



Note: Base map prepared from City of Portland datasets (2010) and on-site reconnaissance.

Table 1
Soil Sample Results - Metals
Pier 99 - Pier West
EE/CA Report

Sample ID	Date Sampled	Sample Depth (feet)	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Vanadium	Zinc	
			mg/kg (ppm)																							
Historical Samples																										
BK01SS	10/30/2008	0-0.5	5,570	<6 JL	2.2	70	--	0.36 JQ (0.50 SQL)	2,530	9.5	4.3 JQ (5.0 SQL)	95.1	12,100	21.4	2,190	207	<0.099	9	690 JH	0.8 JQ (3.5 SQL)	<0.99	<159	--	32.4	88.3	
SS-5	7/3/2003	1	--	--	<0.1 ⁸	--	--	<0.1 ⁸	<0.1 ¹³	<0.1 ⁸	--	--	--	628	--	--	<0.0002 ⁸	--	--	<0.1 ⁸	<0.1 ⁸	--	--	--	--	
SS-6	7/3/2003	1	--	--	<0.1 ⁸	--	--	<0.1 ⁸	<0.1 ¹³	<0.1 ⁸	--	--	--	86.5	--	--	<0.0002 ⁸	--	--	<0.1 ⁸	<0.1 ⁸	--	--	--	--	
UP01SS	10/30/2008	0-0.5	6,650	48.4	15.1	599	--	7.5	10,800	201	15.4	83,000	38,100	6,790	5,260	465	0.61	94.7	432 JH	3.6 JQ	5.2	431 JQ	--	33.7	4,130	
SS-3	7/3/2003	0.5	--	--	<0.1 ⁸	--	--	<0.1 ⁸	<0.1 ¹³	<0.1 ⁸	--	--	--	173	--	--	<0.0002 ⁸	--	--	<0.1 ⁸	<0.1 ⁸	--	--	--	--	
SS-4	7/3/2003	0.67	--	--	<0.1 ⁸	--	--	<0.1 ⁸	<0.1 ¹³	<0.1 ⁸	--	--	--	36.0	--	--	<0.0002 ⁸	--	--	<0.1 ⁸	<0.1 ⁸	--	--	--	--	
WS01SS	10/30/2008	0-0.5	9,830	<6.3	3.7	86.1	--	0.8	4,100	15.2	8.4	503	16,300	90.8	2,480	277	0.42	11.7	658 JH	1.1 JQ	<1	2,620	--	40	169	
WS02SS	10/30/2008	0-0.5	5,850	14.7	16	274	--	4.4	7,790	79.3	14.4	17,300	52,200	1,590	3,520	574	0.16	150	478 JH	4.2	1.1	<252	--	55.8	1,240	
OP01SS	10/30/2008	0-0.5	9,900	--	2.7	124	--	0.97	4,840	15.4	6.2 JQ	41.4	16,100	27	3,220	365	0.082 JQ	13.1	880 JH	39.9	--	--	--	--	127	
OP02SS	10/30/2008	0-0.5	7,750	--	20.9	379	--	4.9	13,000	87.8	15.4	9,260	27,400	1,380	3,100	419	2.5	38.4	1970 JH	50.5	--	--	--	--	2,170	
OP03SS	10/30/2008	0-0.5	13,500	--	11.4	135	--	1.1	5510	26.6	8.6	107	22,700	47.2	3,680	441	0.31	18.9	1140 JH	51.8	--	--	--	--	169	
B-9 (12.5-15.0)	2/21/2013	12.5-15.0	--	--	--	--	--	--	--	--	--	24.4	--	7.4	--	--	--	--	--	--	--	--	--	--	56.4	
Gravel Filter Area																										
TP-2 (1.5-2.0)	2/19/2013	1.5-2.0	7,420	21.9 N*	12	297*	0.2	1.8	5,700	85.2 N*	19.4	45,100	15,100	4,210 *	4,590	229	1.06 *	85.0 *	297	<3.8	2.3 N	656 N	<1.9	28.3	1,660	
TP-2 (3.5)	2/19/2013	3.5	8,980	<1.7 N*	8.0	936 *	0.3	0.6	4,490	55.8 N*	9.7	1,750	21,400	126 *	5,000	354	--	24.7 *	1070	<3.5	<0.4 N	225 N	<1.7	54.5	259	
TP-2 (4.50-5.0)	2/19/2013	4.5-5.0	7,050	<1.8 N*	5.1	113 *	0.3	<0.1	3,480	31.3 N*	7.9	1,630	18,400	122 *	3,600	295	0.38 *	16.7 *	732	<3.7	<0.5 N	240 N	<1.8	45.0	151	
TP-3 (1.5-2.0)	2/19/2013	1.5-2.0	7,840	3.1 N*	5.1	126 *	0.3	1.3	3,650	127 N*	10.8	11,800	26,700	539 *	6,610	398	--	46.4 *	716	<3.6	0.5 N	298 N	<1.8	40.5	744	
TP-3 (3.5)	2/19/2013	3.5	5,920	<1.6 N*	2.3	80.9	0.2	<0.1	2,650	13.6 N*	5.4	200	12,200	13.2 *	2,920	162	--	11.1 *	726	<3.3	<0.4 N	245 N	<1.6	30.9	61.6	
B-6 (3.5-5.0)	2/21/2013	3.5-5.0	--	--	--	--	--	--	--	--	--	6.8	--	3.2	--	--	--	--	--	--	--	--	--	--	32.6	
B-6 (3.5-5.0) DUP	2/21/2013	3.5-5.0	--	--	--	--	--	--	--	--	--	7.1	--	3.1	--	--	--	--	--	--	--	--	--	--	34.5	
