) Woody debris Shell debris Worms rarefium Polychaetes	Drab olive (Brown) Brown surface Gray Black *Other:*	(None) Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1274062.71 Longitude: 196866.22

Grab #4 *or* **N/A** ☒	**Bottom depth:** cm (ADW)	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wees 3/3/11 **Reviewed By/Date:** [signature] 7/11/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 5000 - A

Sampled By: MAP/AMK **Date:** 4 / 8 / 2011

Grab: # 1	Bottom depth: 26.4 ft	Penetration Depth: 9.5 cm	Acceptable / Rejected *(circle one)* Time: 1424
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 206823.75 Longitude: 1268126.61
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 4/8/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

① Lat/long switched. mwm 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 5000 - D

Sampled By: MAP/AMK **Date:** 4 / 8 / 2011

Grab: # 1	Bottom depth: 26.5 ft	Penetration Depth: 9.5 cm	Acceptable / Rejected *(circle one)* Time: 1340
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M (F) (Silt/clay) (Organic matter) Woody debris Shell debris Worms (Polychaetes)	Drab olive (Brown) Brown surface (Gray) Black *Other:*	(None) Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 206808.68 Longitude: 1268093.77 (1)

Grab: #_____ *or* N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] 4/8/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

(1) Lat/Long Switched. [signature] 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 5060 - U

Sampled By: MAP/AMK **Date:** 4 / 8 / 2011

Grab: # ~~5~~ 1 (DD 4/8/11)	**Bottom depth:** 26.9 ft	**Penetration Depth:** 9.5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1436
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 206813.40 Longitude: 1268164.91 ①
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] 4/8/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

① Lat/long switched. mom 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 5002 - A

Sampled By: CW/MAP **Date:** 3 / 24 / 2011

Grab: # 1	Bottom depth: 28.2 ft	Penetration Depth: 3 cm	Acceptable / ~~Rejected~~ *(circle one)* Time: 1542
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1247873.25 Longitude: 205211.21 Under penetration

Grab: # 2 or N/A ☐	Bottom depth: 31.6 ft	Penetration Depth: 6 cm	Acceptable / Rejected *(circle one)* Time: 1548
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267891.98 Longitude: 205186.43

switch to grab 3

Grab: # _____ or N/A ☒ A	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: # _____ or N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [illegible] 3/24/11 **Reviewed By/Date:** [illegible] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 5002 - D

Sampled By: CW/MAP **Date:** 3 / 24 / 2011

Grab: # 1	Bottom depth: 26.0 ft	Penetration Depth: — cm	Acceptable / Rejected *(circle one)* Time: 1600
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267837.81 Longitude: 205194.50 Water

Grab: # 2 *or* N/A ☐	Bottom depth: 27.8 ft	Penetration Depth: 0 cm	Acceptable / Rejected *(circle one)* Time: 1604
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267831.56 Longitude: 205245.35

Grab: # _____ *or* N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: # _____ *or* N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alicia Wells 3/24/11 **Reviewed By/Date:** [signature] 3/24/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 3003 - A

Sampled By: CW / MAP **Date:** 3 / 24 / 2011

Grab: # 1	**Bottom depth:** 24.3 ft	**Penetration Depth:** ___ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1533
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:* ___	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1267859.76 Longitude: 205154.71 Rocks
Grab: # 2 *or* N/A ☐	**Bottom depth:** 25.6 ft	**Penetration Depth:** ___ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1535
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:* ___	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1267878.88 Longitude: 205169.05 Rock
Grab: # 3 *or* N/A ☐	**Bottom depth:** 31.2 ft	**Penetration Depth:** ___ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1537
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:* ___	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1267892.74 Longitude: 205181.74
Grab: # 4 *or* N/A ☐	**Bottom depth:** 27.8 ft	**Penetration Depth:** ___ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1539
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:* ___	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 127883.93 Longitude: 205172.63

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] on 3/24/11 for Alisa J. Wells on 3/24/11 **Reviewed By/Date:** [signature] 7/24/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 5003 - A

Sampled By: CW / MAP **Date:** 03 / 24 / 2011

Grab: # 1	**Bottom depth:** 27.8 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1637
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267859.87 Longitude: 205179.79 Rock
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 31.3 ft	**Penetration Depth:** 6 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1640
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum sheen	Latitude: 1267891.04 Longitude: 205185.98
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wills 3/24/11 **Reviewed By/Date:** [illegible] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 5004 - A

Sampled By: CW / MAP **Date:** 3 / 24 / 2011

Grab: # 1	Bottom depth: 20.1 ft	Penetration Depth: — cm	Acceptable / ~~Rejected~~ (circle one) Time: 1523
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267832.24 Longitude: 205141.99 Rock
Grab: # 2 *or* N/A ☐	**Bottom depth:** 22.8 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** (circle one) **Time:** 1525
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267836.02 Longitude: 205146.30
Grab: # 3 *or* N/A ☐	**Bottom depth:** 24.0 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** (circle one) **Time:** 1528
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267867.13 Longitude: 205153.93
Grab: # 4 *or* N/A ☐	**Bottom depth:** 23.7 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** (circle one) **Time:** 1529
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267868.94 Longitude: 205151.64 Rock

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] 3/24/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

Note: Sample not planned in SAP/QAPP.
[signature] 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 5004 - A

Sampled By: CW / MAP **Date:** 03 / 24 / 2011

Grab: # 1	Bottom depth: 26.1 ft	Penetration Depth: — cm	Acceptable / Rejected *(circle one)* Time: 1630
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267869.04 Longitude: 205157.95 Rock

Grab: # 2 *or* N/A ☐	Bottom depth: 27.8 ft	Penetration Depth: — cm	Acceptable / Rejected *(circle one)* Time: 1633
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1267893.31 Longitude: 205149.31 Rock

Grab: # _____ *or* N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: # _____ *or* N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alissa Wells 3/24/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

Note: Sample not planned in SAP/QAPP. mm 7/21/11

Could not collect sample with Ponar or young due to rocky substrate

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 5005 - A

Sampled By: CW / MAP **Date:** 3 / 24 / 2011

Grab: # 1	Bottom depth: 23.4 ft	Penetration Depth: 6 cm	Acceptable / Rejected *(circle one)* (1) Time: 1617
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 126785 9.56 Longitude: 205139.55
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/29/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

(1) Acceptable circled by MRM on 7/21/11 for ATW, MRM 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 6146 - 4

Sampled By: MAP/AJW **Date:** 3 / 21 / 2011

Grab: # 1	Bottom depth: 29.3 ft	Penetration Depth: 9.5 cm	Acceptable / Rejected *(circle one)* Time: 1444
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum Sheen	Latitude: 203166.52 Longitude: 1268494.16 (1)
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] 3/21/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

(1) lat/long switched. mwm 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 6146 - D

Sampled By: CW & JS **Date:** 3 / 8 / 2011

Grab: # 1	Bottom depth: 33.2 ft	Penetration Depth: 11.0 cm	Acceptable / Rejected *(circle one)* Time: 1001
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 126477.85 Longitude: 203214.57 lost gps signal right before survey collect
Grab: # ____ *or* N/A ☐	**Bottom depth:** ____ ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* Time: ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____
Grab: # ____ *or* N/A ☐	**Bottom depth:** ____ ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* Time: ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	MP 3/8/11 Latitude: ____ Longitude: ____
Grab: # ____ *or* N/A ☐	**Bottom depth:** ____ ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* Time: ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/8/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 646 - U

Sampled By: MAP/ATW **Date:** 3 / 21 / 2011

Grab: # 1	Bottom depth: 28.5 ft	Penetration Depth: 10.5 cm	(Acceptable) / Rejected *(circle one)* Time: 1457
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C (M) F Silt/clay (Organic) matter (Woody) debris (Shell) debris Worms Polychaetes	Drab olive (Brown) Brown surface Gray Black *Other:* Tan	None (Slight) Moderate Strong Overwhelming H_2S Petroleum	Latitude: 203136.27 Longitude: 1268483.74 (1)

Grab: #_____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ or N/A ☒	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] 3/21/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

(1) Lat/Long switched. mom 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** BDC 2 - A

Sampled By: CW / MAP **Date:** 03 / 17 / 2011

Grab: # 1	Bottom depth: 9.1 ft	Penetration Depth: 8 cm	Acceptable / Rejected *(circle one)* Time: 1233
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277437.40 Longitude: 190557.39 homogenize 2 AGW 3/17/11 ~~2 Grabs~~ 3 Grabs
Grab: # 2 *or* N/A ☒	**Bottom depth:** ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab: # *or* N/A ☒	**Bottom depth:** ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab: # *or* N/A ☒	**Bottom depth:** ft	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wills **Reviewed By/Date:** 4/1/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** BBC-2 - D

Sampled By: CW/MAP **Date:** 3 / 17 / 2011

Grab: # 1	**Bottom depth:** 3.5 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1212
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277395.47 Longitude: 190598.34 Rock
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 6.8 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1215
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277413.17 Longitude: 190582.78 Rock
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 7.2 ft	**Penetration Depth:** 7 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 1216
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277416.70 Longitude: 190574.47
Grab: # ____ *or* **N/A** ☒	**Bottom depth:** ____ ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:** ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Lisa Wells **Reviewed By/Date:** [illegible] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** BDC 2 - U

Sampled By: MAP / CW **Date:** 03 / 17 / 2011

Grab: # 1	**Bottom depth:** 8.4 ft	**Penetration Depth:** 10 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1251
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 127743.44 Longitude: 190546.10
Grab: # _____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: # _____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: # _____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] 3/17/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** BPC 3 - D

Sampled By: MAP / CW **Date:** 03 / 17 / 2011

Grab: # 1	Bottom depth: 4.5 ft	Penetration Depth: 5 cm	Acceptable / Rejected *(circle one)* Time: 1307
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277548.42 Longitude: 190548.82 for Will keep composite sample collected downstream pier 6
Grab: # 2 *or* N/A ☐	**Bottom depth:** 7.0 ft	**Penetration Depth:** 7 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1314
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277539.09 Longitude: 190536.94 Sample collected downgradient pier 6
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alicia Wells 3/17/11 **Reviewed By/Date:** [illegible] 7/21/11

Version3 -030311

AW 3/17/11

FD 60

QA collected (field dup)

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** BDC3 - U

Sampled By: MAP / CW **Date:** 3 / 17 / 2011

Grab: # 1	**Bottom depth:** 8.8 ft	**Penetration Depth:** ____ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1331
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277624.08 Longitude: 190527.04
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 9.1 ft	**Penetration Depth:** 5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1334
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Dark Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277621.58 Longitude: 190523.17 Will collect for composite sample
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 9.3 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1339
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277626.57 Longitude: 190527.76 Rocks
Grab: # 4 *or* **N/A** ☐	**Bottom depth:** 9.3 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1341
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277622.78 Longitude: 190525.55

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Krista Wells 3/17/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 130C3 - U

Sampled By: MAP / AW **Date:** 03 / 17 / 2011

Grab: # 5	**Bottom depth:** 9.2 ft	**Penetration Depth:** 7 cm	**Acceptable** / Rejected *(circle one)* **Time:** 1343
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277621.44 Longitude: 190515.64 Composite
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/17/11 **Reviewed By/Date:** [illegible] 3/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** BDC 4 - A

Sampled By: _____ **Date:** 03 / 17 / 2011

Grab: # 1	Bottom depth: 9.2 ft	Penetration Depth: ~ cm	Acceptable / ~~Rejected~~ (circle one) Time: 1404
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277646.78 Longitude: 190538.33 Water
Grab: # 2 *or* N/A ☐	**Bottom depth:** 10.3 ft	**Penetration Depth:** 6 cm	**Acceptable / Rejected** (circle one) Time: 1407
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277650.59 Longitude: 190529.97
Grab: # 3 *or* N/A ☐	**Bottom depth:** 10.8 ft	**Penetration Depth:** 8 cm	**~~Acceptable~~ / Rejected** (circle one) ~~Time:~~ 1418
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277653.02 Longitude: 190518.83
Grab: # _____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** (circle one) Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Melissa Wells 3/17/11 **Reviewed By/Date:** [illegible] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** BPC4 - U

Sampled By: MAP / CW **Date:** 03 / 17 / 2011

Grab: # 1	**Bottom depth:** 11 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1433
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1277676.34 Longitude: 190523.18 Rocks
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 10 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1434
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1277674.33 Longitude: 190538.27 Rock
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 10.9 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1436
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1277684.61 Longitude: 190529.32
Grab: # 4 *or* **N/A** ☐	**Bottom depth:** 10.3 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1440
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1277686.65 Longitude: 190519.65 Rock

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Aron Wills 3/17/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** BDC4 - U

Sampled By: MAP / CW **Date:** 03 / 17 / 2011

Grab: # 5	**Bottom depth:** 10.8 ft	**Penetration Depth:** 5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1442
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277684.08 Longitude: 190519.77 Water Grab
Grab: # 6 *or* **N/A** ☐	**Bottom depth:** 11.1 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1444
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1277689.35 Longitude: 190531.61
Grab: # _____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: # _____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/17/11 **Reviewed By/Date:** [illegible] 3/17/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** BRSTSD - A

Sampled By: CW / MAP **Date:** 03 / 04 / 2011

Grab: # 1	**Bottom depth:** 22.8 ft	**Penetration Depth:** 10 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 1546
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown / Black Brown surface Gray Black *Other:* slight sheen	None Slight Moderate Strong Overwhelming H_2S Black Silt Petroleum	Latitude: 127029.65 Longitude: 201074.53
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Lisa Lee 3/4/11 **Reviewed By/Date:** [illegible] 4/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** BRST SD - D

