

Appendix B

Analytical Chemistry Data Package

**Project: Non-Dry Dock Stormwater
SW01 November 17-18, 2010
Chemical Analyses**

Battelle Project No. 54220
CF No. 3174



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SW01 November 18, 2010
Chemical Analyses
Equipment and Field Blanks**

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Analytical raw data available upon request

BATTELLE MARINE SCIENCE LABORATORIES

1529 West Sequim Bay Road
Sequim, Washington 98382-9099
360/681-4564

Non-Dry Dock Stormwater
ENVVEST 2010_SW01
Metals in Water
UNITS: µg/L

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Type Name	MSL Code	Collection Date	Turbidity	Hg	As	Ag	Al	Cd
						Units (NTU)	CVAF	ICP-MS	ICP-MS	ICP-MS	ICP-MS
						Instrument:					
Laboratory Achieved Detection Limits (Freshwater)						--	0.0001	0.03	0.002	0.3	0.004
Freshwater Reporting Limit (MDL * 3.18)						--	0.0003	0.1	0.006	1.0	0.01
SW01-0020	PSNS081.1	TME	Composite_equal_time	3174-11	11/18/10	26.1	0.00981	1.58	0.0288	146	0.400
SW01-0021	PSNS081.1	DME	Composite_equal_time	3174-12	11/18/10	NA	0.00305	1.40	0.0116	24.8	0.218
SW01-0022	PSNS082.5	TME	Composite_equal_time	3174-13	11/18/10	24.0	0.0116	1.17	0.0488	579	1.25
SW01-0023	PSNS082.5	DME	Composite_equal_time	3174-14	11/18/10	NA	0.00204	0.827	0.00474 J	43.0	0.388
SW01-0024	PSNS126	TME	Composite_equal_time	3174-15	11/18/10	24.1	0.00840	2.75	0.0339	112	0.213
SW01-0025	PSNS126	DME	Composite_equal_time	3174-16	11/18/10	NA	0.00350	2.62	0.0155	23.5	0.142
EQUIPMENT BLANKS											
SW1005	Tubing EB	TME	Grab	3174-1	10/15/10	NA	0.0001 U	0.03 U	0.002 U	0.3 U	0.004 U
SW1006	Tubing EB	TME	Grab	3174-2	10/15/10	NA	0.0001 U	0.03 U	0.002 U	0.3 U	0.004 U
SW0001	PSNS126	TME	Composite_equal_time	3174-3	10/28/10	NA	0.0001 U	0.03 U	0.002 U	0.427 J	0.0104 J
SW0002	PSNS081.1	TME	Composite_equal_time	3174-4	10/28/10	NA	0.000192 J	0.03 U	0.002 U	1.42	0.004 U
SW0003	PSNS096	TME	Composite_equal_time	3174-5	10/28/10	NA	0.0001 U	0.03 U	0.002 U	1.29	0.0143
SW0004	PSNS082.5	TME	Composite_equal_time	3174-6	10/28/10	NA	0.000193 J	0.03 U	0.002 U	1.30	0.0184
SW1001	PSNS126	DME	Composite_equal_time	3174-7	10/28/10	NA	0.000149 J	0.03 U	0.002 U	0.3 U	0.0100 J
SW1002	PSNS081.1	DME	Composite_equal_time	3174-8	10/28/10	NA	0.000173 J	0.03 U	0.002 U	0.454 J	0.004 U
SW1003	PSNS096	DME	Composite_equal_time	3174-9	10/28/10	NA	0.0001 U	0.03 U	0.002 U	0.367 J	0.0115 J
SW1004	PSNS082.5	DME	Composite_equal_time	3174-10	10/28/10	NA	0.000130 J	0.03 U	0.002 U	0.691 J	0.0175
						Average	0.0001 U	0.03 U	0.002 U	0.685 J	0.00981 J