B-6 (8.5-10.0)	2/21/2013	8.5-10.0	5,810	<2.1 N	<2.1	71.4	0.2	0.2	10,800	10.2	4.98	8.2	11,700	3.0	2,980	164	0.07	9.5	763	<4.2	<0.5	519	<2.1	31.5	36.5	
B-7 (3.5-5.0)	2/21/2013	3.5-5.0	--	--	--	--	--	--	--	--	--	10.1	--	3.7	--	--	--	--	--	--	--	--	--	--	37.7	
B-7 (9.0-10.0)	2/21/2013	9.0-10.0	7,850	<2.3 N	2.3	112	0.3	0.3	4,890	12.9	6.68	13.1	15,000	4.6	3,590	231	0.04	12.1	1,010	<4.6	<0.6	342	<2.3	37.5	44.0	
B-8 (3.0-4.0)	2/21/2013	3.0-4.0	4,890	<1.5 N	1.7	56.5	0.4	<0.1	2,360	7.8	4.69	7.0	10,100	3.3	2,190	146	<0.02	8.2	622	<3.1	<0.4 N	244	<1.5	26.0	33.7	
B-8 (9.0-10.0)	2/21/2013	9.0-10.0	12,800	<2.4 N	4.2	151	0.5	0.5	4,580	19.3	9.06	24.7	24,900	8.1	5,410	378	0.03	16.9	1,410	<4.7	<0.6	360	<2.4	51.8	58.5	
Former Crane Engine Pad																										
B-2 (7.0-8.0)	2/20/2013	7.0-8.0	11,200	<2.0 N	9.8	151	<0.1	2.7	4,870	16.5	7.8	72.7 *	19,900	139 N*	4,200	293	0.63	13.6	1,020	<4.0	<0.5	376	<2.0	47.4	341	
Bank																										
SS-9	2/21/2013	0.5	12,700	37.0 N	13	298	1.0	3.1	9,660	102	13.4	4,130	28,100	638	4,840	476	2.98	33.4	2,950	<4.2	0.9 N	384	<2.1	49.9	1,070	
SS-10	2/21/2013	0.5	13,600	<2.2 N	5.4	150	1.1	<0.1	3,590	69.2	9.54	433	28,100	128	4,820	291	0.39	32.4	1,340	<4.3	<0.5 N	291	<2.2	50.8	213	
SS-11	2/22/2013	0.5	13,500	4.9 N	13.3	203	1.0	<0.1	8,230	56.8	13.8	6,500	25,400	989	4,320	460	1.07	28.7	1,420	<4.1	0.6 N	309	<2.0	53.5	380	
SS-12	2/22/2013	0.5	14,200	<2.4 N	4.3	130	1.0	0.4	6,910	21.8	11.0	450	23,300	151	4,040	478	0.21	16.0	2,200	<4.9	<0.6 N	290	<2.4	56.3	345	
SS-13	2/22/2013	1.6-2	10,700	3.3 N	25.4	234	1.1	0.4	4,650	44.1	13.6	2,650	31,100	636	3,570	489	6.26	24.4	886	<3.8	0.5 N	326	<1.9	66.8	612	
SS-18	2/21/2013	0.5	--	--	--	--	--	--	--	--	--	43.5	--	12.5	--	--	--	--	--	--	--	--	--	--	94.0	
Applicable Screening Levels																										
Industrial EPA Region Removal Management Level, HQ = 3			3,000,000	1,200	240	570,000	6,000	2,400	--	4,600,000 ¹⁴	910	120,000	2,100,000	800	--	68,000	130	59,000	--	15,000	15,000	--	31	--	920,000	
Other Screening Levels																										
Residential EPA Region Removal Management Level, HQ = 3			230,000	94	61	46,000	470	210	--	350,000 ¹⁴	70	9,400	160,000	400	--	5,500	30	4,600	--	1,200	1,200	--	2.3	--	7,000	
EPA Region 3 Freshwater Sediment Benchmarks ¹⁰			--	2	9.8	--	--	0.99	--	43.4	50	31.6	20,000	35.8	--	460	0.18	22.7	--	2	1.0	--	--	--	121	
DEQ Construction Worker RBCs for Direct Contact			--	--	13	60,000	610	150	--	460,000 ¹³	--	12,000	--	800	--	7,200	93	6,100	--	--	1,500	--	--	--	--	
DEQ Excavation Worker RBCs for Direct Contact			--	--	370	>1,000,000	17,000	4,300	--	>1,000,000 ¹³	--	340,000	--	800	--	200,000	2,600	170,000	--	--	43,000	--	--	--	--	
EPA RSLs for Industrial Soil Direct Contact			990,000	410	1.6	190,000	2,000	800	--	1,500,000 ¹³	300	41,000	720,000	800	--	23,000	43	20,000	--	5,100	5,100	--	11	--	310,000	
Background Concentrations																										
Oregon DEQ Default Background Metal Concentrations			52,300 ¹⁴	0.56	8.8	790	2.0	0.63	--	76	--	34	36,100 ¹⁴	79	--	1,800	0.23	47	--	0.71	0.82	--	5.2	180	180	