Sampled By: CW / MAP **Date:** 03 / 04 / 2011

Grab: # 1	Bottom depth: 22.8 ft	Penetration Depth: 11.5 cm	Acceptable / Rejected *(circle one)* Time: 1530
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive ~~Brown/Black~~ Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S — Black silt Petroleum	Latitude: 1270271.68 Longitude: 201096.83
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wills 3/4/11 **Reviewed By/Date:** [signature] 4/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** BRSTSD - U

Sampled By: CW / MAP **Date:** 03 / 04 / 2011

Grab: # 1	Bottom depth: 22.9 ft	Penetration Depth: ~ cm	Acceptable / Rejected *(circle one)* Time: 1600
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown / Black Brown surface Gray Black *Other:* alvin wells 3/04/11	None Slight Moderate Strong Overwhelming H_2S slight Petroleum	Latitude: 1270320.24 Longitude: 201062.56 Wood debris & sticks
Grab: # 2 *or* N/A ☐	**Bottom depth:** 23.1 ft	**Penetration Depth:** 10.5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1603
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown/Black Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S slight Petroleum	Latitude: 1270315.24 Longitude: 201059.62
Grab: # _____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: # _____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alvin Wells 3/4/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** HRE 1 - A

Sampled By: CAS/MA **Date:** 3 / 18 / 2011

Grab #1	**Bottom depth:** 10.3 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1535
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266910.22 Longitude: 211400.13 water
Grab #2 *or* N/A ☐	**Bottom depth:** 13.3 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1536
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266915.94 Longitude: 211401.30 water
Grab #3 *or* N/A ☐	**Bottom depth:** 14.2 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1537
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266919.12 Longitude: 211406.32 water
Grab #4 *or* N/A ☐	**Bottom depth:** 13.7 ft	**Penetration Depth:** — cm	**Acceptable / ~~Rejected~~** *(circle one)* **Time:** 1539
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266911.77 Longitude: 211376.38 Rocks

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] 3/18/11 **Reviewed By/Date:** [signature] 7/21/11

Version2 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** HRE 1 - ~~A~~ D ①

Sampled By: CW / MAP **Date:** 3 / 18 / 2011

Grab #1	Bottom depth: 14.8 ft	Penetration Depth: — cm	Acceptable / ~~Rejected~~ (circle one) Time: 1548
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266924.94 Longitude: 211418.58 Rock
Grab #2 *or* N/A ☐	**Bottom depth:** 11.7 **ft**	**Penetration Depth:** — **cm**	**Acceptable / ~~Rejected~~ (circle one) Time:** 1547
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266924.40 Longitude: 211432.16 Rock
Grab #3 *or* N/A ☐	**Bottom depth:** 12.2 **ft**	**Penetration Depth:** — **cm**	**Acceptable / Rejected (circle one) Time:** 1542
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266924.16 Longitude: 211430.93 Rock
Grab #4 *or* N/A ☐	**Bottom depth:** 12.7 **ft**	**Penetration Depth:** — **cm**	**Acceptable / ~~Rejected~~ (circle one) Time:** 1542
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266924.67 Longitude: 211428.24 Rock

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/18/11 **Reviewed By/Date:** [signature] 3/21/11

Version2 -030311

① Rewritten for clarity. MAM 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** HRE1 - 3/18/D AW U

Sampled By: CW / MAP **Date:** 3 / 18 / 2011

Grab #1	**Bottom depth:** 13.4 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1529
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266916.15 Longitude: 211374.07 Rock
Grab #2 *or* **N/A** ☐	**Bottom depth:** 9.8 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1530
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266903.49 Longitude: 211366.98 Rock
Grab #3 *or* **N/A** ☐	**Bottom depth:** 12.0 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1531
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266908.22 Longitude: 211365.99 Rock
Grab #4 *or* **N/A** ☐	**Bottom depth:** 12.7 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1533
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1266907.63 Longitude: 211371.04 Rock

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Lisa Wells 7/18/11 **Reviewed By/Date:** [illegible] 7/21/11

Version2 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** NVSD - A

Sampled By: MAP/AJW **Date:** 3 / 21 / 2011

Grab: # 1	Bottom depth: 9.7 ft	Penetration Depth: X cm	Acceptable / Rejected (circle one) Time: 0910
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 210048.68 Longitude: 1266932.34 Rocks

Grab: # 2 or N/A ☐	Bottom depth: 25.2 ft	Penetration Depth: \ cm	Acceptable / Rejected (circle one) Time: 0912
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	CW 3/21/11 Latitude: ~~12~~ 210043.37 Longitude: 1266944.40 Rocks

Grab: # 3 or N/A ☐	Bottom depth: 25.8 ft	Penetration Depth: \ cm	Acceptable / Rejected (circle one) Time: 0913
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 210029.81 Longitude: 1266940.81 Rocks Shell frags

Grab: # 4 or N/A ☐	Bottom depth: 19.9 ft	Penetration Depth: \ cm	Acceptable / Rejected (circle one) Time: 0915
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 210051.35 Longitude: 1266949.77 Rocks After 4 attempts due to substrate could not Sample

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/21/11 **Reviewed By/Date:** 7.21.11

Version3 -030311

① Lat/long switched. mm 7.21.11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** NVSD - D

Sampled By: MAP/AJW **Date:** 3 / 21 / 2011

Grab: # 1	Bottom depth: 14.4 ft	Penetration Depth: \ cm	Acceptable / Rejected (circle one) Time: 0959
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 210094.33 Longitude: 1266974.99 Rocks

Grab: # 2 or N/A ☐	Bottom depth: 16.7 ft	Penetration Depth: \ cm	Acceptable / Rejected (circle one) Time: 0901
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 210089.83 Longitude: 1266962.14 Rocks

Grab: # 3 or N/A ☐	Bottom depth: 24.6 ft	Penetration Depth: \ cm	Acceptable / Rejected (circle one) Time: 0907
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 210094.61 Longitude: 1266951.97 Rocks

Grab: # 4 or N/A ☐	Bottom depth: (2) ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 0904
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 210160.36 Longitude: 1266963.61 Rocks After 4 attempts due to Substrate could not Sample

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/21/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

(1) Lat/long switched mwm 7/21/11

(2) Not Recorded. mwm 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** NVSD - 4

Sampled By: MAP/AJW **Date:** 3 / 21 / 2011

Grab: # 1	**Bottom depth:** 20.3 ft	**Penetration Depth:** \ cm	**Acceptable / Rejected** *(circle one)* **Time:** 0918
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 210038.30 Longitude: 1266949.05 Rocks
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 12.2 ft	**Penetration Depth:** \ cm	**Acceptable / Rejected** *(circle one)* **Time:** ~~0930~~ 3/21/11 0930
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 210033.05 Longitude: 1266964.63 Rocks
Grab: # 3 *or* **N/A** ☐	**Bottom depth:** 16.6 ft	**Penetration Depth:** \ cm	**Acceptable / Rejected** *(circle one)* **Time:** 0921
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 210027.67 Longitude: 1266963.51 Rocks
Grab: # 4 *or* **N/A** ☐	**Bottom depth:** 18.1 ft	**Penetration Depth:** \ cm	**Acceptable / Rejected** *(circle one)* **Time:** 0922
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 210024.76 Longitude: 1266960.51 Rocks Unable to collect sample after 4 attempts, due to rocky substrate

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/21/11 **Reviewed By/Date:** 7.21.11

Version3 -030311

① Lat/long surfaced. 7-21-11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** PSF - A

Sampled By: C. Wilson / A. Wells **Date:** 3 / 7 / 2011

Grab: # 1	Bottom depth: 20.7 ft	Penetration Depth: 5 cm	(Acceptable) / Rejected (circle one) Time: 1557
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel (Sand C M F) (Silt/clay) (Organic matter) Woody debris (Shell debris) Worms Polychaetes	Drab olive (Brown) Brown surface Gray (Black) *Other:*	(None) Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 126918.7 Longitude: 201689.8
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate (MP 3/7/11) Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/7/11 **Reviewed By/Date:** [illegible] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

AJW 3/7/11

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** 26 PSF - D

Sampled By: CW / MAP **Date:** 03 / 07 / 2011

Grab: # 1	Bottom depth: 19.4 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1537
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269139.53 Longitude: 201723.44 Star fish in sampler

Grab: # 2 or N/A ☐	Bottom depth: 12.0 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1538
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269142.71 Longitude: 201675.34 Rock in sampler

Grab: # 3 or N/A ☐	Bottom depth: 10.2 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1540
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269142.71 Longitude: 201675.34 debris is rock

Grab: # 4 or N/A ☐	Bottom depth: 10.8 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1541
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269141.45 Longitude: 201674.15

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] 3/7/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** PSF - D

Sampled By: MAP / CW **Date:** 03 / 07 / 2011

Grab: # 5	Bottom depth: 12.4 ft	Penetration Depth: ____ cm	Acceptable / Rejected *(circle one)* Time: 1543
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269143.58 Longitude: 201677.76

Grab: # 6 *or* N/A ☐	Bottom depth: 20.7 ft	Penetration Depth: 1.5 cm	Acceptable / Rejected *(circle one)* Time: 1546
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269164.75 Longitude: 201707.75 Slightly outside of 50' diameter LPC of rip rap on shore side of piers.

Grab: # ____ *or* N/A ☒	Bottom depth: ____ ft	Penetration Depth: ____ cm	Acceptable / Rejected *(circle one)* Time: ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____

Grab: # ____ *or* N/A ☒	Bottom depth: ____ ft	Penetration Depth: ____ cm	Acceptable / Rejected *(circle one)* Time: ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/7/11 **Reviewed By/Date:** [illegible] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** PSF - U

Sampled By: C. Wilson & A. Wells **Date:** 3 / 7 / 2011

Grab: # 1	Bottom depth: 20.2 ft	Penetration Depth: ____ cm	Acceptable / Rejected (circle one) Time: 1629
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: — } hypack Longitude: — } froze up - rocks in grab

Grab: # 2 or N/A ☐	Bottom depth: 21.2 ft	Penetration Depth: ____ cm	Acceptable / Rejected (circle one) Time: 1632
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269194.0 Longitude: 2016683 sampler - not closing

Grab: # 3 or N/A ☐	Bottom depth: 21.5 ft	Penetration Depth: ____ cm	Acceptable / Rejected (circle one) Time: 1634
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269197.38 Longitude: 2016700.63 sampler - not closing

Grab: # 4 or N/A ☐	Bottom depth: 22.4 ft	Penetration Depth: ____ cm	Acceptable / Rejected (circle one) Time: 1636
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269201.53 Longitude: 2016720.37 sampler - not closing

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/7/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** PSF - U

Sampled By: C. Wilson + A. Wells **Date:** 3 / 7 / 2011

Grab: # 5	**Bottom depth:** 21.0 ft	**Penetration Depth:** 7.5 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 1646
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269190.73 Longitude: 201667.72 Field duplicate collected. Jum 7.21.11
Grab: #_____ *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	MP 3/7/11 Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/7/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** RVSTSD - ~~A~~ A (1)

Sampled By: CW / MAP **Date:** 03 / 04 / 2011

Grab: # 1	Bottom depth: 19.2 ft	Penetration Depth: 5.5 cm	Acceptable / Rejected *(circle one)* Time: 1640
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269729.38 Longitude: 201525.856 No GPS signal due to poor or no reception under bridges
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alyssa Wells 3/4/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

(1) Write over corrected for clarity. [signature] 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** RVSTSD-D

Sampled By: CW / MAP **Date:** 3 / 04 / 2011

Grab: # 1	Bottom depth: 19.3 ft	Penetration Depth: 7.5 cm	Acceptable / Rejected *(circle one)* Time: 1623
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* Black silt below	None Slight Moderate Strong Overwhelming H_2S Petroleum slight sheen	Latitude: 12696486.46 Longitude: 201583.86 Poor GPS reception due to 1st Ave bridge
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/4/11 **Reviewed By/Date:** [illegible] 7/26/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** RUSTSD - U

Sampled By: CW / MAP **Date:** 03 / 04 / 2011

Grab: # 1	Bottom depth: 8.6 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1653
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269836.31 Longitude: 201625 water grab
Grab: # 2 or N/A ☐	**Bottom depth: 13.7 ft**	**Penetration Depth: — cm**	**Acceptable / Rejected (circle one) Time: 1654**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269807.72 Longitude: 201616.15 water grab
Grab: # 3 or N/A ☐	**Bottom depth: 15.1 ft**	**Penetration Depth: 2 cm**	**Acceptable / Rejected (circle one) Time: 1655**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269813.41 Longitude: 201612.39 water grab not sufficient sediment
Grab: # 4 or N/A ☐	**Bottom depth: 16.2 ft**	**Penetration Depth: — cm**	**Acceptable / Rejected (circle one) Time: 1657**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269821.55 Longitude: 201607.37 Water grab rock stuck in jaws of sampler

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/4/11 **Reviewed By/Date:** [signature] 7/26/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** RUSTSD - U

Sampled By: CW / MAP **Date:** 00 / 04 / 2011

Grab: # ~~56~~ AOW	Bottom depth: 14.5 ft	Penetration Depth: — cm	Acceptable / Rejected *(circle one)* Time: 1659
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269833.59 Longitude: 201612.60 AOW ~~Wat~~ Rocks : gravel
Grab: # ~~KW6~~ 7 *or* N/A ☐	**Bottom depth:** 18.4 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1784
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1269810.01 Longitude: 201606.98 Gravel : cobbles
Grab: # _____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: # _____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alison Wells 03/04/11 **Reviewed By/Date:** _____