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Non-Dry Dock Stormwater
ENVVEST 2010_SW01
Metals in Water
UNITS: µg/L

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Type Name	MSL Code	Cr	Cu	Pb	Zn	CVAF Batch ID	ICP-MS Batch ID
					Instrument: ICP-MS	ICP-MS	ICP-MS	ICP-MS		
Laboratory Achieved Detection Limits (Freshwater)					0.08	0.007	0.002	0.05		
Freshwater Reporting Limit (MDL* 3.18)					0.3	0.02	0.006	0.2		
SW01-0020	PSNS081.1	TME	Composite_equal_time	3174-11	8.76	31.0	6.05	116	112910HGA	112310-6100
SW01-0021	PSNS081.1	DME	Composite_equal_time	3174-12	4.31	19.6	0.555	82.9	112910HGA	112310-6100
SW01-0022	PSNS082.5	TME	Composite_equal_time	3174-13	5.49	50.7	10.7	158	112910HGA	112310-6100
SW01-0023	PSNS082.5	DME	Composite_equal_time	3174-14	1.99	18.5	0.710	51.3	112910HGA	112310-6100
SW01-0024	PSNS126	TME	Composite_equal_time	3174-15	2.94	15.0	3.88	62.3	112910HGA	112310-6100
SW01-0025	PSNS126	DME	Composite_equal_time	3174-16	2.36	10.2	0.356	46.1	112910HGA	112310-6100
EQUIPMENT BLANKS										
SW1005	Tubing EB	TME	Grab	3174-1	0.08 U	0.007 U	0.002 U	0.05 U	101910HGA	101810-6100
SW1006	Tubing EB	TME	Grab	3174-2	0.08 U	0.007 U	0.002 U	0.05 U	101910HGA	101810-6100
SW0001	PSNS126	TME	Composite_equal_time	3174-3	0.951	0.223	0.00758	0.248	112910HGA	112310-6100
SW0002	PSNS081.1	TME	Composite_equal_time	3174-4	1.43	0.211	0.0401	0.535	112910HGA	112310-6100
SW0003	PSNS096	TME	Composite_equal_time	3174-5	4.54	1.23	0.0628	1.07	112910HGA	112310-6100
SW0004	PSNS082.5	TME	Composite_equal_time	3174-6	0.390	0.112	0.0328	0.502	112910HGA	112310-6100
SW1001	PSNS126	DME	Composite_equal_time	3174-7	0.706	0.100	0.002 U	0.482	112910HGA	112310-6100
SW1002	PSNS081.1	DME	Composite_equal_time	3174-8	0.695	0.0476	0.0246	0.808	112910HGA	112310-6100
SW1003	PSNS096	DME	Composite_equal_time	3174-9	0.772	0.0914	0.0178	0.368	112910HGA	112310-6100
SW1004	PSNS082.5	DME	Composite_equal_time	3174-10	0.389	0.0470	0.002 U	0.332	112910HGA	112310-6100
					1.00	0.208	0.0194	0.445		

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**Non-Dry Dock Stormwater
ENVVEST 2010_SW01
STE#1**