Please refer to notes at end of table.

Table 1
Soil Sample Results - Metals
Pier 99 - Pier West
EE/CA Report

Sample ID	Date Sampled	Sample Depth (feet)	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Magnesium	Manganese	Mercury	Nickel	Potassium	Selenium	Silver	Sodium	Thallium	Vanadium	Zinc
			mg/kg (ppm)																						
Removal Action Samples																									
REX-1	9/19/2013	2.5-3	--	2.2	--	--	--	3.00	--	28.6	--	1,460	--	129	--	--	--	22.3	--	--	--	--	--	--	741
REX-2	9/19/2013	1-1.5	--	<1.07	--	--	--	2.15	--	14.5	--	393	--	56	--	--	--	13.7	--	--	--	--	--	--	276
REX-3	9/19/2013	2.5-3	--	<1.07	--	--	--	0.256	--	7.02	--	22.1	--	12.6	--	--	--	8.73	--	--	--	--	--	--	45.5
REX-4	9/25/2013	2.8-3.3	--	<1.13	--	--	--	0.158 J	--	10.9	--	8.99	--	3.82	--	--	--	11.5	--	--	--	--	--	--	45.7
REX-5	9/25/2013	4.67-5.17	--	<1.09	--	--	--	0.174 J	--	7.34	--	9.85	--	4.15	--	--	--	9.29	--	--	--	--	--	--	50.7
REX-6	9/25/2013	0.75-1.25	--	<1.10	--	--	--	0.21 J	--	14.1	--	28	--	6.75	--	--	--	13	--	--	--	--	--	--	82.4
REX-7	9/25/2013	1-1.5	--	<1.07	--	--	--	0.213	--	8.01	--	15.4	--	25.5	--	--	--	9.8	--	--	--	--	--	--	78.6
REX-8	9/25/2013	1.5-2	--	<1.23	--	--	--	<0.245	--	6.99	--	22.7	--	4.96	--	--	--	9.46	--	--	--	--	--	--	116
REX-9	9/25/2013	1.8-2.3	--	<1.19	--	--	--	0.155 J	--	5.8	--	7.86	--	3.79	--	--	--	7.8	--	--	--	--	--	--	37.7
REX-10	9/25/2013	1.5-2	--	<1.16	--	--	--	0.163 J	--	7.08	--	6.64	--	3.39	--	--	--	8.7	--	--	--	--	--	--	36.4
REX-11	9/25/2013	1.8-2.3	--	<1.06	--	--	--	0.127 J	--	5.3	--	6.53	--	3.45	--	--	--	8.28	--	--	--	--	--	--	36.1
REX-12	9/26/2013	0-0.5 ¹⁷	--	1.98	--	--	--	0.702	--	17.4	--	438	--	129	--	--	--	15.4	--	--	--	--	--	--	342
REX-13	9/26/2013	0-0.5 ¹⁷	--	6.87	--	--	--	3.25	--	49.6	--	2,970	--	911	--	--	--	19.5	--	--	--	--	--	--	977
REX-14	9/26/2013	0-0.5 ¹⁷	--	<1.14	--	--	--	2.59	--	11.8	--	497	--	96	--	--	--	12.5	--	--	--	--	--	--	412
REX-14 DUP	9/26/2013	0-0.5 ¹⁷	--	0.663	--	--	--	2.02	--	14.5	--	473	--	103	--	--	--	15.3	--	--	--	--	--	--	433
REX-15	10/1/2013	0-0.5 ¹⁷	--	3.16	--	--	--	1.17	--	16.4	--	2,150	--	264	--	--	--	9.76	--	--	--	--	--	--	160
REX-16	10/1/2013	0-0.5 ¹⁷	--	--	9.72	157	--	18.1	--	46.1	--	--	--	1,060	--	--	0.486 ^H	--	--	<0.123	<1.11	--	--	--	--
REX-17	10/4/2013	1-1.5 ¹⁷	--	<0.592	--	--	--	0.261	--	5.78	--	126	--	23.8	--	--	--	9.14	--	--	--	--	--	--	46.3
RAC-1	10/1/2013	0-0.5	--	<1.22	--	--	--	1.33	--	11.9	--	28.6	--	26.7	--	--	--	14.9	--	--	--	--	--	--	144
RAC-2	10/4/2013	0.5-1.0	--	14.5	--	--	--	6.83	--	113	--	7,800	--	2,300	--	--	--	28.3	--	--	--	--	--	--	1,500
Applicable Screening Levels																									
Industrial EPA Region Removal Management Level, HQ = 3			3,000,000	1,200	240	570,000	6,000	2,400	--	4,600,000 ¹⁴	910	120,000	2,100,000	800	--	68,000	130	59,000	--	15,000	15,000	--	31	--	920,000
Other Screening Levels																									
Residential EPA Region Removal Management Level, HQ = 3			230,000	94	61	46,000	470	210	--	350,000 ¹⁴	70	9,400	160,000	400	--	5,500	30	4,600	--	1,200	1,200	--	2.3	--	7,000
EPA Region 3 Freshwater Sediment Benchmarks ¹⁰			--	2	9.8	--	--	0.99	--	43.4	50	31.6	20,000	35.8	--	460	0.18	22.7	--	2	1.0	--	--	--	121
DEQ Construction Worker RBCs for Direct Contact			--	--	13	60,000	610	150	--	460,000 ¹³	--	12,000	--	800	--	7,200	93	6,100	--	--	1,500	--	--	--	--
DEQ Excavation Worker RBCs for Direct Contact			--	--	370	>1,000,000	17,000	4,300	--	>1,000,000 ¹³	--	340,000	--	800	--	200,000	2,600	170,000	--	--	43,000	--	--	--	--
EPA RSLs for Industrial Soil Direct Contact			990,000	410	1.6	190,000	2,000	800	--	1,500,000 ¹³	300	41,000	720,000	800	--	23,000	43	20,000	--	5,100	5,100	--	11	--	310,000
Background Concentrations																									
Oregon DEQ Default Background Metal Concentrations			52,300 ¹⁴	0.56	8.8	790	2.0	0.63	--	76	--	34	36,100 ¹⁴	79	--	1,800	0.23	47	--	0.71	0.82	--	5.2	180	180