Version3 -030311

SAIC
From Science to Solutions

MP 3/18/11

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS~~RWSD~~ RWSD A**

Sampled By: CW & AW **Date:** 3 / 18 / 2011

Grab #1 F	Bottom depth: 13.0 ft	Penetration Depth: — cm	Acceptable / ~~Rejected~~ (circle one) Time: 1122
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	Latitude: 127994.04
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	Longitude: 188900.23
Silt/clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	*Other:*	H_2S	water
Shell debris		Petroleum	
Worms			
Polychaetes			

Grab #2 *or* N/A ☐	Bottom depth: ~~13.3~~ 13.4 10.1 ft	Penetration Depth: — cm	Acceptable / ~~Rejected~~ (circle one) Time: ~~1126~~ 1126 MP 3/18/11
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive MP 3/18/11	None	Latitude: 127986.67
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	Longitude: 188901.75
Silt/clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	*Other:*	H_2S	ROCKS
Shell debris		Petroleum	
Worms			
Polychaetes			

Grab #3 *or* N/A ☐	Bottom depth: 10.2 ft	Penetration Depth: — cm	Acceptable / ~~Rejected~~ (circle one) Time: 1128
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	Latitude: 127992.83
Gravel	Brown	Slight	
Sand C M F	Brown surface	Moderate	Longitude: 188905.04
Silt/clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	*Other:*	H_2S	over-penetration
Shell debris		Petroleum	
Worms			
Polychaetes			

Grab #4 *or* N/A ☐	Bottom depth: 10.9 ft	Penetration Depth: 13 cm	Acceptable / ~~Rejected~~ (circle one) Time: 1132
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble	Drab olive	None	Latitude: 127992.32
Gravel F	Brown	Slight	
Sand C M F	Brown surface	~~Moderate~~	Longitude: 188902.59
Silt/clay minor	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	*Other:*	H_2S	
Shell debris		Petroleum	
Worms			
Polychaetes			

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: M.P. 3/18/11 **Reviewed By/Date:** [signature] 4/1/11

Version2 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** RWSD - A6

Sampled By: MAP / AMK **Date:** 4 / 8 / 2011

Grab: # 1	Bottom depth: 10.3 ft	Penetration Depth: 7 cm	Acceptable / Rejected *(circle one)* Time: ~~1142~~ 1146 mm 7/21/11
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 189425.11 Longitude: 1279680.36 ①
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 4/8/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

① Lat/Long Switched. mm 7/21/11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** SP1 - A

Sampled By: CW / MAP **Date:** 3 / 24 / 2011

Grab: # 1	**Bottom depth:** — ft	**Penetration Depth:** 11 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1348
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: — Longitude: — see photos (marked GPS location from boat ~ 30' out)
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____ NF 3/24/11
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Chris Wills 3/24/11 **Reviewed By/Date:** [illegible] 4/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** SP1 - D

Sampled By: CW / MAP **Date:** 03 / 24 / 2011

Grab: # 1	**Bottom depth:** 3.2 ft	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1112
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1275880.22 Longitude: 194116.87
Grab: # 2 *or* **N/A** ☐	**Bottom depth:** 3.2 ft	**Penetration Depth:** (1) ~~10~~ cm	**Acceptable / Rejected** *(circle one)* **Time:** 1114
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: 1275876.89 Longitude: 194122.96
Grab: # _____ *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: _____ Longitude: _____
Grab: # _____ *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type: Cobble, Gravel, Sand C M F, Silt/clay, Organic matter, Woody debris, Shell debris, Worms, Polychaetes	***Sediment color:*** Drab olive, Brown, Brown surface, Gray, Black, *Other:*	***Sediment Odor:*** None, Slight, Moderate, Strong, Overwhelming, H_2S, Petroleum	***Comments:*** Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alison Wells 3/24/11 **Reviewed By/Date:** M Mitchell 7/21/11

Version3 -030311

(1) Strikethru by AJW on 3.24.11. Jenny 7/21/11 N/A to Rejected grass

Will collect samples by foot during low tide

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** SP1 - D

Sampled By: CW / MAP **Date:** 3 / 24 / 2011

Grab: # 1	Bottom depth: — ft	Penetration Depth: 10 cm	Acceptable / Rejected *(circle one)* Time: 1347
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: — Longitude: — See photos (~40' downstream from SP1-A)

Grab: # _____ or N/A ☑	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____ MP 3/24/11

Grab: # _____ or N/A ☑	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: # _____ or N/A ☑	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Anna Wall 7/24/11 **Reviewed By/Date:** [illegible] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** SP1 - 0

Sampled By: MAP **Date:** 3 / 24 / 2011

Grab: # 1	**Bottom depth:** 0 ft	**Penetration Depth:** 10 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1357
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* red	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: — Longitude: — See photos (approx. 40' upstream from SP1-A)
Grab: #_____ or N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____ 3/24/11
Grab: #_____ or N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ or N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* _____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MAP 3/24/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** SP2 - A

Sampled By: CW / MAP / AW **Date:** 3 / 24 / 2011

Grab: # 1	Bottom depth: 0 ft	Penetration Depth: 10 cm	Acceptable / Rejected *(circle one)* Time: 1322
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude: See photos (marked GPS location from boat ~ 20' out)

Grab: #_____ *or* N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude: MP 3/24/11

Grab: #_____ *or* N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Grab: #_____ *or* N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MP 3/24/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** SP2 - D

Sampled By: CW / MAP / AW **Date:** 3 / 24 / 2011

Grab: # 1	Bottom depth: 0 ft	Penetration Depth: 10 cm	Acceptable / Rejected *(circle one)* Time: 1321
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: — Longitude: — ↓ See photos (~30' from SP2-A)
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	MP 3/24/11 Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MP 3/24/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

MAP 5/5/11

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** SR2 SP3 - U

Sampled By: MAP / CW **Date:** 3 / 24 / 2011

Grab: # 1	Bottom depth: — ft	Penetration Depth: 10 cm	Acceptable / Rejected *(circle one)* Time: 1332
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: — Longitude: — See photos
Grab: #_____ *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____ MP 3/24/11
Grab: #_____ *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* **N/A** ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MP 3/24/11 **Reviewed By/Date:** 7.21.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** SP 3 - A

Sampled By: MAP / MR / AW **Date:** 3 / 24 / 2011

Grab: # 1	Bottom depth: — ft	Penetration Depth: 10 cm	Acceptable / Rejected *(circle one)* Time: ~~1252~~ 1253
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	~~None~~ Slight Moderate Strong Overwhelming H_2S Petroleum	MR 3/24/11 Latitude: — Longitude: — ↓ See photos (marked w/ boat approx 20' out)

Grab: #_____ or N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ or N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	MR 3/24/11 Latitude: _____ Longitude: _____

Grab: #_____ or N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MR 3/24/11 **Reviewed By/Date:** [signature] 4/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** SP3 - D

Sampled By: MAP / AW **Date:** 03 / 24 / 2011

Grab: # 3.2 (1) AOW 3/24/11	Bottom depth: 3.2 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1105
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275785.13 Longitude: 194540.78 Water

Grab: # 2 or N/A ☐	Bottom depth: 4.3 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1106
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275788.43 Longitude: 194539.85 Water

Grab: # 3 or N/A ☐	Bottom depth: 4.2 ft	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1107
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275784.31 Longitude: 194532.27 Rocks

Grab: # _____ or N/A ☑	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected (circle one) Time: _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alan Weller 3/24/11 **Reviewed By/Date:** [signature] 7/24/11

Version3 -030311

Will wait until tide drops to grab samples ≈ 1230

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** SP 3 - D

Sampled By: MAP / CW / ALW **Date:** 3 / 24 / 2011

Grab: # 1	Bottom depth: — ft	Penetration Depth: 10 cm	Acceptable / Rejected *(circle one)* Time: 1252
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
(Cobble) (Gravel) (Sand C M F) Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive (Brown) Brown surface Gray Black *Other:*	(None) Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude: See photos

Grab: #_____ *or* N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Grab: #_____ *or* N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight (MP) Moderate 3/24/11 Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Grab: #_____ *or* N/A ☐	Bottom depth: _____ ft	Penetration Depth: _____ cm	Acceptable / Rejected *(circle one)* Time:
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: MP 3/24/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** SP 3 - U

Sampled By: MAP/CW **Date:** 3/24/2011

Grab: #1	**Bottom depth:** — ft	**Penetration Depth:** 10 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1306
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay minor Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude: see photos
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab: #_____ *or* **N/A** ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/24/11 **Reviewed By/Date:** [signature] 7.21.11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** SP 5 - 5D

Sampled By: CW / MAP **Date:** 03 / 03 / 2011

Grab #5	Bottom depth: 6 ft cm ADW	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1435
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275642.58 Longitude: 195177.07 Rock in bottom water grabe
Grab #2 or N/A ☐	**Bottom depth:** 6 ft cm ADW	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:** 1436
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275637.62 Longitude: 195197.23 Rock + sloss
Grab #3 or N/A ☐	**Bottom depth:** 6 ADW cm	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1438
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275636.86 Longitude: unable to record Water
Grab #4 or N/A ☐	**Bottom depth:** 6 ADW cm	**Penetration Depth:** 3 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1439
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275635.84 Longitude: 195190.57 Gravel

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wilbs 3/3/11 **Reviewed By/Date:** 7-21-11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** SP5 - A

Sampled By: CW / MAP **Date:** 3 / 3 / 2011

Grab #1	**Bottom depth:** 7.5 cm	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1450
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275660.25 Longitude: 195153.63 large cobbles
Grab #2 *or* **N/A** ☐	**Bottom depth:** 7-8 cm	**Penetration Depth:** 4.5 cm	**Acceptable / Rejected** *(circle one)* **Time:** 1450
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms cirthapeds Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275664.38 Longitude: 195154.15 Hold material
Grab #3 *or* **N/A** ☐	**Bottom depth:** 6 ~~ft~~ cm	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1502
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275664.27 Longitude: 19148.07 Water grab
Grab #4 *or* **N/A** ☐	**Bottom depth:** (1) cm	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1504
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275662.53 Longitude: 195143.24 Water Grab

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/3/11 **Reviewed By/Date:** [signature] 7/21/11

(1) Not recorded. num 7-21-11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** SP 5 - 1A

Sampled By: MAP / CW **Date:** 03 / 03 / 2011

Grab #1 AOW 5	**Bottom depth:** 6 ft cm BW	**Penetration Depth:** — cm	**Acceptable / Rejected** *(circle one)* **Time:** 1505
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275665.91 Longitude: 15148.04 Water riprap cobbles Grab
Grab #2 *or* **N/A** ☒	**Bottom depth:** cm	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab #3 *or* **N/A** ☒	**Bottom depth:** cm	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:
Grab #4 *or* **N/A** ☒	**Bottom depth:** cm	**Penetration Depth:** cm	**Acceptable / Rejected** *(circle one)* **Time:**
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: Longitude:

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 3/3/11 Alisa Wolf **Reviewed By/Date:** 7/21/11

Attempted to collect addition sample but additional samples were rejected due to large debris

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** SP5 - 8D (AGW)

Sampled By: CW / MAP **Date:** 3 / 3 / 2011

Grab #1	Bottom depth: 6 ft cm (AGW)	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1440
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275642.93 Longitude: 195195.30 Riprap Water Rock brick

Grab #2 or N/A ☐	Bottom depth: 6 ft cm (AGW)	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1441
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275648.53 Longitude: 195207.95 water grab

Grab #3 or N/A ☐	Bottom depth: 6 ft cm (AGW)	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1445
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275632.37 Longitude: 195202.80 Rip rap cobbles

Grab #4 or N/A ☐	Bottom depth: 6 ft cm (AGW)	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1445
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275652.54 Longitude: 195202.41

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/3/11 **Reviewed By/Date:** 7-21-11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** SP5 - U

Sampled By: ATW / CW / MAP **Date:** 03 / 3 / 2011

Grab #1	Bottom depth: 4.4 ft cm	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1513
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275676.47 Longitude: 195097.37 Water Grab

Grab #2 or N/A ☐	Bottom depth: 8.6 ft cm	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1515
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275690.95 Longitude: 195100.74 Water Grab Rock in jaw of sampler

Grab #3 or N/A ☐	Bottom depth: 7.5 ft cm	Penetration Depth: 2 cm	Acceptable / Rejected (circle one) Time: 1517
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275673.06 Longitude: 195133.92 Insufficient recovery

Grab #4 or N/A ☐	Bottom depth: 8.4 ft cm	Penetration Depth: — cm	Acceptable / Rejected (circle one) Time: 1520
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1275693.09 Longitude: 195083.06 Water Grab due to cobbles

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 3/3/11 **Reviewed By/Date:** [signature] 7.21.11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** SWC50 - A

Sampled By: MAP / AMK **Date:** 04 / 08 / 2011

Grab: # 1 | **Bottom depth:** 32.2 ft | **Penetration Depth:** ____ cm | **Acceptable / Rejected** *(circle one)* **Time:** 0930

Sediment type:	*Sediment color:*	*Sediment Odor:*	*Comments:*
Cobble	Drab olive	None	CW 4/8/11
Gravel	Brown	Slight	Latitude: ~~47~~ 209104.61
Sand C M F	Brown surface	Moderate	Longitude: 1266462.03
Silt/clay	Gray	Strong	Bad Penetration CW 4/8/11
Organic matter	Black	Overwhelming	~~Switch to young's Grab~~
Woody debris	*Other:* ____	H_2S	Water Grab Stayed w/ Forest
Shell debris		Petroleum	
Worms			
Polychaetes			

Grab: # 2 *or* **N/A** ☐ | **Bottom depth:** 35.1 ft | **Penetration Depth:** 6 cm | **Acceptable / Rejected** *(circle one)* **Time:** 0935