Station Code	Type Name	Collection Date	Analysis Date	Analysis Method	Component	Units	Result	Detection Limit	Reporting Limit
PSNS081.1	Composite_equal_time	11/18/10	12/02/10	SM 2340 C	Hardness, Total as CaCO3	mg/L	23.1 =	0.8	2.0
PSNS081.1	Composite_equal_time	11/18/10	11/22/10	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	15 =	5.0	5.0
PSNS081.1	Composite_equal_time	11/18/10	11/30/10	SM 5310 C	Carbon, Total Organic	mg/L	8.28 =	0.07	0.50
PSNS081.1	Composite_equal_time	11/18/10	11/30/10	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	8.45 =	0.07	0.50
PSNS081.1	Grab	11/17/10	12/04/10	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	61 =, J	11	250
PSNS081.1	Grab	11/17/10	12/04/10	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	130 =, J	19	500
PSNS082.5	Composite_equal_time	11/18/10	12/02/10	SM 2340 C	Hardness, Total as CaCO3	mg/L	23.5 =	0.8	2.0
PSNS082.5	Composite_equal_time	11/18/10	11/22/10	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	14 =	5.0	5.0
PSNS082.5	Composite_equal_time	11/18/10	11/30/10	SM 5310 C	Carbon, Total Organic	mg/L	6.08 =	0.07	0.50
PSNS082.5	Composite_equal_time	11/18/10	11/30/10	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	6.83 =	0.07	0.50
PSNS082.5	Grab	11/17/10	12/04/10	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	1100 =, H	12	260
PSNS082.5	Grab	11/17/10	12/04/10	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	1600 =, O	20	520
PSNS126	Composite_equal_time	11/18/10	12/02/10	SM 2340 C	Hardness, Total as CaCO3	mg/L	44.9 =	0.8	2.0
PSNS126	Composite_equal_time	11/18/10	11/22/10	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	12.5 =	5.0	5.0
PSNS126	Composite_equal_time	11/18/10	11/30/10	SM 5310 C	Carbon, Total Organic	mg/L	6.90 =	0.07	0.50
PSNS126	Composite_equal_time	11/18/10	11/30/10	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	7.63 =	0.07	0.50
PSNS126	Grab	11/17/10	12/04/10	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	ND ND	13	280
PSNS126	Grab	11/17/10	12/04/10	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	ND ND	22	560
PSNS096	Grab	11/17/10	12/04/10	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	170 =, J	11	250
PSNS096	Grab	11/17/10	12/04/10	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	450 =, J	19	500

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Sample Type	MSL Code	Hg	CVA Batch ID
<i>Instrument:</i>					<i>CVA</i>	
Laboratory Achieved Detection Limits					0.0001	
Reporting Limit (MDL* 3.18)					0.0003	

METHOD BLANKS

MB-1	TME	Freshwater	MB1_101910	0.0001 U	101910HGA
MB-2	TME	Freshwater	MB2_101910	0.0001 U	101910HGA
MB-3	TME	Freshwater	MB3_101910	0.0001 U	101910HGA
MB-4	TME	Freshwater	MB1_112910	0.0001 U	112910HGA
MB-5	TME	Freshwater	MB2_112910	0.0001 U	112910HGA
MB-6	TME	Freshwater	MB3_112910	0.0001 U	112910HGA

LABORATORY CONTROL SAMPLES

Spiking Level				0.00496	
LCS (1)	TME	Freshwater	OPR 101810 run1	0.00508	101910HGA
LCS (2)	TME	Freshwater	OPR 101810 run2	0.00519	101910HGA
LCS Blank (1)	TME	Freshwater	Blank 101810	0.000110 J	101910HGA

Percent Recovery, LCS 1

100%

Percent Recovery, LCS 2

102%

Spiking Level				0.00496	
LCS (1)	TME	Freshwater	OPR 112709 run1	0.00465	112910HGA
LCS (2)	TME	Freshwater	OPR 112709 run2	0.00466	112910HGA
LCS Blank (1)	TME	Freshwater	Blank 112709	0.0001 U	112910HGA

Percent Recovery, LCS 1

94%

Percent Recovery, LCS 2

94%

MATRIX SPIKE RESULTS

SW01-0023	PSNS 082.5	DME	Freshwater	3174-14	0.00204	112910HGA
MS1	PSNS 082.5	DME	Freshwater	3174-14MS	0.0210	112910HGA
MSD1	PSNS 082.5	DME	Freshwater	3174-14MSD	0.0204	112910HGA

Spiking Level, MS

0.0195

Spiking Level, MSD

0.0194

Percent Recovery, MS

97%

Percent Recovery, MSD

95%

RPD

2.7%

REPLICATE PRECISION

SW01-0024	PSNS 126	TME	Freshwater	3174-15	0.00840	112910HGA
DUP	PSNS 126	TME	Freshwater	3174-15r2	0.00797	112910HGA