Notes:

1. Target Analyte List (TAL) metals analyzed per Environmental Protection Agency (EPA) Method 6010C Low Level (LL).
2. Mercury analyzed per per EPA Method 7471B.
3. mg/kg = milligrams per kilogram (parts per million).
4. Bold type indicates detected concentration above the Method Reporting Limit (MRL)..
5. < = The analyte was not detected at or above the MRL.
6. * = Matrix spike recovery (MS) or duplicate (MSD) outside limits based on heterogeneous samples. These data are not flagged as an estimated concentration.
7. N = Matrix spike recovery (MS) or duplicate (MSD) outside limits based on heterogeneous samples. These data are flagged as an estimated concentration.
8. -- = Not applicable or not analyzed.
9. EPA Removal Management Levels (RMLs) , November 2012.
10. EPA Region 3 Freshwater Sediment SLVs from Mid-Atlantic Risk Assessment: Ecological Risk Assessment - Freshwater Sediment Screening Benchmarks, 2004.
Note the 10x attenuation factor referenced in report text is not applied to the levels reported above.
11. DEQ RBCs from *Risk-Based Concentrations for Individual Chemicals*, June 2012.
12. EPA Regional Screening Levels (RSLs) for Industrial Soil from *Regional Screening Level (RSL) Summary Table* , updated November 2012.
13. Oregon DEQ Background Metal Concentrations (Portland Basin) from Background Levels of Metals in Soils for Cleanups, March 2013.
14. Chromium (III) concentration used for applicable screening level.
15. Oregon DEQ background metal concentration does not exist for specific metal, Clark County, Washington background metal concentration used.
16. Shaded cells represent detected concentrations that exceed the EPA Industrial RMLs.
17. Sample depths corresponds to the depth below the the average excavation leave surface because samples REX-12 through REX-17 were collected below surface accumulations of various thicknesses.

18. Mercury analyses for REX-16 completed outside of recommended holding time.

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Table 2
Soil Sampling Results - Butyltins and PCBs
Pier 99 - Pier West
EE/CA Report

Sample ID	Date Sampled	Sample Depth (feet)	Organotins (µg/kg)				Polychlorinated Biphenyls (µg/kg)									
			Di-n-butyltin	n-Butyltin	Tetra-n-butyltin	Tri-n-butyltin	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Aroclor 1262	Aroclor 1268	Total Detected PCBs
			µg/kg (ppb)													
Historical Samples																
BK01SS	10/30/2008	0-0.5	36	36 JL	<3.6	48	--	--	--	--	<34	<34	--	--	--	0
UP01SS	10/30/2008	0-0.5	210,000 JL	84,000	--	660,000	--	--	--	--	--	3800	--	--	--	3,800
WS01SS	10/30/2008	0-0.5	210 JL	240	--	1100	--	--	--	--	--	130 JL	--	--	--	130
WS02SS	10/30/2008	0-0.5	8,400 JL	3,200	--	24000	--	--	--	--	--	380 JL	--	--	--	380
OP01SS	10/30/2008	0-0.5	<1.7	<1.7	<4.7	<1.7	--	--	--	--	<43	12 JQ	--	--	--	12
OP02SS	10/30/2008	0-0.5	9,000 JL	7,500	190	36000	--	--	--	--	1200	1600	--	--	--	2,800
OP03SS	10/30/2008	0-0.5	220	210	<4.7	28	--	--	--	--	<43	68 JL	--	--	--	68
Gravel Filter Area																
TP2 (1.5-2.0)	2/19/2013	1.5-2.0	29,000	6,900	<1,300	29,000	<10	<20	<10	<10	<10	400	130	<10	<10	530
TP2 (4.5-5.0)	2/19/2013	4.5-5.0	9,600	3,000	<3,100	64,000	<9.9	<20	<9.9	<9.9	<9.9	160	70	<9.9	<9.9	230
B-6 (8.5-10.0)	2/21/2013	8.5-10.0	--	--	--	--	<8.5	<17	<8.5	<8.5	<8.5	<8.5	<8.5	<8.5	<8.5	--
B-8 (3.0-4.0)	2/21/2013	3.0-4.0	--	--	--	--	<10	<20	<10	<10	<10	<10	<10	<10	<10	--
Former Crane Engine Pad																
B-2 (7.0-8.0)	2/20/2013	7.0-8.0	78	20	3.3	760 D	<9.9	<20	<9.9	<9.9	<9.9	<9.9	52 P	<9.9	<9.9	52
Bank																
SS-9	2/21/2013	0.5	--	--	--	--	<9.4	<19	<9.4	<9.4	<9.4	610	420	<9.4	<9.4	1,030
SS-10	2/21/2013	0.5	--	--	--	--	<9.9	<20	<9.9	<9.9	<9.9	27	38	<9.9	<9.9	65
SS-11	2/22/2013	0.5	--	--	--	--	<97	<200	<97	<97	<97	950	<97	<97	<97	950
SS-12	2/22/2013	0.5	--	--	--	--	<11	<21	<11	<11	<11	69	41	<11	<11	110
SS-13	2/22/2013	1.6-2	--	--	--	--	<85	<170	<85	<85	<85	1,600	<85	<85	<85	1,600
Removal Action Samples																
REX-1	9/19/2013	0-0.5	62	340 E	<4.9	280	<11	<11	<11	<11	<11	50.8	34.6	<11	<11	85
REX-2	9/19/2013	0-0.5	510 E	620 E	<4.5	1,000 E	<10.1	<10.1	<10.1	<10.1	<10.1	18	14.5	<10.1	<10.1	33
REX-5	9/25/2013	4.67-5.17	<5.2	2.5 J	<4.5	<3.5	<10.3	<10.3	<10.3	<10.3	<10.3	<10.3	<10.3	<10.3	<10.3	0
REX-9	9/25/2013	1.83-2.33	<5.3	<3.7	<4.6	<3.5	<10.2	<10.2	<10.2	<10.2	<10.2	<10.2	<10.2	<10.2	<10.2	0
REX-15	10/1/2013	0-0.5 ¹³	--	--	--	--	<52.1	<52.1	<78.2	<78.2	<52.1	554	164	<52.1	<52.1	718
REX-17	10/4/2013	1-1.5 ¹³	--	--	--	--	<10.0	<10.0	<10.0	<10.0	<10.0	36.8	36.3	<10.0	<10.0	73.1
RAC-1	10/1/2013	0-0.5	--	--	--	--	<12.2	<12.2	<12.2	<12.2	<12.2	<12.2	<12.2	<12.2	<12.2	0
RAC-2	10/4/2013	0-0.5	--	--	--	--	<277	<277	<277	<277	<277	15,500	2,950	<277	<277	18,450
Applicable Screening Level Values																
Industrial EPA Region Removal Management Level, HQ = 3			550,000	550,000	550,000	550,000	110,000	54,000	54,000	74,000	74,000	32,000	74,000	--	--	74,000
Other Screening Level Values																
Residential EPA Region Removal Management Level, HQ = 3			55,000	55,000	55,000	55,000	12,000	14,000	14,000	22,000	22,000	3,400	22,000	--	--	22,000
PEL (MacDonald et al, 2000) ⁹			--	--	--	--	--	--	--	--	--	340	--	--	--	277
DEQ Construction Worker RBCs for Direct Contact			--	--	--	--	--	--	--	--	--	--	--	--	--	4,400
DEQ Excavation Worker RBCs for Direct Contact			--	--	--	--	--	--	--	--	--	--	--	--	--	120,000
EPA RSLs 9 Industrial Soil Direct Contact			180,000	180,000	180,000	180,000	21000	540	540	740	740	740	740	--	--	740