Sediment type:	*Sediment color:*	*Sediment Odor:*	*Comments:*
Cobble	Drab olive	None	
Gravel	Brown	Slight	Latitude: 209115.33
Sand C M F	Brown surface	Moderate	Longitude: 1266476.86
Silt/clay	Gray	Strong	Field Dup collected
Organic matter	Black	Overwhelming	mm 7-21-11
Woody debris	*Other:* ____	H_2S	
Shell debris	Slight Sheen	Petroleum	
Worms			
Polychaetes			

Grab: # ____ *or* **N/A** ☒ | **Bottom depth:** ____ ft | **Penetration Depth:** ____ cm | **Acceptable / Rejected** *(circle one)* **Time:** ____

Sediment type:	*Sediment color:*	*Sediment Odor:*	*Comments:*
Cobble	Drab olive	None	
Gravel	Brown	Slight	Latitude: ____
Sand C M F	Brown surface	Moderate	Longitude: ____
Silt/clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	*Other:* ____	H_2S	
Shell debris		Petroleum	
Worms			
Polychaetes			

Grab: # ____ *or* **N/A** ☒ NA | **Bottom depth:** ____ ft | **Penetration Depth:** ____ cm | **Acceptable / Rejected** *(circle one)* **Time:** ____

Sediment type:	*Sediment color:*	*Sediment Odor:*	*Comments:*
Cobble	Drab olive	None	
Gravel	Brown	Slight	Latitude: ____
Sand C M F	Brown surface	Moderate	Longitude: ____
Silt/clay	Gray	Strong	
Organic matter	Black	Overwhelming	
Woody debris	*Other:* ____	H_2S	
Shell debris		Petroleum	
Worms			
Polychaetes			

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: [signature] 4/8/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

① Lat/Long switched. mm 7-21-11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** SWCS0 - U

Sampled By: MP / AMK **Date:** 4 / 8 / 2011

Grab: # 1	Bottom depth: 21.5 ft	Penetration Depth: 3.5 cm	Acceptable / Rejected (circle one) Time: 1001
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 209074.36 Longitude: 1266398.28 Under Penetration

Grab: # 2 or N/A ☐	Bottom depth: 18 ft	Penetration Depth: 2 cm	Acceptable / Rejected (circle one) Time: 1006
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 209080.59 Longitude: 1266405.31 Under Penetration Switch to Youngs

Grab: # 3 or N/A ☐	Bottom depth: 21.4 ft	Penetration Depth: 6 cm	Acceptable / Rejected (circle one) Time: 1015
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel (Sand) C M (F) (Silt/clay) Organic matter (Woody debris) (Shell debris) Worms (Polychaetes)	Drab olive (Brown) Brown surface (Gray) Black *Other:*	(None) Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 209073.53 Longitude: 1266401.55

Grab: # ____ or N/A ☒	Bottom depth: ____ ft	Penetration Depth: ____ cm	Acceptable / Rejected (circle one) Time: ____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: ____ Longitude: ____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: 4/8/11 **Reviewed By/Date:** 7/21/11

Version3 -030311

① Lat/Long satisfied. mm 7.21.11

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID:** LDW-SS ~~Beach~~ UNK - A (NAP 5/13/11)

Sampled By: MAP / AK **Date:** 4 / 15 / 2011

Grab: # 1	Bottom depth: 5.1 ft	Penetration Depth: 7.5 cm	Acceptable / Rejected *(circle one)* Time: 1201
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel mixed Sand C M F Silt/clay surface Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum slight sheen	Latitude: 1270751.99 Longitude: 199927.61
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____
Grab: #_____ *or* N/A ☐	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 4/15/11 **Reviewed By/Date:** [illegible] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID: LDW-SS** ~~Boyer 3~~ UNK - A D (4/15/11)

Sampled By: MK / MA **Date:** 4 / 15 / 2011

Grab: # 1	Bottom depth: 2.0 ft	Penetration Depth: ____ cm	Acceptable / Rejected (circle one) Time: 1134
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1270730.26 Longitude: 199955.69

Grab: # 2 or N/A ☐	Bottom depth: 2 ft	Penetration Depth: 4.5 cm	Acceptable / Rejected (circle one) Time: 1135
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1270728.22 Longitude: 199954.82

Grab: # 3 or N/A ☐	Bottom depth: 3.1 ft	Penetration Depth: ____ cm	Acceptable / Rejected (circle one) Time: 1137
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1270723.55 Longitude: 199955.39

Grab: # 4 or N/A ☐	Bottom depth: 2.7 ft	Penetration Depth: ____ cm	Acceptable / Rejected (circle one) Time: 1149
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:* ____	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1270735.22 Longitude: 199941.37 Brick in young sampler

Switch to Young sampler

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 4/15/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

SAIC
From Science to Solutions

Surface Sediment Collection Form

Project: LDW Outfall Sediment Sampling **Sample ID:** LDW-SS ~~Buoy~~ (R) Slick UNK ? - D

Sampled By: MAP / AK **Date:** 4 / 15 / 2011

Grab: # 5	**Bottom depth:** 2.8 ft	**Penetration Depth:** 10.5 cm	**Acceptable** / **Rejected** *(circle one)* **Time:** 1147
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: 1270730.48 Longitude: 199950.00

Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Grab: #_____ *or* N/A ☒	**Bottom depth:** _____ ft	**Penetration Depth:** _____ cm	**Acceptable / Rejected** *(circle one)* **Time:** _____
Sediment type:	***Sediment color:***	***Sediment Odor:***	***Comments:***
Cobble Gravel Sand C M F Silt/clay Organic matter Woody debris Shell debris Worms Polychaetes	Drab olive Brown Brown surface Gray Black *Other:*	None Slight Moderate Strong Overwhelming H_2S Petroleum	Latitude: _____ Longitude: _____

Coordinates are presented in NAD83 horizontal datum; X-Y coordinates in Washington State Plane N (US survey ft)

Recorded By/Date: Alisa Wells 4/15/11 **Reviewed By/Date:** [signature] 7/21/11

Version3 -030311

Sheen noticed on surface of water

Appendix E
Chain-of-Custody Forms

3276

SAIC
From Science to Solutions

18912 North Creek Parkway, Suite 101
Bothell, Washington 98011
TEL: 425.485.5800 • FAX: 425.485.5566

CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Shipping Information

Number of Shipping Containers: 2
Date Shipped: 3/7/11
Carrier: SAIC
Waybill No.: N/A

Sample ID	Depth	Matrix	Date	Time	# of Containers	archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC	Comments
LDW-SS 2039 - D	0-10 cm	sediment	3/03/11	1035	3		X			X				X		*Archive dioxins/furans jar
LDW-SS 2039 - A	0-10 cm	sediment		1105	3		X			X				X		frozen upon receipt. Sample will
LDW-SS 2038 - A	0-10 cm	sediment		1204	3		X			X				X		be shipped to Axys for analysis
LDW-SS 2038 - D	0-10 cm	sediment		1220	3		X			X				X		at a later date.
LDW-SS 3037 - D	0-10 cm	sediment		1325	3		X			X				X		
LDW-SS 3037 - D-2	0-10 cm	sediment		1325	3		X			X				X		Analyze per SAP/QAPP,
LDW-SS 3037 - A	0-10 cm	sediment		1354	4	X	X			X				X		provided under separate cover.
LDW-SS 3037 - U	0-10 cm	sediment		1418	3		X			X				X		① Contact Marina Mitchell for analysis
① LDW-SS SP5 - A	0-10 cm	sediment		1450	2		X			X				X		Do not dispose of samples
LDW-SS 2099 - D	0-10 cm	sediment		1548 1550 AOW 3/3/11	3		X			X				X		without written authorization
LDW-SS 2099 - A	0-10 cm	sediment		1608	4	X	X			X				X		from SAIC.
LDW-SS 2099 - U	0-10 cm	sediment		1626	3		X			X				X		

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Alicia Wyles	Signature: Nicholas Bentley	Signature:	Signature:
Date/Time: 3/3/11 1 AJW 3/3/11 1200 @ 1900	Date/Time: 3/7/2011 10:00	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: ARI	Affiliation:	Affiliation:

SAIC
From Science to Solutions

18912 North Creek Parkway, Suite 101
Bothell, Washington 98011
TEL: 425.485.5800 • FAX: 425.485.5566

CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Shipping Information
Number of Shipping Containers: 3
Date Shipped: 3/7/2011
Carrier: SAIC
Waybill No.: N/A

Sample ID	Depth	Matrix	Date	Time	# of Containers	Archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC	Comments
LDW-SS 2098 - D	0-10 cm	sediment	3/4/11	0950	AJW 3/4/11 3 6			X		X				X	X	*Archive dioxins/furans jar
LDW-SS 2098 - A	0-10 cm	sediment		1014	4	X		X		X				X		frozen upon receipt. Sample will
LDW-SS 2098 - U	0-10 cm	sediment		1029	3			X		X				X		be shipped to Axys for analysis
LDW-SS 2103 - D	0-10 cm	sediment		1127	3			X		X				X		at a later date.
LDW-SS 2103 - A	0-10 cm	sediment		1140	4	X		X		X				X		
LDW-SS 2103 - U	0-10 cm	sediment		1225	3			X		X				X		Analyze per SAP/QAPP,
LDW-SS 2106 - D	0-10 cm	sediment		1302	3			X		X				X		provided under separate cover.
LDW-SS 2106 - A	0-10 cm	sediment		1325	4	X		X		X				X		
LDW-SS 2040 - D	0-10 cm	sediment		1421	3			X		X				X		Do not dispose of samples
LDW-SS 2040 - A	0-10 cm	sediment		1437	4	X		X		X				X		without written authorization
LDW-SS 2040 - U	0-10 cm	sediment		1457	3			X		X				X		from SAIC.
LDW-SS DR AJW 3/5/50 - D	0-10 cm	sediment		1530	3			X		X				X		

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Alisa Wells	Signature: Natalie Bentley	Signature:	Signature:
Date/Time: 03/04/2011 @ 928	Date/Time: 3/7/2011 10:00	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: ARI	Affiliation:	Affiliation:

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CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Sample ID	Depth	Matrix	Date	Time	# of Containers	archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC
LDW-SS BRSTSD-A	0-10 cm	sediment	3/04/11	1546	3		X			X				X	
LDW-SS BRSTSD-U	0-10 cm	sediment	3/04/11	1603	3		X			X				X	
LDW-SS RVSTSD-D	0-10 cm	sediment	"	1623	3		X			X				X	
LDW-SS RVSTSD-A	0-10 cm	sediment	"	1640	3		X			X				X	
LDW-SS -	0-10 cm	sediment	"				X			X				X	

after Work 3/04/11

Shipping Information

Number of Shipping Containers: 3
Date Shipped: 3/7/2011
Carrier: SAIC
Waybill No.: N/A

Comments

*Archive dioxins/furans jar frozen upon receipt. Sample will be shipped to Axys for analysis at a later date.

Analyze per SAP/QAPP, provided under separate cover.

Do not dispose of samples without written authorization from SAIC.

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Alicia Wells	Signature: Nichole Barker	Signature:	Signature:
Date/Time: 03/04/2011 @ 1928	Date/Time: 3/7/2011 10:00	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: ARI	Affiliation:	Affiliation:

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Bothell, Washington 98011
TEL: 425.485.5800 • FAX: 425.485.5566

CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Sample ID	Depth	Matrix	Date	Time	# of Containers	PCB Aroclors (EPA 8082)	SVOCs (EPA 8270D)	Mercury (EPA 7470A)	Other Metals (EPA 6010B/200.8)	Comments
LDW-SS 030411 -RB	n/a	water	3/4/11	17:50	5	X	X	X		Analyze per SAP/QAPP, provided under separate cover. RINSATE BLANK

Shipping Information
Number of Shipping Containers: 3
Date Shipped: 3/7/2011
Carrier: SAIC
Waybill No.: N/A

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Alisa Wells	Signature: Natalie Beatty	Signature:	Signature:
Date/Time: 03/04/2011 @ 1928	Date/Time: 3/7/2011 1000	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: ARI	Affiliation:	Affiliation:

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CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel & Corey Wilson

Sample ID	Depth	Matrix	Date	Time	# of Containers	Archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC	Comments
LDW-SS 2113 - A	0-10 cm	sediment	03/07/11	0858	3			X		X				X		*Archive dioxins/furans jar
LDW-SS 2113 - A-2	0-10 cm	sediment	03/07/11	0858	3			X		X				X		frozen upon receipt. Sample will
LDW-SS 2113 - U	0-10 cm	sediment		0928	3			X		X				X		be shipped to Axys for analysis
LDW-SS 2106 - U	0-10 cm	sediment		0948	3			X		X				X		at a later date.
LDW-SS 2108 - A	0-10 cm	sediment		1003	3			X		X				X		
LDW-SS 2108 - U	0-10 cm	sediment		1013	ASW 3/7/11 6			X		X				X	X	Analyze per SAP/QAPP,
LDW-SS 2214 - A	0-10 cm	sediment		1045	3			X		X				X		provided under separate cover.
LDW-SS 2214 - D	0-10 cm	sediment		1057	3			X		X				X		
LDW-SS 2214 - U	0-10 cm	sediment		1108	3			X		X				X		Do not dispose of samples
LDW-SS 2036 - D	0-10 cm	sediment		1140	3			X		X				X		without written authorization
LDW-SS 2036 - A	0-10 cm	sediment		1157	4	X		X		X				X		from SAIC.
LDW-SS 2035 - D	0-10 cm	sediment		1208 ~~1208~~ 1206 ASW 3/7/11	3			X		X				X		

Shipping Information

Number of Shipping Containers: 5
Date Shipped: 3/7/11
Carrier: SAIC ASW 3/7/11 ARI
Waybill No.: N/A

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Marina Mitchell	Signature: Natalie Bentley	Signature:	Signature:
Date/Time: 3/07/2011 @ 1945	Date/Time: 3/8/2011 1050	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: ARI	Affiliation:	Affiliation:

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Bothell, Washington 98011
TEL: 425.485.5800 • FAX: 425.485.5566

CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Sample ID	Depth	Matrix	Date	Time	# of Containers	archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC
LDW-SS -	0-10 cm	sediment	3/7/11	1646	4	X		X		X				X	
LDW-SS PSF - U	0-10 cm	sediment	03/7/11	1646	4	X		X		X				X	
LDW-SS PSF - U-2	0-10 cm	sediment	3/7/11	1646	4			X		X				X	
LDW-SS -	0-10 cm	sediment						X		X				X	
LDW-SS -	0-10 cm	sediment						X		X				X	

Alw 3/7/11

Shipping Information

Number of Shipping Containers: 5
Date Shipped: 3/8/11
Carrier: ~~SAIC~~ AR 3/7/11
Waybill No.: N/A

Comments

*Archive dioxins/furans jar frozen upon receipt. Sample will be shipped to Axys for analysis at a later date.