Mean

0.00819

RPD

5%

STANDARD REFERENCE MATERIAL

SRM 1641 (1)		TME	Freshwater	1641d 101810	1626	101910HGA
SRM 1641 (2)		TME	Freshwater	1641d 112709	1547	112910HGA

Certified Value

1590

range

±18

SRM 1641 (1)

PD

2%

SRM 1641 (2)

PD

3%

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Non-Dry Dock Stormwater
ENVVEST 2010_SW01
Metals in Water
UNITS: µg/L

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Sample Type	MSL Code	As	Ag	Al	Cd	Cr	Cu	Pb	Zn	ICP-MS Batch ID
<i>Instrument:</i>					<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	
Laboratory Achieved Detection Limits (Freshwater)					0.03	0.002	0.3	0.004	0.08	0.007	0.002	0.05	
Freshwater Reporting Limit (MDL* 3.18)					0.1	0.006	1.0	0.01	0.3	0.02	0.006	0.2	

METHOD BLANKS

MB-1		TME	Freshwater	Blank101810	0.03 U	0.002 U	0.3 U	0.004 U	0.08 U	0.007 U	0.002 U	0.05 U	101810-6100
MB-2		TME	Freshwater	TRM Blank 112910R1	0.03 U	0.002 U	0.3 U	0.004 U	0.08 U	0.007 U	0.002 U	0.0802 J	112310-6100
MB-3		TME	Freshwater	TRM Blank 112910R2	0.03 U	0.002 U	0.3 U	0.004 U	0.08 U	0.007 U	0.002 U	0.05 U	112310-6100

LABORATORY CONTROL SAMPLES

Spiking Level					1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
SW1005	Tubing EB	TME	Freshwater	3174-1	0.03 U	0.002 U	0.3 U	0.004 U	0.08 U	0.007 U	0.002 U	0.05 U	101810-6100
LCS (1)		TME	Freshwater	3174-1MS	1.11	1.01	0.96	1.13	1.01	1.01	1.01	1.29	101810-6100
Percent Recovery, LCS					111%	101%	96%	113%	101%	101%	101%	129%	
Spiking Level					2	2	2	2	2	2	2	2	
MB-2		TME	Freshwater	TRM Blank 112910R1	0.03 U	0.002 U	0.3 U	0.004 U	0.08 U	0.007 U	0.002 U	0.0802 J	112310-6100
LCS (2)		TME	Freshwater	TRM LCS 112910	1.98	1.93	2.26	1.96	1.99	1.98	2.02	2.06	112310-6100
Percent Recovery, LCS					99%	97%	113%	98%	100%	99%	101%	99%	

MATRIX SPIKE RESULTS

SW01-0021	PSNS 081.1	DME	Freshwater	3174-12	1.40	0.0116	24.8	0.218	4.31	19.6	0.555	82.9	112310-6100
MS1	PSNS 081.1	DME	Freshwater	3174-12MS	12.1	9.07	34.3	10.1	14.8	28.6	11.0	93.4	112310-6100
MSD1	PSNS 081.1	DME	Freshwater	3174-12MSD	12.3	9.18	33.6	10.1	15.0	29.3	11.0	94.6	112310-6100
Spiking Level					10	10	10	10	10	10	10	10	
Percent Recovery, MS					107%	91%	95%	99%	105%	90%	104%	105%	
Percent Recovery, MSD					109%	92%	88%	99%	107%	97%	104%	117%	
RPD					1.9%	1.2%	7.7%	0.0%	1.9%	7.5%	0.0%	10.8%	