Notes:

- Organotins analyzed per the Krone Method.
- Polychlorinated Biphenyls (PCBs) per Environmental Protection Agency (EPA) Method 8081B.
- µg/kg = = micrograms per kilogram (parts per billion).
- Bold type indicates detected concentration above the Method Reporting Limit (MRL)..
- < = The analyte was not detected at or above the MRL.
- = Not applicable or not analyzed.
- P = The confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results because of interference and the data are considered estimated values.
- EPA Removal Management Levels (RMLs) , November 2012.
- MacDonalad et al., 2000; Development and Evaluation of Consensus-Based Sediment Quality Guideline for Freshwater Ecosystems. Environmental Contamination and Toxicity 39: 20-31.
Note the 10x attenuation factor referenced in report text is not applied to levels reported above.
- DEQ RBCs from *Risk-Based Concentrations for Individual Chemicals*, June 2012.
- EPA Regional Screening Levels (RSLs) for Industrial Soil from *Regional Screening Level (RSL) Summary Table* , updated November 2012.
- Shaded cells represent detected concentrations that exceed the EPA Industrial RMLs.
- Sample depths corresponds to the depth below the the average excavation leave surface because samples REX-12 through REX-17 were collected below surface accumulations of various thicknesses.

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Table 3
Soil Sampling Results - Organochlorine Pesticides
Pier 99 - Pier West
EE/CA Report