Analyze per SAP/QAPP, provided under separate cover.

Do not dispose of samples without written authorization from SAIC.

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Alisa Wells	Signature: Nahuh Bentley	Signature:	Signature:
Date/Time: 3/07/2011 @ 1945	Date/Time: 3/8/2011 10:00	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: AR	Affiliation:	Affiliation:

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CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Sample ID	Depth	Matrix	Date	Time	# of Containers	PCB Aroclors (EPA 8082)	SVOCs (EPA 8270D)	Mercury (EPA 7470A)	Other Metals (EPA 6010B/200.8)	Comments
LDW-SS 030411 -RB	n/a	water	3/4/11	1750	5	X	X	X		Analyze per SAP/QAPP, provided under separate cover. RINSATE BLANK

Analyses / Tests

Shipping Information

Number of Shipping Containers: 3
Date Shipped: 3/8/2011 NSW 3/7/11 3/7/2011
Carrier: ~~SAIC~~ NSW 3/7/11
Waybill No.: N/A

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Alisa Wells	Signature: Nakula Bentley	Signature:	Signature:
Date/Time: 03/04/2011 @ 1928	Date/Time: 3/8/2011 1000	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: ARI	Affiliation:	Affiliation:

SS500 : 10WS

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CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel + Cory Wilson & Alisa Wells

Sample ID	Depth	Matrix	Date	Time	# of Containers	Archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC	Comments
LDW-SS 2035 - A	0-10 cm	sediment	03/07/11	1218	4	X	X			X				X		*Archive dioxins/furans jar
LDW-SS 2035 - U	0-10 cm	sediment		1235	3		X			X				X		frozen upon receipt. Sample will
LDW-SS 2037 - D	0-10 cm	sediment		1257 1254	3		X			X				X		be shipped to Axys for analysis
LDW-SS 2037 - A	0-10 cm	sediment		1322	3		X			X				X		at a later date.
LDW-SS 2037 - U	0-10 cm	sediment		1340	3		X			X				X		
LDW-SS 2505 - A	0-10 cm	sediment		1414	3		X			X				X		Analyze per SAP/QAPP,
LDW-SS 2512 - A	0-10 cm	sediment		1429	3		X			X				X		provided under separate cover.
LDW-SS 2512 - U	0-10 cm	sediment		1436	3		X			X				X		
LDW-SS 2506 - D	0-10 cm	sediment		1506	3		X			X				X		Do not dispose of samples
LDW-SS 2506 - A	0-10 cm	sediment		1518	3		X			X				X		without written authorization
LDW-SS PSF - D	0-10 cm	sediment		1546	3		X			X				X		from SAIC.
LDW-SS PSF - A	0-10 cm	sediment	3/7/11	1557	4	X	X			X				X		

Shipping Information

Number of Shipping Containers: 5
Date Shipped: 3/8/11
Carrier: ~~SAIC~~ AR 3/7/4
Waybill No.: N/A

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Alisa Wells	Signature: Nichole Bentley	Signature:	Signature:
Date/Time: 3/07/2011 @ 1945	Date/Time: 3/8/2011 1080	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: AR1	Affiliation:	Affiliation:

SMSE

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From Science to Solutions

18912 North Creek Parkway, Suite 101
Bothell, Washington 98011
TEL: 425.485.5800 • FAX: 425.485.5566

CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel, J C Wilson & J Salgado

Shipping Information
Number of Shipping Containers: 2
Date Shipped: 03/10/2011
Carrier: ARI ~~SAIC~~
Waybill No.: N/A

Sample ID	Depth	Matrix	Date	Time	# of Containers	Archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC	Comments
LDW-SS 2122-A	0-10 cm	sediment	3/8/11	0843	4	X		X			X			X		*Archive dioxins/furans jar
LDW-SS 2122-D	0-10 cm	sediment		0924	4	X		X			X			X		frozen upon receipt. Sample will
LDW-SS 2122-U	0-10 cm	sediment		0939	3			X			X			X		be shipped to Axys for analysis
LDW-SS 6146-D	0-10 cm	sediment		1001	3			X			X			X		at a later date.
LDW-SS 2018-U	0-10 cm	sediment		1049	3			X			X			X		
LDW-SS 2015-D	0-10 cm	sediment		1104	3			X			X			X		Analyze per SAP/QAPP,
LDW-SS 2009-A	0-10 cm	sediment		1334	3			X			X			X		provided under separate cover.
LDW-SS 2009-U	0-10 cm	sediment		1350	3			X			X			X		
LDW-SS 2009-A	0-10 cm	sediment	3/8/11	1428	4	X		X			X			X		Do not dispose of samples
~~LDW-SS -~~	~~0-10 cm~~	~~sediment~~						X			X			X		without written authorization
LDW-SS -	0-10 cm	sediment						X			X			X		from SAIC.
LDW-SS -	0-10 cm	sediment						X			X			X		

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature:	Signature:	Signature:	Signature:
Date/Time: 03/10/2011 @ 0915	Date/Time: 3/10/2011 10:50	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: ARI	Affiliation:	Affiliation:

SAIC
From Science to Solutions

18912 North Creek Parkway, Suite 101
Bothell, Washington 98011
TEL: 425.485.5800 • FAX: 425.485.5566

CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Sample ID	Depth	Matrix	Date	Time	# of Containers	archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC
LDW-SS 2147-B (Dup)	0-10 cm	sediment	3/14/11	1541	3		X		X					X	
LDW-SS 2146 - A	0-10 cm	sediment	"	1408	3		X		X					X	
LDW-SS 2146 (Dup) A	0-10 cm	sediment	"	1427	3		X		X					X	
LDW-SS -	0-10 cm	sediment					X		X					X	
LDW-SS -	0-10 cm	sediment					X		X					X	

JAP 3-13-2011

Alice Wells 03/14/11

Shipping Information

Number of Shipping Containers: 1
Date Shipped:
Carrier: SAIC /ARI AJW 3/14/11
Waybill No.: N/A

Comments

*Archive dioxins/furans jar frozen upon receipt. Sample will be shipped to Axys for analysis at a later date.

Analyze per SAP/QAPP, provided under separate cover.

Do not dispose of samples without written authorization from SAIC.

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Marina Wells	Signature: Michael Bedding	Signature:	Signature:
Date/Time: 3/14/2011 @ 1830	Date/Time: 3/15/2011 10:00	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: ARI	Affiliation:	Affiliation:

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From Science to Solutions

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Bothell, Washington 98011
TEL: 425.485.5800 • FAX: 425.485.5566

CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel, Corey Wilson, Alisa Wells, Chris Hunt

Shipping Information

Number of Shipping Containers: 4
Date Shipped: 3/18/2011
Carrier: SAIC / ARI
Waybill No.: N/A

	Sample ID	Depth	Matrix	Date	Time	# of Containers	archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC	Comments
★	LDW-SS2082-U	0-10 cm	sediment	3/17/2011	9:22	7	X	X			X				X	X	*Archive dioxins/furans jar
•	LDW-SS2083-A	0-10 cm	sediment	3/17/2011	9:47	3		X			X				X		frozen upon receipt. Sample will
•	LDW-SS2089-D	0-10 cm	sediment	3/17/2011	10:19	3		X			X				X		be shipped to Axys for analysis
•	LDW-SS2089-A	0-10 cm	sediment	3/17/2011	10:38	3		X			X				X		at a later date.
•	LDW-SS2085-A	0-10 cm	sediment	3/17/2011	10:53	3		X			X				X		
•	LDW-SS2090-D	0-10 cm	sediment	3/17/2011	11.11	3		X			X				X		Analyze per SAP/QAPP,
•	LDW-SS2090-A	0-10 cm	sediment	3/17/2011	11:26	4	X	X			X				X		provided under separate cover.
•	LDW-SSBDC2-D	0-10 cm	sediment	3/17/2011	12 16	3		X			X				X		
•	LDW-SSBDC2-A	0-10 cm	sediment	3/17/2011	12:33	3		X			X				X		Do not dispose of samples
•	LDW-SSBDC2-A-2	0-10 cm	sediment	3/17/2011	12:33	3		X			X				X		without written authorization
•	LDW-SSBDC2-U	0-10 cm	sediment	3/17/2011	12:51	3		X			X				X		from SAIC.
★	LDW-SSBDC3-D	0-10 cm	sediment	3/17/2011	13:14	6		X			X				X	X	

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature:	Signature:	Signature:	Signature:
Date/Time: 3/18/2011 @ 1000	Date/Time: 3/18/2011 10:06	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: ARI	Affiliation:	Affiliation:

SNSS-SAIC

SAIC
From Science to Solutions

18912 North Creek Parkway, Suite 101
Bothell, Washington 98011
TEL: 425.485.5800 • FAX: 425.485.5566

CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel, Corey Wilson, Alisa Wells, Chris Hunt

Sample ID	Depth	Matrix	Date	Time	# of Containers	Archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC
LDW-SSBDC3-U	0-10 cm	sediment	3/17/2011	13:43	3		X			X				X	
LDW-SSBDC4-A	0-10 cm	sediment	3/17/2011	14:18	3		X			X				X	
LDW-SS2091-U	0-10 cm	sediment	3/17/2011	14:49	4	X	X			X				X	

Analyses / Tests

Shipping Information

Number of Shipping Containers: 4
Date Shipped: 3/18/2011
Carrier: SAIC / ARI
Waybill No.: N/A

Comments

*Archive dioxins/furans jar frozen upon receipt. Sample will be shipped to Axys for analysis at a later date.

Analyze per SAP/QAPP, provided under separate cover.

Do not dispose of samples without written authorization from SAIC.

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature:	Signature:	Signature:	Signature:
Date/Time: 3/18/2011 @ 1000	Date/Time: 3/18/2011 10:05	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: ARI	Affiliation:	Affiliation:

SW8 : 8000

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CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel, Corey Wilson, Alisa Wells, Chris Hunt

Sample ID	Depth	Matrix	Date	Time	# of Containers	PCB Aroclors (EPA 8082)	SVOCs (EPA 8270D)	Mercury (EPA 7470A)	Other Metals (EPA 6010B/200.8)						Comments
LDW-SS031711-RB	n/a	water	3/17/2011	16:50	5	X	X	X							Analyze per SAP/QAPP, provided under separate cover. RINSE BLANK

Analyses / Tests

Shipping Information

Number of Shipping Containers: 4
Date Shipped: 3/18/2011
Carrier: SAIC / ARI
Waybill No.: N/A

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature:	Signature:	Signature:	Signature:
Date/Time: 3/18/2011 @ 1000	Date/Time: 3/18/2011 1600	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: ARI	Affiliation:	Affiliation:

SN68 · SS55

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CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Shipping Information

Number of Shipping Containers: 2
Date Shipped: 3/21/2011
Carrier: SAIC/ARI
Waybill No.: N/A

Sample ID	Depth	Matrix	Date	Time	# of Containers	Archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC	Comments
LDW-SS 2092 - A	0-10 cm	sediment	3/18/11	0847	3		X		X					X		*Archive dioxins/furans jar
LDW-SS 2097 - D	0-10 cm	sediment		0903	3		X		X					X		frozen upon receipt. Sample will
LDW-SS 2097 - A	0-10 cm	sediment		0918	3		X		X					X		be shipped to Axys for analysis
LDW-SS 2094 - D	0-10 cm	sediment		0935	3		X		X					X		at a later date.
LDW-SS 2093 - D	0-10 cm	sediment		1036	3/17/11 B 6		X		X					X	X	
LDW-SS RWSD - A	0-10 cm	sediment		1132	3		X		X					X		Analyze per SAP/QAPP,
LDW-SS RWSD - A-2	0-10 cm	sediment		1132	3		X		X					X		provided under separate cover.
LDW-SS 2096 - A	0-10 cm	sediment		1202	3		X		X					X		
LDW-SS 2096 - U	0-10 cm	sediment		1202	3		X		X					X		Do not dispose of samples
LDW-SS 2200 - D	0-10 cm	sediment		1247	3		X		X					X		without written authorization
LDW-SS 2200 - A	0-10 cm	sediment		1258	4	X	X		X					X		from SAIC.
LDW-SS 2201 - D	0-10 cm	sediment	↓	1311	3		X		X					X		

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Alisa Wells	Signature: Nebula Barbery	Signature:	Signature:
Date/Time: 3/18/2011 @ 1736	Date/Time: 3/21/2011 10:00	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: ARI	Affiliation:	Affiliation:

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CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Sample ID	Depth	Matrix	Date	Time	# of Containers	archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC
LDW-SS 2201 - A	0-10 cm	sediment	3/18/11	1322	4	X	X			X				X	
LDW-SS 2201 - U	0-10 cm	sediment	↓	1333	3		X			X				X	
LDW-SS -	0-10 cm	sediment					X			X				X	
LDW-SS -	0-10 cm	sediment					X			X				X	
LDW-SS -	0-10 cm	sediment					X			X				X	
LDW-SS -	0-10 cm	sediment					X			X				X	
LDW-SS -	0-10 cm	sediment					X			X				X	
LDW-SS -	0-10 cm	sediment					X			X				X	
LDW-SS -	0-10 cm	sediment					X			X				X	
LDW-SS -	0-10 cm	sediment					X			X				X	
LDW-SS -	0-10 cm	sediment					X			X				X	
LDW-SS -	0-10 cm	sediment					X			X				X	

3/18/11

Shipping Information

Number of Shipping Containers: 2
Date Shipped: 3/21/2011
Carrier: SAIC / STIC
Waybill No.: N/A

Comments

*Archive dioxins/furans jar frozen upon receipt. Sample will be shipped to Axys for analysis at a later date.