REPLICATE PRECISION

SW1006	Tubing EB	TME	Freshwater	3174-2	0.03 U	0.002 U	0.3 U	0.004 U	0.08 U	0.007 U	0.002 U	0.05 U	101810-6100
DUP1	Tubing EB	TME	Freshwater	3174-2r2	0.03 U	0.002 U	0.3 U	0.004 U	0.08 U	0.007 U	0.002 U	0.05 U	101810-6100
<i>Mean</i>					0.03 U	0.002 U	0.3 U	0.004 U	0.08 U	0.007 U	0.002 U	0.05 U	
RPD					NA	NA	NA	NA	NA	NA	NA	NA	
SW01-0020	PSNS 081.1	TME	Freshwater	3174-11	1.58	0.0288	146	0.400	8.76	31.0	6.05	116	112310-6100
DUP2	PSNS 081.1	TME	Freshwater	3174-11r2	1.63	0.0366	173	0.408	8.83	31.9	6.22	116	112310-6100
<i>Mean</i>					1.61	0.0327	160	0.404	8.80	31.5	6.14	116	
RPD					3%	24%	17%	2%	1%	3%	3%	0%	

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Non-Dry Dock Stormwater
 ENVVEST 2010_SW01
 Metals in Water
 UNITS: µg/L

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Sample Type	MSL Code	As	Ag	Al	Cd	Cr	Cu	Pb	Zn	ICP-MS Batch ID
<i>Instrument:</i>					<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	
<u>STANDARD REFERENCE MATERIAL, Seawater</u>													
SRM 1640 (1)		TME	Freshwater	NIST 1640 101810	25.7	6.62	50.8	22.6	38.4	84.7	28.5	54.4	101810-6100
SRM 1640 (2)		TME	Freshwater	TRM 1640 112310	26.2	6.82	48.7	22.6	36.5	84.3	28.0	55.1	112310-6100
Certified Value					26.7	7.62	52.0	22.8	38.6	85.2	27.9	53.2	
PD					4%	13%	2%	1%	1%	1%	2%	2%	
PD					2%	10%	6%	1%	5%	1%	0%	4%	

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**Non-Dry Dock Stormwater
ENVVEST 2010_SW01
Metals in Water**

DATA QUALIFIERS:

- c Exceeds DQO but meets contingency criteria of either:
 - 1 SRM certified <10x MDL
 - 2 Insufficient spiking level relative to native sample concentrations
 - 3 Sample concentration <10x MDL
- U Analyte not detected at or above the MDL, MDL reported
- J Analyte detected above the MDL, but less than the RL
- N Spiked sample recovery outside QC criterion of 70-130%
- & Accuracy result outside QC criterion of $\leq 20\%$ PD
- * Precision result outside QC criterion of $< 30\%$
- NS Sample not spiked for this analyte
- B Analyte detected in the method blank > RL
 - and sample concentration < 10 times detected blank value
- b Data are blank corrected using the batch specific procedural blank
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- ND Not detected

Notes:

- Composite_equal_time Equal portion composite of time integrated sample (ISCO samples)
- NC Not Certified
 - Not analyzed
 - NA Not applicable/available
 - TME Total Metals Fraction
 - DME Dissolved Metals Fraction
 - 2 Sample specific MDLs and RLs reported

QA/QC NARRATIVE

PROJECT: Non-Dry Dock Stormwater Sampling (SW01) and Equipment Blanks

PARAMETER: Total and Dissolved Metals – Al, Ag, As, Cd, Cr, Cu, Pb, Zn, Hg

LABORATORY: Battelle Marine Sciences Laboratory (MSL), Sequim, Washington

MATRIX: Stormwater and Equipment Blanks (DI water matrix)