Sample ID	Date Sampled	Sample Depth (feet)	Organchlorine Pesticides																						
			alpha-BHC	beta-BHC	gamma-BHC	delta-BHC	Heptachlor	Aldrin	Heptachlor epoxide	gamma-Chlordane	Endosulfan I	alpha-Chlordane	Dieldrin	4,4'DDE	Endrin	Endosulfan II	4,4'DDD	Endrin Aldehyde	Endosulfan Sulfate	4,4'-DDT	Endrin Ketone	Methoxychlor	Chlordane	Toxaphene	
			µg/kg (ppb)																						
Historical Samples																									
BK01SS	10/30/2008	0-0.5	--	--	--	--	--	--	<1.8	--	--	--	--	<3.4	--	--	0.39 JQ (2.4 SOL)	--	--	1.2 JQ (2.4 SOL)	--	--	--	--	
UP01SS	10/30/2008	0-0.5	--	--	--	--	--	--	<210	--	--	--	--	--	--	--	2700	--	--	370	--	--	--	--	
WS01SS	10/30/2008	0-0.5	--	--	--	--	--	--	4.5 JL	--	--	--	--	--	--	--	76	--	--	33 JL	--	--	--	--	
WS02SS	10/30/2008	0-0.5	--	--	--	--	--	--	<18	--	--	--	--	--	--	--	32 JQ	--	--	33 JQ	--	--	--	--	
OP01SS	10/30/2008	0-0.5	--	--	--	--	--	--	--	--	--	--	--	0.74 JQ	--	--	0.28 JQ	--	--	<4.3	--	--	--	--	
OP02SS	10/30/2008	0-0.5	--	--	--	--	--	--	--	--	--	--	--	58	--	--	930	--	--	180 JL	--	--	--	--	
OP03SS	10/30/2008	0-0.5	--	--	--	--	--	--	--	--	--	--	--	<4.3	--	--	8 JL	--	--	19	--	--	--	--	
Gravel Filter Area																									
TP2 (1.5-2.0)	2/19/2013	1.5-2.0	<2.0	<2.0	<2.0	<2.5 i	<2.0	<2.0	<38 i	<3.3 i	<2.0	<2.0	<7.3 i	<2.8 i	<2.0	<8.1 i	51 P	<2.0	<2.0	<14 i	<2.1 i	<2.6 i	--	<390 i	
TP2 (4.5-5.0)	2/19/2013	4.5-5.0	<0.99	<0.99	<0.99	<0.99	<0.99	<0.99	<2.0 i	1.5 P	<0.99	<0.99	<2.0 i	<0.99	<0.99	<2.3 i	6.3	<0.99	<0.99	<6.5 i	<0.99	<1.6 i	--	<110 i	
B-8 (3.0-4.0)	2/21/2013	3.0-4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	--	<50	
Former Crane Engine Pad																									
B-2 (7.0-8.0)	2/20/2013	7.0-8.0	<0.99	<0.99	<0.99	<0.99	<0.99	<0.99	<0.99	<0.99	<0.99	<0.99	<0.99	1.2	<0.99	<0.99	<0.99	<0.99	<0.99	9.7	<0.99	<1.6 i	--	<200 i	
Bank																									
SS-9	2/21/2013	0.5	<1.9	<1.9	<1.9	<1.9	<1.9	<1.9	<21 i	<6.8 i	<1.9	<1.9	<10 i	44	<1.9	<8.8 i	390	<1.9	45	310	<2.0 i	<13 i	--	<1,200 i	
SS-10	2/21/2013	0.5	<0.99	<0.99	<0.99	<0.99	1.2 P	<0.99	<0.99	<0.99	<2.5 i	<0.99	2.2 P	<0.99	<0.99	<1.1 i	2.4	<0.99	<0.99	<9.3 i	<0.99	<0.99	--	<59 i	
SS-11	2/22/2013	0.5	<4.9	<4.9	<4.9	<4.9	<4.9	<4.9	<12 i	12 P	<4.9	<4.9	<17 i	16 P	<4.9	<19 i	170	<4.9	11	130	<4.9	5.5 P	--	<720 i	
SS-12	2/22/2013	0.5	1.8 P	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.1	<1.2 i	1.6	<1.1	<1.8 i	1.4 P	<1.1	<1.4 i	12 i	<1.5 i	<1.1	--	<72 i	
SS-13	2/22/2013	1.6-2	<1.7	<1.7	<1.7	<1.7	<1.7	<1.7	<3.4 i	16 P	<4.3 i	<1.7	<26 i	99	<2.4 i	<5.3 i	1,300	<1.7	100	1,600	<6.8 i	<6.5 i	--	<750 i	
Removal Action Samples																									
REX-1	9/19/2013	0-0.5	<22.3	<22.3	<22.3	<22.3	<22.3	<22.3	<22.3	<22.3	<22.3	<22.3	<22.3	<22.3	<22.3	<22.3	35.3	<22.3	<22.3	104	<22.3	<67	<670	<670	
REX-2	9/19/2013	0-0.5	<4.21	<4.21	<4.21	<4.21	<4.21	<4.21	<4.21	<4.21	<4.21	<4.21	<4.21	<4.21	<4.21	<4.21	15.1	<4.21	<4.21	4.51	<4.21	<12.6	<126	<126	
REX-5	9/25/2013	4.67-5.17	<1.62	<1.62	<1.62	<1.62	<1.62	<1.62	<1.62	<1.62	<1.62	<1.62	<1.62	<1.62	<1.62	<1.62	<1.62	<1.62	<1.62	<1.62	<1.62	<4.85	<48.5	<48.5	
REX-9	9/25/2013	1.83-2.33	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<1.77	<5.31	<53.1	<53.1	<53.1	
REX-15 ¹³	10/1/2013	0-0.5	<20.5	<20.5	<20.5	<20.5	<20.5	<20.5	28.5	<20.5	<20.5	<20.5	<20.5	<24.5	<20.5	<20.5	209	<20.5	<20.5	347	<20.5	<61.4	<614	<614	
REX-16 ^H	10/1/3013	0-0.5	<19.2	<19.2	<19.2	<19.2	<19.2	<19.2	<19.2	<19.2	<19.2	<19.2	<19.2	<19.2	<19.2	<19.2	<19.2	<19.2	<19.2	<34.6	<19.2	<57.6	<576	<576	
Applicable Screening Level Values																									
Industrial EPA Region Removal Management Level, HQ = 2			27,000	96,000	210,000	--	38,000	10,000	19,000	--	11,000,000	--	11,000	510,000	550,000	11,000,000	720,000	--	--	700,000	--	9,200,000	650,000	160,000	
Other Screening Level Values																									
Residential EPA Region Removal Management Level, HQ = 3			7,700	27,000	52,000	--	11,000	2,900	2,400	--	1,100,000	--	3,000	140,000	55,000	--	200,000	--	--	170,000	--	920,000	110,000	44,000	
EPA Region 3 Freshwater Sediment Benchmarks ⁹			6	5	2.37	6,400	68	2	2.47	3.24	2.9	3.24	1.9	3.16	2.22	14	4.88	--	5.4	4.16	--	18.7	3.24	0.1	
DEQ Construction Worker RBCs for Direct Contact			2,600	--	15,000	--	3,700	950	1,800	55,000	1,400,000	55,000	1,000	58,000	71,000	1,400,000	83,000	--	--	58,000	--	--	55,000	15,000	
DEQ Excavation Worker RBCs for Direct Contact			71,000	--	400,000	--	100,000	26,000	51,000	1,500,000	40,000,000	1,500,000	29,000	1,600,000	2,000,000	40,000,000	2,300,000	--	--	1,600,000	--	--	1,500,000	420,000	
EPA RSLs Industrial Soil Direct Contact			270	960	2,100	--	380	100	190	6,500,000	3,700,000	6,500	110	5,100	180,000	3,700,000	7,200	--	--	7,000	--	3,100,000	6,500	16,000	