Analyze per SAP/QAPP, provided under separate cover.

Do not dispose of samples without written authorization from SAIC.

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Marina Mitchell	Signature: Michele Benkley	Signature:	Signature:
Date/Time: 3/18/2011 @ 1736	Date/Time: 3/21/2011 0920	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: ARI	Affiliation:	Affiliation:

S023

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From Science to Solutions

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CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Shipping Information

Number of Shipping Containers: 3
Date Shipped: 3/22/11
Carrier: SAIC - ARI 3/24/11
Waybill No.: N/A

Sample ID	Depth	Matrix	Date	Time	# of Containers	archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC	Comments
LDW-SS 2246 - A	0-10 cm	sediment	3/21/11	1039	3		X		X					X		*Archive dioxins/furans jar
LDW-SS 2246 - U	0-10 cm	sediment	3/21/11	1109	3		X		X					X		frozen upon receipt. Sample will
LDW-SS 2246 - U-2	0-10 cm	sediment	3/21/11	1109	3		X		X					X		be shipped to Axys for analysis
LDW-SS 2247 - A	0-10 cm	sediment	3/21/11	1138	3		X		X					X		at a later date.
LDW-SS 2247 - U	0-10 cm	sediment	3/21/11	1152	6		X		X					X	X	
LDW-SS 2244 - D	0-10 cm	sediment	3/21/11	1213	3		X		X					X		Analyze per SAP/QAPP,
LDW-SS 2244 - A	0-10 cm	sediment	3/21/11	1229	3		X		X					X		provided under separate cover.
LDW-SS 2223 - A	0-10 cm	sediment	3/21/11	1255	3		X		X					X		
LDW-SS 2010 - D	0-10 cm	sediment	3/21/11	1324	3		X		X					X		Do not dispose of samples
LDW-SS 2010 - A	0-10 cm	sediment	3/21/11	1335	3		X		X					X		without written authorization
LDW-SS 2010 - U	0-10 cm	sediment	3/21/11	1353	3		X		X					X		from SAIC.
LDW-SS 2011 - D	0-10 cm	sediment	3/21/11	1410	3		X		X					X		

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Olivia Wells	Signature:	Signature:	Signature:
Date/Time: 03/21/2011 @ 1900	Date/Time: 3/22/2011 815	Date/Time: 1900 / 3-22-7,11	Date/Time: 10:00 / 3/22/2011
Affiliation: SAIC	Affiliation: SAIC	Affiliation: SAIC	Affiliation: ARI

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CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Shipping Information

Number of Shipping Containers: 3
Date Shipped: 3/22/11
Carrier: SAIC – ARI CW 3/24/11
Waybill No.: N/A

Sample ID	Depth	Matrix	Date	Time	# of Containers	archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC	Comments
LDW-SS 2011 - A	0-10 cm	sediment	3/21/11	1421	3		X		X					X		*Archive dioxins/furans jar
LDW-SS 6146 - A	0-10 cm	sediment	3/21/11	1444	4	X	X		X					X		frozen upon receipt. Sample will
LDW-SS 6146 - U	0-10 cm	sediment	3/21/11	1457	3		X		X					X		be shipped to Axys for analysis
LDW-SS 2080 - A	0-10 cm	sediment	3/21/11	1631	3		X		X					X		at a later date.
LDW-SS 2078 - U	0-10 cm	sediment	3/21/11	1646	3		X		X					X		
LDW-SS 2078 - A	0-10 cm	sediment	3/21/11	1657	3		X		X					X		Analyze per SAP/QAPP,
LDW-SS 2078 - D	0-10 cm	sediment	3/21/11	1709	3		X		X					X		provided under separate cover.
LDW-SS -	0-10 cm	sediment					X		X					X		
LDW-SS -	0-10 cm	sediment					X		X					X		Do not dispose of samples
LDW-SS -	0-10 cm	sediment					X		X					X		without written authorization
LDW-SS -	0-10 cm	sediment					X		X					X		from SAIC.
LDW-SS -	0-10 cm	sediment					X		X					X		

3/21/11

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature:	Signature:	Signature:	Signature:
Date/Time: 3/21/2011 @ 1900	Date/Time: 3/22/2011 815	Date/Time: 3-22-2011/1000	Date/Time: 3/22/2011 1010
Affiliation: SAIC	Affiliation: SAIC	Affiliation: SAIC	Affiliation: ARI

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CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Sample ID	Depth	Matrix	Date	Time	# of Containers	PCB Aroclors (EPA 8082)	SVOCs (EPA 8270D)	Mercury (EPA 7470A)	Other Metals (EPA 6010B/200.8)	Comments
LDW-SS 032111 -RB	n/a	water	3/21/11	1807	5	X	X	X		Analyze per SAP/QAPP, provided under separate cover. RINSATE BLANK

Shipping Information
Number of Shipping Containers: 3
Date Shipped: 3/22/11
Carrier: SAIC-ARI CW 3/21/11
Waybill No.: N/A

3/21/11

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Alisa Wills	Signature:	Signature:	Signature: Michele Bastey
Date/Time: 3/21/2011 @ 1900	Date/Time: 3-22-2011 / 815	Date/Time: 1900 3-22-2011	Date/Time: 3/22/2011 AL.CC
Affiliation: SAIC	Affiliation: SAIC	Affiliation: SAIC	Affiliation: ARI

5080

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CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Shipping Information

Number of Shipping Containers: 3
Date Shipped: 3/25/11
Carrier: SAIC/ARI AW 3/24/11
Waybill No.: N/A

Sample ID	Depth	Matrix	Date	Time	# of Containers	Archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC	Comments
LDW-SS SP2 - A	0-10 cm	sediment	3/24/11	1328	3		X			X				X		*Archive dioxins/furans jar
LDW-SS SP2 - U	0-10 cm	sediment		1332	3		X			X				X		frozen upon receipt. Sample will
LDW-SS SP1 - D	0-10 cm	sediment		1347	3		X			X				X		be shipped to Axys for analysis
LDW-SS SP1 - A AW 3/24/11	0-10 cm	sediment		1348	3		X			X				X		at a later date.
LDW-SS SP1 - U	0-10 cm	sediment		1357	3		X			X				X		
LDW-SS 2021 - U AW 3/24/11	0-10 cm	sediment		1432	3		X			X				X		Analyze per SAP/QAPP,
LDW-SS 2021 - A	0-10 cm	sediment		1433	4	X	X			X				X		provided under separate cover.
LDW-SS 2021 - D	0-10 cm	sediment		1448	3		X			X				X		
LDW-SS 5002 - A	0-10 cm	sediment		1548	3		X			X				X		Do not dispose of samples
LDW-SS 5002 - D	0-10 cm	sediment		1604	3		X			X				X		without written authorization
LDW-SS 5005 - A	0-10 cm	sediment		1617	3		X			X				X		from SAIC.
LDW-SS 5003 - A	0-10 cm	sediment		1640	3		X			X				X		

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Alina Wers	Signature:	Signature:	Signature:
Date/Time: 3/24/2011 @ 1835	Date/Time: 3-25-11/815	Date/Time: 3-25-11/1000	Date/Time: 3/25/11 1215
Affiliation: SAIC	Affiliation: SAIC	Affiliation: SAIC	Affiliation:

5083

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From Science to Solutions

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CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Shipping Information

Number of Shipping Containers: 3
Date Shipped: 3/25/11
Carrier: SAIC / ARI
AJW 3/24/11
Waybill No.: N/A

Sample ID	Depth	Matrix	Date	Time	# of Containers	archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC	Comments
LDW-SS 2027 - A	0-10 cm	sediment	3/24/11	0951	3		X			X				X		*Archive dioxins/furans jar
LDW-SS 2034 - D	0-10 cm	sediment		1020	6		X			X				X	X	frozen upon receipt. Sample will
LDW-SS 2034 - U	0-10 cm	sediment		1036	3		X			X				X		be shipped to Axys for analysis
AJW 3/24/11 ② LDW-SS 2034 - U-2	0-10 cm	sediment		1036	3		X			X				X		at a later date.
LDW-SS 2503 - A	0-10 cm	sediment		1148	3		X			X				X		②Hold analysis AJW 3/24/11
LDW-SS 2022 - D	0-10 cm	sediment		1158	4 3 2	X	X			X				X		Analyze per SAP/QAPP,
LDW-SS 2022 - A	0-10 cm	sediment		1211	4	X	X			X				X		provided under separate cover.
LDW-SS 2027 - A-2	0-10 cm	sediment		1211	4	X	X			X				X		
LDW-SS SP3 - D	0-10 cm	sediment		1252	4	X	X			X				X		Do not dispose of samples
LDW-SS SP3 - A	0-10 cm	sediment		1253	3		X			X				X		without written authorization
LDW-SS SP3 - U	0-10 cm	sediment		1306	3		X			X				X		from SAIC.
LDW-SS SP2 - D	0-10 cm	sediment		1321	3		X			X				X		

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Alexa Wells	Signature:	Signature:	Signature:
Date/Time: 3/24/2011 @ 1835	Date/Time: 815/3-25-11	Date/Time: 1000/3-25-11	Date/Time: 3/25/11 1215
Affiliation: SAIC	Affiliation: SAIC	Affiliation: SAIC	Affiliation: ARI

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CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Sample ID	Depth	Matrix	Date	Time	# of Containers	archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC
LDW-SS 2157 - A	0-10 cm	sediment	3/24/11	1704	4	X	X		X					X	
LDW-SS -	0-10 cm	sediment					X		X					X	
LDW-SS -	0-10 cm	sediment					X		X					X	
LDW-SS -	0-10 cm	sediment					X		X					X	
LDW-SS -	0-10 cm	sediment					X		X					X	

alw 3/24/11

Analyses / Tests

Shipping Information

Number of Shipping Containers: 3
Date Shipped: 3/25/11
Carrier: SAIC/ARI ADW 3/24/11
Waybill No.: N/A

Comments

*Archive dioxins/furans jar frozen upon receipt. Sample will be shipped to Axys for analysis at a later date.

Analyze per SAP/QAPP, provided under separate cover.

Do not dispose of samples without written authorization from SAIC.

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Marina Weis	Signature:	Signature:	Signature:
Date/Time: 3/24/2011 @ 1835	Date/Time: 3-25-11/815	Date/Time: 3-25-11/1000	Date/Time: 3/25/11 1215
Affiliation: SAIC	Affiliation: SAIC	Affiliation: SAIC	Affiliation: ARI

SR19

4.6°, 5.1°

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CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Shipping Information

Number of Shipping Containers: 2
Date Shipped: 04/11/2011
Carrier: SAIC - ART CW 4/8/11
Waybill No.: N/A

Sample ID	Depth	Matrix	Date	Time	# of Containers	Archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC	Comments
LDW-SS SWCS0 - A	0-10 cm	sediment	4/8/11	0935	3			X		X				X		*Archive dioxins/furans jar
LDW-SS SWCS0 - A-2	0-10 cm	sediment	4/8/11	0935	3			X		X				X		frozen upon receipt. Sample will
LDW-SS SWCS0 - U	0-10 cm	sediment	4/8/11	1015	3			X		X				X		be shipped to Axys for analysis
LDW-SS 2139 - A	0-10 cm	sediment	4/8/11	1046	4	X		X		X				X		at a later date.
LDW-SS RWSD - A6	0-10 cm	sediment	4/8/11	1146	3			X		X				X		
LDW-SS 2112 - A	0-10 cm	sediment	4/8/11	1214	3			X		X				X		Analyze per SAP/QAPP,
LDW-SS 2013 - D	0-10 cm	sediment	4/8/11	1332	3			X		X				X		provided under separate cover.
LDW-SS 2013 - A	0-10 cm	sediment	4/8/11	1343	8	X		X		X				X	X	
LDW-SS 2013 - U	0-10 cm	sediment	4/8/11	1357	3			X		X				X		Do not dispose of samples
LDW-SS 5000 - D	0-10 cm	sediment	4/8/11	1410	3			X		X				X		without written authorization
LDW-SS 5000 - A	0-10 cm	sediment	4/8/11	1424	4	X		X		X				X	X	CW 4/8/11 from SAIC.
LDW-SS 5000 - U	0-10 cm	sediment	4/8/11	1436	3			X		X				X		

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature:	Signature:	Signature:	Signature:
Date/Time: 4/11/2011 @ 0930	Date/Time: 4/4/11 950	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: ART	Affiliation:	Affiliation:

SAIC
From Science to Solutions

18912 North Creek Parkway, Suite 101
Bothell, Washington 98011
TEL: 425.485.5800 • FAX: 425.485.5566

CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Sample ID	Depth	Matrix	Date	Time	# of Containers	PCB Aroclors (EPA 8082)	SVOCs (EPA 8270D)	Mercury (EPA 7470A)	Other Metals (EPA 6010B/200.8)						
LDW-SS 040811 -RB	n/a	water	4/8/11	1530	5	X	X	X							

Analyses / Tests

Shipping Information

Number of Shipping Containers: 2
Date Shipped: 04/11/2011
Carrier: SAIC-ARI @ 4/11/2011
Waybill No.: N/A

Comments

Analyze per SAP/QAPP, provided under separate cover.