Notes:

- Organochlorine pesticides per Environmental Protection Agency (EPA) Method 8081B.
- µg/kg = = micrograms per kilogram (parts per billion).
- Bold type indicates detected concentration above the Method Reporting Limit (MRL)..
- < = The analyte was not detected at or above the MRL.
- = Not applicable or not analyzed.
- i = Elevated due to chromatographic interference.
- P = The confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results and the data is considered estimated.
- EPA EPA Removal Management Levels (RMLs) , November 2012.
- EPA Region 3 Freshwater Sediment SLVs from Mid-Atlantic Risk Assessment: Ecological Risk Assessment - Freshwater Sediment Screening Benchmarks, 2004.
Note the 10x attenuation factor referenced in report text is not applied to the levels.
- DEQ RBCs from *Risk-Based Concentrations for Individual Chemicals*, June 2012.
- EPA Regional Screening Levels (RSLs) for Industrial Soil from *Regional Screening Level (RSL) Summary Table* , updated November 2012.
- Shaded cells represent detected concentrations that exceed the EPA Industrial RMLs.
- Sample depths corresponds to the depth below the the average excavation leave surface because samples REX-12 through REX-17 were collected below surface accumulations of various thicknesses.

Table 4
Soil Sampling Results - SVOCs
Pier 99 - Pier West
EECA Report

Location Sample ID Date Sampled Sample Depth (feet)	Historical samples							Former Crane Engine Pad	Bank					Removal Action Samples							Applicable Screening Level Values	Relevant Screening Level Values				
	BK01SS 10/30/08	UP01SS 10/30/08	WS01SS 10/30/08	WS02SS 10/30/08	OP01SS 10/30/08	OP02SS 10/30/08	OP03SS 10/30/08	B-2 (7.0-8.0) 2/20/13	SS-9 2/21/13	SS-10 2/21/13	SS-11 2/22/13	SS-12 2/22/13	SS-13 2/22/13	REX-1 9/19/13	REX-2 9/19/13	REX-5 9/25/13	REX-9 9/25/13	REX-15 10/1/13	REX-16 10/1/13	RAC-1 10/1/13	Industrial EPA Region Removal Management Level, HQ = 3	Residential EPA Region Removal Management Level, HQ = 3	EPA Region 3 Freshwater Sediment Benchmarks ⁸	DEQ Construction Worker RBCs for Direct Contact	DEQ Excavation Worker RBCs for Direct Contact	EPA RSLs Industrial Soil Direct Contact
	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	0-0.5	7.0-8.0	0.5	0.5	0.5	0.5	1.6-2	0-0.5	0-0.5	4.67-5.17	1.83-2.33	0-0.5 ¹³	0-0.5 ¹³	0-0.5						
Analyte	µg/kg																									
Bis(2-chloroethyl) Ether	14 JQ (180 SQL)	3,100	74 JQ	680 JQ	49 JQ	2,200	55 JQ	<150	<150	<150	560	<150	<750	<399	<59.7	<8.43	<8.7	869	<296	--	100,000	21,000	--	--	--	1,000
2-Chlorophenol	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	<570	<85.4	<16.9	<17.4	<203	<493	--	37,000,000	3,700,000	31.2	--	--	180,000,000
1,3-Dichlorobenzene	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	--	--	--	--	--	--	--	--	--	4,430	--	--	5,100,000
1,4-Dichlorobenzene	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	--	--	--	--	--	--	--	1,200,000	240,000	599	1,200,000	34,000,000	12,000
1,2-Dichlorobenzene	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	--	--	--	--	--	--	--	30,000,000	5,700,000	16.5	19,000,000	520,000,000	9,800,000
Benzyl Alcohol	--	--	--	--	--	--	--	<98	<100	<100	4,500	<99	<500	--	--	--	--	--	--	--	180,000,000	18,000,000	--	--	--	62,000,000
Bis(2-chloroisopropyl) Ether	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	--	--	--	--	--	--	--	--	--	--	--	--	--
2-Methylphenol	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	<285	<42.7	<8.43	<8.7	<102	<246	--	92,000,000	9,200,000	--	--	--	31,000,000
Hexachloroethane	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	--	--	--	--	--	--	--	1,300,000	130,000	1,027	240,000	6,600,000	43,000
N-Nitrosodipropylamine	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	--	--	--	--	--	--	--	25,000	--	--	--	--	250
4-Methylphenol	--	--	--	--	--	--	--	<49	90	<50	190	<50	<250	<285	<42.7	<8.43	<8.7	<102	<246	--	180,000,000	18,000,000	670	--	--	62,000,000
Nitrobenzene	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	--	--	--	--	--	--	--	2,400,000	390,000	--	--	--	24,000
Isophorone	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	--	--	--	--	--	--	--	180,000,000	37,000,000	--	--	--	1,800,000
2-Nitrophenol	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	<1,140	<171	<33.7	<34.8	<407	<986	--	--	--	--	--	--	