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RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature:	Signature:	Signature:	Signature:
Date/Time: 4/11/2011 @ 0930	Date/Time: 4/11/11 950	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: ARI	Affiliation:	Affiliation:

35-31

SAIC
From Science to Solutions

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Bothell, Washington 98011
TEL: 425.485.5800 • FAX: 425.485.5566

CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Shipping Information

Number of Shipping Containers: 3
Date Shipped: 4/18/11
Carrier: SAIC / ARI
Waybill No.: N/A

Sample ID	Depth	Matrix	Date	Time	# of Containers	archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC	Comments
LDW-SS 2025 - A	0-10 cm	sediment	4/15/11	0840	3		X		X					X		*Archive dioxins/furans jar
LDW-SS 2025 - A-2	0-10 cm	sediment	4/15/11	0840	3		X		X					X		frozen upon receipt. Sample will
LDW-SS 2019 - A	0-10 cm	sediment		0949	6		X		X					X	X	be shipped to Axys for analysis
LDW-SS 2029 - D	0-10 cm	sediment		1031	3		X		X					X		at a later date.
LDW-SS 2029 - A	0-10 cm	sediment		1043	3		X		X					X		
LDW-SS 2030 - A	0-10 cm	sediment		1053	3		X		X					X		Analyze per SAP/QAPP,
LDW-SS 2030 - U	0-10 cm	sediment		1106	3		X		X					X		provided under separate cover.
LDW-SS 2032 - A	0-10 cm	sediment		1123	3		X		X					X		
LDW-SS Boyer-? - D	0-10 cm	sediment		1147	4	X	X		X					X		Do not dispose of samples
LDW-SS Boyer-? - A	0-10 cm	sediment		1201	3		X		X					X		without written authorization
LDW-SS 2115 - D	0-10 cm	sediment		1222	3		X		X					X		from SAIC.
LDW-SS 2115 - A	0-10 cm	sediment		1241	4	X	X		X					X		

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Alisa Wells	Signature: Nakuler Bankey	Signature:	Signature:
Date/Time: 4 15 2011 @ 1625	Date/Time: 4/16/2011 11:00	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: ARI	Affiliation:	Affiliation:

SAIC
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Bothell, Washington 98011
TEL: 425.485.5800 • FAX: 425.485.5566

CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Sample ID	Depth	Matrix	Date	Time	# of Containers	archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC
LDW-SS 2115 - U	0-10 cm	sediment	4/15/11	1254	3		X			X				X	
LDW-SS -	0-10 cm	sediment					X			X				X	
LDW-SS -	0-10 cm	sediment					X			X				X	
LDW-SS -	0-10 cm	sediment					X			X				X	
LDW-SS -	0-10 cm	sediment					X			X				X	

Analyses / Tests

Shipping Information

Number of Shipping Containers: 3
Date Shipped: 4/18/11
Carrier: SAIC / AR1
Waybill No.: N/A

Comments

*Archive dioxins/furans jar frozen upon receipt. Sample will be shipped to Axys for analysis at a later date.

Analyze per SAP/QAPP, provided under separate cover.

Do not dispose of samples without written authorization from SAIC.

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Alissa Wells	Signature: Nichole Bayley	Signature:	Signature:
Date/Time: 4/15/2011 @ 1625	Date/Time: 4/18/2011 11:00	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: AR1	Affiliation:	Affiliation:

SAIC
From Science to Solutions

18912 North Creek Parkway, Suite 101
Bothell, Washington 98011
TEL: 425.485.5800 • FAX: 425.485.5566

CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Sample ID	Depth	Matrix	Date	Time	# of Containers	PCB Aroclors (EPA 8082)	SVOCs (EPA 8270D)	Mercury (EPA 7470A)	Other Metals (EPA 6010B/200.8)	Comments
LDW-SS 0415 11 -RB	n/a	water	4/15/11	1347	5	X	X	X		Analyze per SAP/QAPP, provided under separate cover. RINSATE BLANK

Analyses / Tests

Shipping Information

Number of Shipping Containers: 3
Date Shipped: 4/18/11
Carrier: SAIC/ARI
Waybill No.: N/A

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Alisa Wells	Signature: Nichole Barkley	Signature:	Signature:
Date/Time: 4/15/2011 @ 1625	Date/Time: 4/18/2011 11:00	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: ARI	Affiliation:	Affiliation:

SAIC
From Science to Solutions

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Bothell, Washington 98011
TEL: 425.485.5800 • FAX: 425.485.5566

CHAIN OF CUSTODY RECORD

Project Number: 196900
Project Name: LDW Outfall Sampling
Project Location: Lower Duwamish Waterway, Seattle, WA
Contact Name: Marina Mitchell 425.482.3310 marina.i.mitchell@saic.com
Samples Collected by: Michael Pagel

Shipping Information
Number of Shipping Containers:
Date Shipped:
Carrier: SAIC
Waybill No.: N/A

Sample ID	Depth	Matrix	Date	Time	# of Containers	Archive - Dioxins/Furans (EPA 1613B)*	PCB Aroclors (EPA 8082)	SVOCs by SIM (EPA 8270D-SIM)	SVOCs (EPA 8270D)	Mercury (EPA 7471A)	Other Metals (EPA 6010B/200.8)	Total Organic Carbon (Plumb 1981)	Total Solids (EPA 160.3)	Grain Size (PSEP 1986)	extra volume for lab QC	Comments
LDW-SS 2149 - A	0-10 cm	sediment	4/20/11	0815	3		X			X				X		*Archive dioxins/furans jar
LDW-SS 2148 - A	0-10 cm	sediment		0845	3		X			X				X		frozen upon receipt. Sample will
LDW-SS 2148 - A-Z	0-10 cm	sediment		0845	3		X			X				X		be shipped to Axys for analysis
LDW-SS 2150 - A	0-10 cm	sediment		0903	Now 3 of 4	X	X			X				X		at a later date.
LDW-SS 2233 - U	0-10 cm	sediment		0916	6		X			X				X	X	
LDW-SS 2233 - D	0-10 cm	sediment		0950	3		X			X				X		Analyze per SAP/QAPP,
LDW-SS 2232 - D	0-10 cm	sediment		1006	3		X			X				X		provided under separate cover.
LDW-SS 2232 - A	0-10 cm	sediment		1028	3		X			X				X		
LDW-SS 2232 - U	0-10 cm	sediment		1054	3		X			X				X		Do not dispose of samples
LDW-SS -	0-10 cm	sediment					X			X				X		without written authorization
LDW-SS -	0-10 cm	sediment					X			X				X		from SAIC.
LDW-SS -	0-10 cm	sediment					X			X				X		

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Signature: Michael Pagel	Signature:	Signature:	Signature:
Date/Time: 4/20/2011 @ 1156	Date/Time: 4/20/11 - 1156	Date/Time:	Date/Time:
Affiliation: SAIC	Affiliation: ARI	Affiliation:	Affiliation:

Appendix F
Field Photos

(Included on CD)

LDW Outfall Surface Sediment Sampling

Outfall #2003

LDW Outfall Surface Sediment Sampling

Outfall #2005

LDW Outfall Surface Sediment Sampling

Outfall #2006

LDW Outfall Surface Sediment Sampling

Outfall #2007

LDW Outfall Surface Sediment Sampling

Outfall #2008

LDW Outfall Surface Sediment Sampling

Outfall #2009

LDW Outfall Surface Sediment Sampling

Outfall #2010

LDW Outfall Surface Sediment Sampling

Outfall #2011

LDW Outfall Surface Sediment Sampling

Outfall #2013

LDW Outfall Surface Sediment Sampling

Outfall #2014

LDW Outfall Surface Sediment Sampling

Outfall #2015, 2016

LDW Outfall Surface Sediment Sampling

Outfall #2017

LDW Outfall Surface Sediment Sampling

Outfall #2018

LDW Outfall Surface Sediment Sampling

Outfall #2019

LDW Outfall Surface Sediment Sampling

Outfall #2021

LDW Outfall Surface Sediment Sampling

Outfall #2022

LDW Outfall Surface Sediment Sampling

Outfall #2022

LDW Outfall Surface Sediment Sampling

Outfall #2025

LDW Outfall Surface Sediment Sampling

Outfall #2025

LDW Outfall Surface Sediment Sampling

Outfall #2027

LDW Outfall Surface Sediment Sampling

Outfall #2029

LDW Outfall Surface Sediment Sampling

Outfall #2030

LDW Outfall Surface Sediment Sampling

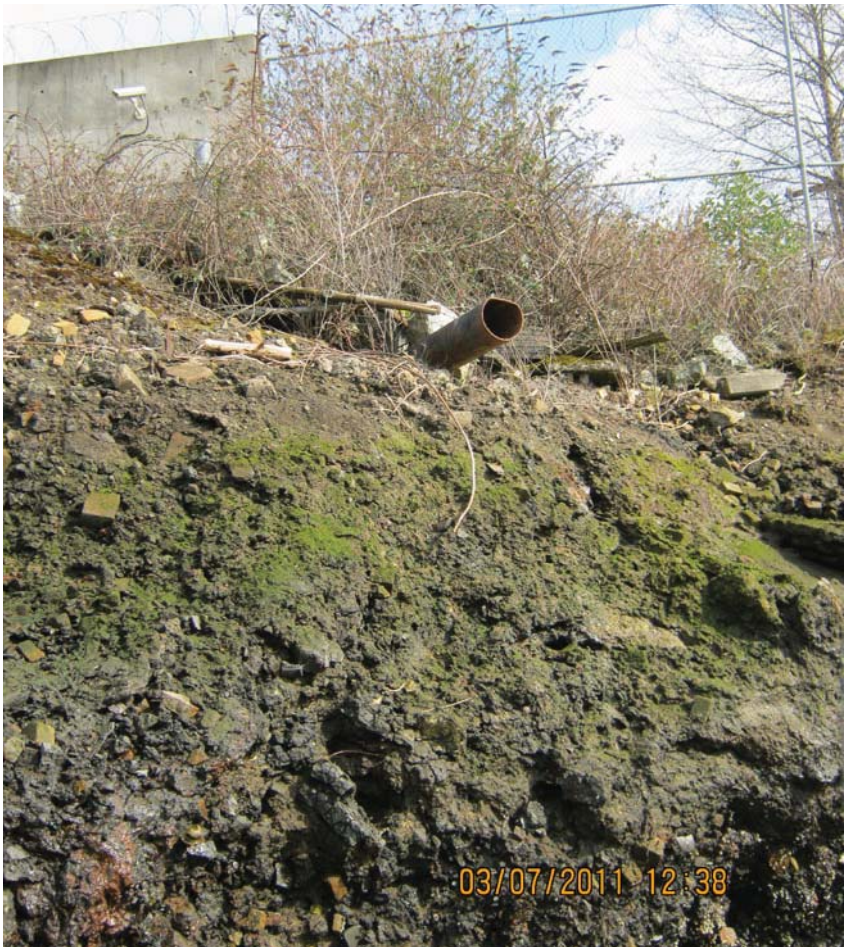
Outfall #2034

LDW Outfall Surface Sediment Sampling

Outfall #2035

LDW Outfall Surface Sediment Sampling

Outfall #2036



LDW Outfall Surface Sediment Sampling

Outfall #2037

LDW Outfall Surface Sediment Sampling

Outfall #2038

LDW Outfall Surface Sediment Sampling

Outfall #2039

LDW Outfall Surface Sediment Sampling

Outfall #2040

LDW Outfall Surface Sediment Sampling

Outfall #2049

LDW Outfall Surface Sediment Sampling

Outfall #2078

LDW Outfall Surface Sediment Sampling

Outfall #2079

LDW Outfall Surface Sediment Sampling

Outfall #2080

LDW Outfall Surface Sediment Sampling

Outfall #2082

LDW Outfall Surface Sediment Sampling

Outfall #2083

LDW Outfall Surface Sediment Sampling

Outfall #2085

LDW Outfall Surface Sediment Sampling

Outfall #2089

LDW Outfall Surface Sediment Sampling

Outfall #2090

LDW Outfall Surface Sediment Sampling

Outfall #2091

LDW Outfall Surface Sediment Sampling

Outfall #2092

LDW Outfall Surface Sediment Sampling

Outfall #2093

LDW Outfall Surface Sediment Sampling

Outfall #2094

LDW Outfall Surface Sediment Sampling

Outfall #2096

LDW Outfall Surface Sediment Sampling

Outfall #2097

LDW Outfall Surface Sediment Sampling

Outfall #2098

LDW Outfall Surface Sediment Sampling

Outfall #2099

LDW Outfall Surface Sediment Sampling

Outfall #2103 (SP4)