2,4-Dimethylphenol	--	--	--	--	--	--	--	<250	<250	<250	<250	<250	<1,300	<570	<85.4	<16.9	<17.4	<203	<493	--	37,000,000	3,700,000	29	--	--	12,000,000
Bis(2-chloroethoxy)methane	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	--	--	--	--	--	--	--	5,500,000	550,000	--	--	--	1,800,000
2,4-Dichlorophenol	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	<570	<85.4	<16.9	<17.4	<230	<493	--	5,500,000	550,000	117	--	--	1,800,000
Benzoic Acid	--	--	--	--	--	--	--	<1,000	<1,000	<1,000	<1,000	<1,000	<5,000	--	--	--	--	--	--	--	7,400,000,000	730,000,000	650	--	--	2,500,000,000
1,2,4-Trichlorobenzene	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	--	--	--	--	--	--	--	820,000	190,000	2,100	--	--	99,000
Naphthalene	--	--	--	--	--	--	--	6.6	76	6.1	18	8.7	36	<228	<34.1	<6.74	<6.96	<81.3	<197	11.3	1,800,000	360,000	176	580,000	16,000,000	18,000
4-Chloroaniline	--	--	--	--	--	--	--	<50	<50	<50	<50	<50	<250	--	--	--	--	--	--	--	860,000	240,000	--	--	--	8,600
Hexachlorobutadiene	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	--	--	--	--	--	--	--	1,800,000	180,000	--	--	--	22,000
4-Chloro-3-methylphenol	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	<1,140	<171	<33.7	<34.8	<407	<986	--	180,000,000	18,000,000	--	--	--	62,000,000
1-Methylnaphthalene	--	--	--	--	--	--	--	--	--	--	--	--	--	<228	<34.1	6.8	<6.96	<81.3	<197	<10.6	5,300,000	1,600,000	--	--	--	--
2-Methylnaphthalene	--	--	--	--	--	--	--	<5.0	31	4.7	13	10	23	<228	<34.1	10	<6.96	<81.3	<197	<10.6	6,600,000	690,000	20.2	--	--	2,200,000
Hexachlorocyclopentadiene	--	--	--	--	--	--	--	<250	<250	<250	<250	<250	<1,300	--	--	--	--	--	--	--	11,000,000	1,100,000	--	--	--	3,700,000
2,4,6-Trichlorophenol	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	<570	<85.4	<16.9	<17.4	<203	<493	--	1,800,000	180,000	213	240,000	6,600,000	160,000
2,4,5-Trichlorophenol	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	<570	<85.4	<16.9	<17.4	<203	<493	--	180,000,000	18,000,000	--	--	--	62,000,000
2-Chloronaphthalene	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	--	--	--	--	--	--	--	250,000,000	19,000,000	--	--	--	82,000,000
2-Nitroaniline	--	--	--	--	--	--	--	<98	<100	<100	<100	<99	<500	--	--	--	--	--	--	--	18,000,000	1,800,000	--	--	--	6,000,000
Acenaphthalene	--	--	--	--	--	--	--	13	5.5	<3.7	7.9	<4.1	22	<114	<17.1	<3.37	<3.48	<40.7	<98.6	<10.6	--	--	5.9	--	--	--
Dimethyl Phthalate	200	48,000	660	17,000	8.6 JQ	21,000	99 JQ	<49	690	450	7,500	530	990	<1,140	410	<33.7	<34.8	2,840	<986	--	--	--	--	--	--	--
2,6-Dinitrotoluene	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	--	--	--	--	--	--	--	120,000	33,000	--	240,000	6,600,000	620,000
Acenaphthene	--	--	--	--	--	--	--	<5.0	9.2	6.4	16	11	13	<114	<17.1	<3.37	<3.48	<40.7	<98.6	<10.6	99,000,000	10,000,000	6.7	19,000,000	520,000,000	33,000,000
5-Nitroaniline	--	--	--	--	--	--	--	<98	<100	<100	<100	<99	<500	--	--	--	--	--	--	--	--	--	--	--	--	86,000
2,4-Dinitrophenol	--	--	--	--	--	--	--	<1,000	<1,000	<1,000	<1,000	<1,000	<5,000	<2,280	<341	<67.4	<69.6	<813	<2,020	--	3,700,000	370,000	--	--	--	1,200,000
Dibenzofuran	--	--	--	--	--	--	--	<5.0	11	<3.7	8.7	4.5	14	<114	<17.1	<3.37	<3.48	<40.7	<98.6	<10.6	3,100,000	230,000	415	--	--	1,000,000
4-Nitrophenol	--	--	--	--	--	--	--	<490	<500	<500	<500	<500	<2,500	<1,140	<171	<33.7	<34.8	<407	<986	--	--	--	--	--	--	--
2,4-Dinitrotoluene	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	--	--	--	--	--	--	--	550,000	160,000	41.6	--	--	5,500
Fluorene	--	--	--	--	--	--	--	<5.0	7.4	4.2	12	7.2	18	<114	<17.1	<3.37	<3.48	<40.7	<98.6	<10.6	66,000,000	6,900,000	77.4	12,000,000	340,000,000	22,000,000
4-Chlorophenyl Phenyl Ether	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	--	--	--	--	<40.7	<98.6	<10.6	--	--	--	--	--	--
Diethyl Phthalate	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	<1,140	<171	<33.7	<34.8	<407	<986	--	1,500,000,000	150,000,000	603	--	--	490,000,000
4-Nitroaniline	--	--	--	--	--	--	--	<98	<100	<100	260	<99	<500	--	--	--	--	--	--	--	7,400,000	730,000	--	--	--	86,000
2-Methyl-4,6-dinitrophenol	--	--	--	--	--	--	--	<490	<500	<500	<500	<500	<2,500	<6,840	<1,020	<202	<209	<2,440	--	--	180,000	18,000	--	--	--	49,000
N-Nitrosodiphenylamine	--	--	--	--	--	--	--	<49	<50	<50	<50	<50	<250	--	--	--	--	--	--	--	35,000,000	9,900,000	2,680	--	--	350,000
4-Bromophenyl Phenyl Ether	--	--	--	--	--																					