LDW Outfall Surface Sediment Sampling

Outfall #2106

LDW Outfall Surface Sediment Sampling

Outfall #2107

LDW Outfall Surface Sediment Sampling

Outfall #2108

LDW Outfall Surface Sediment Sampling

Outfall #2109, 2110, 2111


03/14/2011


03/14/2011

LDW Outfall Surface Sediment Sampling

Outfall #2112

LDW Outfall Surface Sediment Sampling

Outfall #2113

LDW Outfall Surface Sediment Sampling

Outfall #2114

LDW Outfall Surface Sediment Sampling

Outfall #2115

LDW Outfall Surface Sediment Sampling

Outfall #2116

LDW Outfall Surface Sediment Sampling

Outfall #2122

LDW Outfall Surface Sediment Sampling

Outfall #2136

LDW Outfall Surface Sediment Sampling

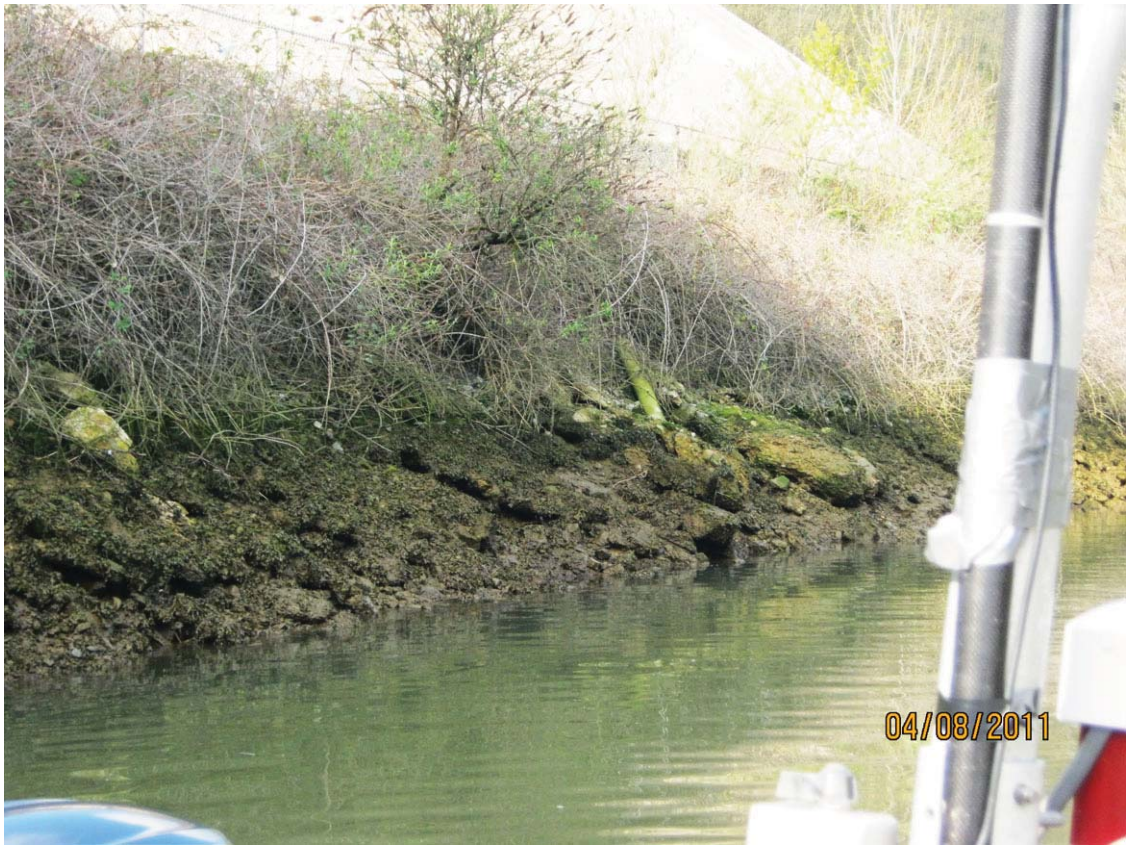
Outfall #2137

LDW Outfall Surface Sediment Sampling

Outfall #2138

LDW Outfall Surface Sediment Sampling

Outfall #2139



LDW Outfall Surface Sediment Sampling

Outfall #2144, 2145, 2146

LDW Outfall Surface Sediment Sampling

Outfall #2144, 2145, 2146

LDW Outfall Surface Sediment Sampling

Outfall #2144, 2145, 2146

LDW Outfall Surface Sediment Sampling

Outfall #2148

LDW Outfall Surface Sediment Sampling

Outfall #2149

LDW Outfall Surface Sediment Sampling

Outfall #2150

LDW Outfall Surface Sediment Sampling

Outfall #2151

LDW Outfall Surface Sediment Sampling

Outfall #2154

LDW Outfall Surface Sediment Sampling

Outfall #2156

LDW Outfall Surface Sediment Sampling

Outfall #2157

LDW Outfall Surface Sediment Sampling

Outfall #2200

LDW Outfall Surface Sediment Sampling

Outfall #2201

LDW Outfall Surface Sediment Sampling

Outfall #2214

LDW Outfall Surface Sediment Sampling

Outfall #2220

LDW Outfall Surface Sediment Sampling

Outfall #2224

LDW Outfall Surface Sediment Sampling

Outfall #2232

LDW Outfall Surface Sediment Sampling

Outfall #2233

LDW Outfall Surface Sediment Sampling

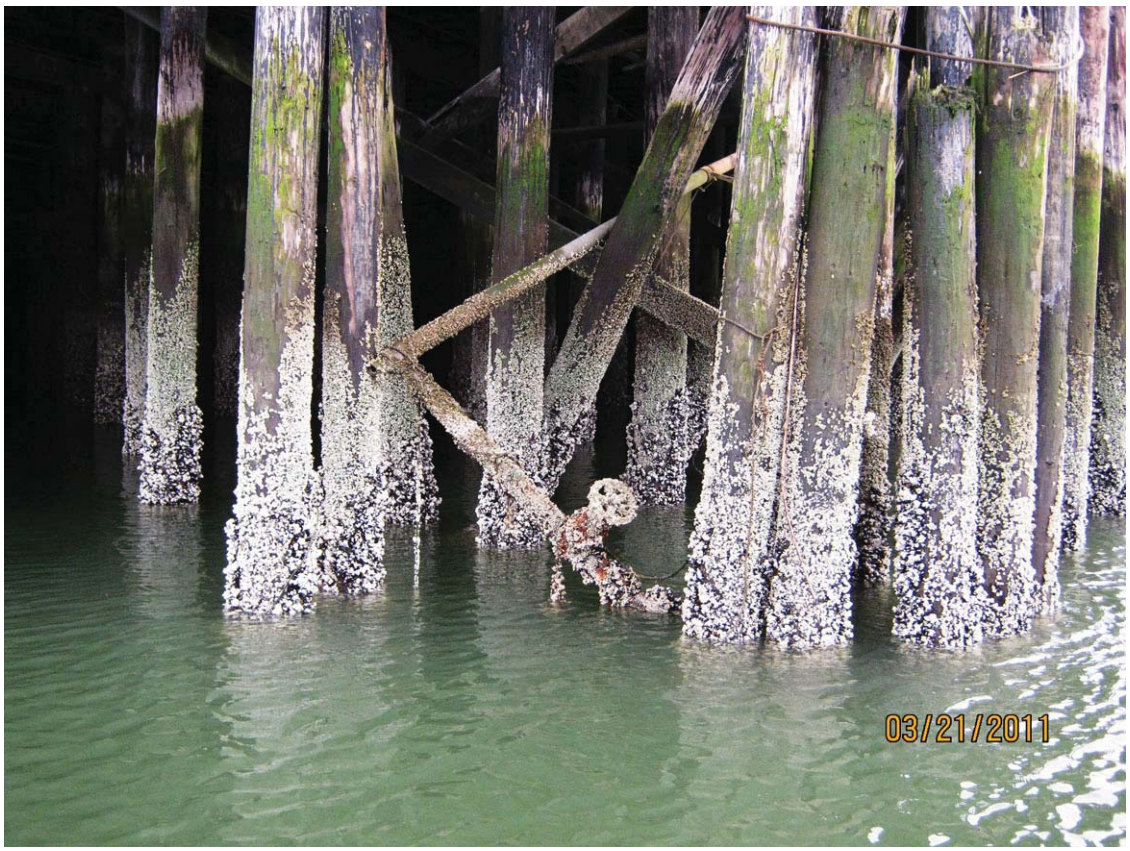
Outfall #2245, 5001

LDW Outfall Surface Sediment Sampling

Outfall #2246

LDW Outfall Surface Sediment Sampling

Outfall #2247



LDW Outfall Surface Sediment Sampling

Outfall #2501

LDW Outfall Surface Sediment Sampling

Outfall #2501

LDW Outfall Surface Sediment Sampling

Outfall #2502

LDW Outfall Surface Sediment Sampling

Outfall #2506

LDW Outfall Surface Sediment Sampling

Outfall #2512

LDW Outfall Surface Sediment Sampling

Outfall #3037

LDW Outfall Surface Sediment Sampling

Outfall #5000

LDW Outfall Surface Sediment Sampling

Outfall #5002

LDW Outfall Surface Sediment Sampling

Outfall #5003

LDW Outfall Surface Sediment Sampling

Outfall #5004

LDW Outfall Surface Sediment Sampling

Outfall #5005

LDW Outfall Surface Sediment Sampling

Outfall #6146

LDW Outfall Surface Sediment Sampling

Outfall #BDC-2

LDW Outfall Surface Sediment Sampling

Outfall #BDC-3

LDW Outfall Surface Sediment Sampling

Outfall #BDC-4

LDW Outfall Surface Sediment Sampling

Outfall #Boyer_Unknown

LDW Outfall Surface Sediment Sampling

Outfall # E&E#3

LDW Outfall Surface Sediment Sampling

Outfall # E&E#5

LDW Outfall Surface Sediment Sampling

Outfall # E&E#7

LDW Outfall Surface Sediment Sampling

Outfall # E&E#8

LDW Outfall Surface Sediment Sampling

Outfall # Former Rhone-Poulenc

LDW Outfall Surface Sediment Sampling

Outfall # HRE-1

LDW Outfall Surface Sediment Sampling

Outfall # Port SF

LDW Outfall Surface Sediment Sampling

Outfall # Port SF

LDW Outfall Surface Sediment Sampling

Outfall # Port SF

LDW Outfall Surface Sediment Sampling

Outfall # Ryan Way SD

LDW Outfall Surface Sediment Sampling

Outfall # S Nevada Street

LDW Outfall Surface Sediment Sampling

Outfall # S River

LDW Outfall Surface Sediment Sampling

Outfall # Siphon-West CSO

LDW Outfall Surface Sediment Sampling

Outfall # SP-1

LDW Outfall Surface Sediment Sampling

Outfall # SP-1

LDW Outfall Surface Sediment Sampling

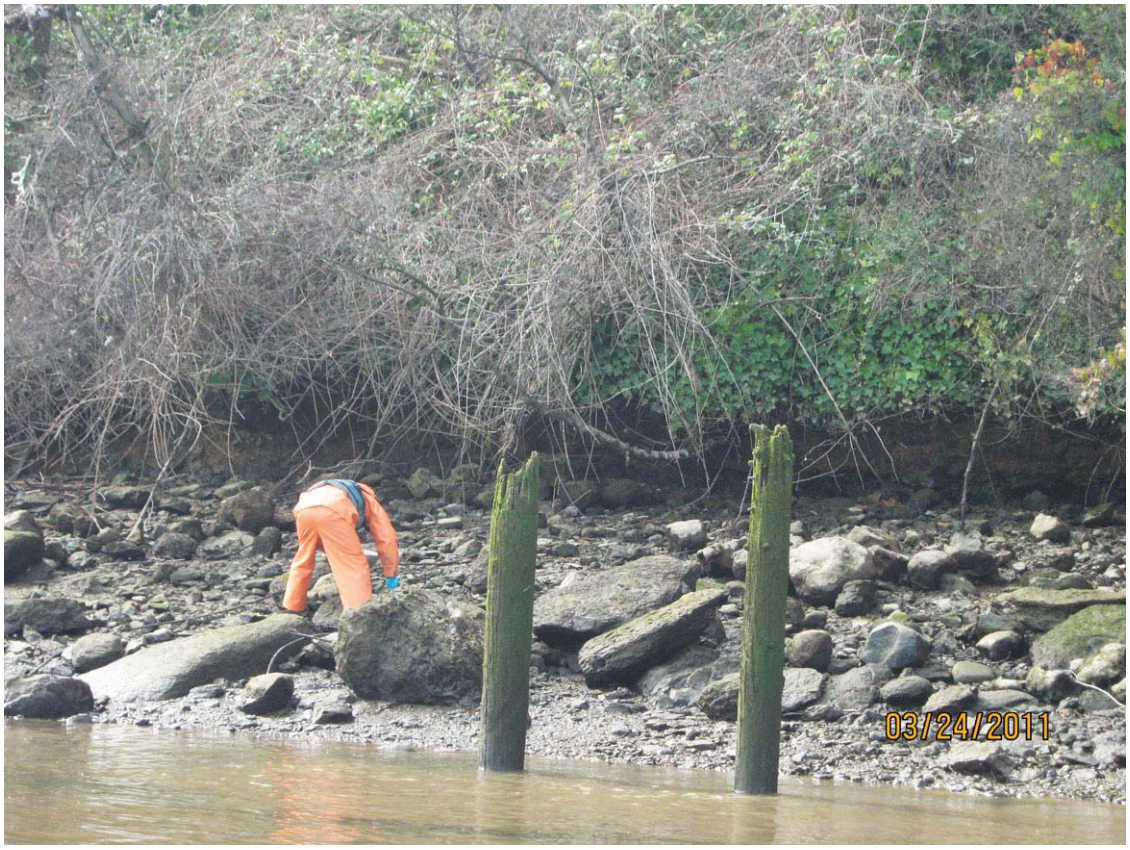
Outfall # SP-2

LDW Outfall Surface Sediment Sampling

Outfall # SP-3

LDW Outfall Surface Sediment Sampling

Outfall # SP-3



LDW Outfall Surface Sediment Sampling

Outfall # SP-5

LDW Outfall Surface Sediment Sampling

Outfall # SP-5