SAMPLE CUSTODY AND PROCESSING: Samples were collected from stormwater outfalls located within the Confined Industrial Area (CIA) of the Puget Sound Naval Shipyard and Intermediate Maintenance Facility (PSNS & IMF) by Taylor Associated, Inc., MSL, and the U.S. Navy. Two types of samples were collected. The first were various equipment blanks to ensure the Teflon tubing, polycarbonate wedge bottles, composite glass jar, and final sample containers would not significantly contribute metals to the sample. Samples 3174-1 and -2 were deionized water rinse blanks for the Teflon tubing extending from the outfall manhole into the ISCO sampler. The rinse blanks were collected by pumping deionized water through the length of tubing typically used in the field. Field blanks were then collected from each of the four outfall locations. The field blank was collected by pumping deionized water from the bottom of the manhole through the Teflon tubing and into each of the 24 wedge bottles located inside the ISCO sampler. The wedge bottles were then carried back to the stormwater lab at PSNS&IMF and composited in the glass jar using the same method for the storm event samples (see Project Field Sampling Plan and Quality Assurance Plan). Glass composite jars were hand delivered the day of collection to MSL. Upon receipt at MSL, the samples were shaken vigorously and approximately 500mL was filtered through a pre-cleaned 0.45µm polyvinylidene fluoride (PVDF) filter membrane inside a class 100 clean bench and the filtrate was transferred to a trace metal clean Teflon bottle. A separate unfiltered aliquot was poured into a precleaned Teflon bottle. The total metal fractions (TME) and dissolved metal fractions (DME) were each acidified to a pH of < 2.0 with double distilled nitric acid.

The second type of samples were composite samples collected during the storm event identified as STE#1 beginning on November 17, 2010 with the composite ending 24 hours later. The glass composite jars for outfalls PSNS81.1, 82.5, and 126 were delivered to MSL. In addition, grab samples for total petroleum hydrocarbons (TPH) were received in amber glass bottles and were forwarded to Columbia Analytical Services (CAS) along with the total organic carbon (TOC), dissolved organic carbon (DOC), hardness, and total suspended solids (TSS) samples there were collected from the glass composite jar. In the clean laboratory at MSL, the glass composite jar was shaken vigorously (prior and between aliquot removal) and aliquots were poured into the following types of containers:

1. 500 mL Teflon bottle for total metals,
2. 500 mL PVDF filter unit, vacuum filtered in a class 100 clean bench and then poured into a 500 mL Teflon bottle for dissolved metals,
3. 250 mL low-density polyethylene (LDPE) bottle provided by CAS and included a nitric acid preservative for samples to be analyzed for hardness,
4. 500 mL LDPE container with sulfuric acid preservative provided by CAS for the analysis of TOC,
5. 60 mL syringe and 0.45 µm syringe filter both rinsed with deionized water. An aliquot of the sample was filtered into a 250 mL LDPE container with sulfuric acid preservative provided by CAS for the analysis of DOC,
6. 500 mL or 1L LDPE bottle provided by CAS for the analysis of TSS, and
7. Glass vial for the analysis of turbidity as each sample was aliquoted.

All samples were received in good condition. Samples were assigned a Battelle Central File (CF) identification number (3174) and were entered into Battelle's sample tracking system.

QA/QC NARRATIVE

The following lists information on sample receipt and processing activities:

Sample Receipt Dates:	10/15/10, 10/28/10, 11/19/2010
Cooler temp. on arrival	All coolers were at 4.0±2°C
Collection dates	10/15/10, 10/28/10, 11/18/2010
CVAF analysis dates (Hg)	10/19/10 and 11/29/10
TRM Prep/Freshwater Analysis by ICP-MS (As, Ag, Al, Cd, Cr, Cu, Pb, Zn)	10/18/10 and 11/23/10

QA/QC DATA QUALITY OBJECTIVES:

Analyte	Analytical Method for Seawater	MS Range of Recovery	SRM Percent Difference	Replicate Precision	Method Detection Limits (µg/L)	Reporting Limits (µg/L)
Aluminum	ICP-MS	70-130%	≤20%	≤30%	0.3	1.0
Arsenic	ICP-MS	70-130%	≤20%	≤30%	0.03	0.1
Cadmium	ICP-MS	70-130%	≤20%	≤30%	0.004	0.01
Chromium	ICP-MS	70-130%	≤20%	≤30%	0.08	0.3
Copper	ICP-MS	70-130%	≤20%	≤30%	0.007	0.02
Lead	ICP-MS	70-130%	≤20%	≤30%	0.002	0.006
Silver	ICP-MS	70-130%	≤20%	≤30%	0.002	0.006
Zinc	ICP-MS	70-130%	≤20%	≤30%	0.05	0.2
Mercury	CVAF	70-130%	≤20%	≤30%	0.0001	0.0003

METHODS:

Samples were analyzed for nine metals: aluminum (Al), arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), silver (Ag), zinc (Zn), and mercury (Hg). Samples were submitted for analyses following two methods. All samples were analyzed for Hg by Cold Vapor Atomic Fluorescence (CVAF) in accordance with Battelle SOP *MSL-I-013, Total Mercury in Aqueous Samples by CVAF*, following EPA Method 1631 revision E.

All samples were analyzed for other metals by Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) in accordance with Battelle SOP *MSL-I-022, Determination of Elements in Aqueous and Digestate Samples by ICP/MS*. The base methods for this procedure are EPA Method 1638 and EPA Method 1640. All samples were digested following the total metal recoverable (TRM) method established in EPA Method 1640 prior to analysis by ICP-MS. In summary, this preparation brings the pH of the sample to 2% and heats the capped samples for 2.5 hours in a 85°C oven to solubilize particulates. Both the filtered and unfiltered fractions were prepared using this method to destroy any colloidal particles remaining in the filtered (aka. Dissolved) fraction.

All results were reported in units of µg/L. Data are not blank corrected.

QA/QC NARRATIVE

HOLDING TIMES:	All samples were analyzed within the established holding times of 90 days for Hg and six months for all other metals.
DETECTION LIMITS:	<p>Laboratory method detection limits (MDLs) for TRM freshwater were reported from the Annual MDL Study as determined by seven replicates of deionized water spiked at appropriate concentrations and prepared using the TRM method. Reporting limits are determined as 3.18 times the laboratory achieved MDL. The data are evaluated and flagged as follows:</p> <ul style="list-style-type: none">U Analyte not detected at or above the MDL, MDL reportedJ Analyte detected above the MDL, but less than the RLN Spiked sample recovery outside QC criterion of 70-130%& Accuracy result outside QC criterion of $\leq 20\%$ PD* Precision result outside QC criterion of $< 30\%$B Analyte detected in the method blank $>$ RL and sample concentration $<$ 10 times detected blank valuec Exceeds data quality objective but meets contingency criterionb Result is reagent blank corrected using the batch specific blank (BMRB)
METHOD BLANKS:	A minimum of one method blank was prepared and analyzed by each instrument with each analytical batch. The method blanks were all less than the RL.
LABORATORY CONTROL SAMPLES:	A minimum of one LCS (OPR or blank spike) was prepared and analyzed with each analytical batch of 20 or fewer samples. For the equipment blanks, the matrix is deionized water. Therefore, the matrix spike and LCS are synonymous. Percent recoveries for LCS samples were within the QC acceptance criterion of 70% to 130% for all metals.
MATRIX SPIKE ACCURACY:	A minimum of one set of duplicate matrix spikes (MS/MSD) was prepared and analyzed with each analytical batch of 20 or fewer samples. Percent recoveries for matrix spikes were within the QC limits of 70% to 130% for all metals. See the LCS section for matrix spikes on the equipment blanks.
REPLICATE PRECISION:	Laboratory precision was expressed as the relative percent difference (RPD) between laboratory duplicates. The RPD values for the laboratory duplicates were within the QC acceptance criterion of $\pm 30\%$ for all metals detected above the RL.
STANDARD REFERENCE MATERIAL ACCURACY:	Standard reference materials (SRM) were prepared and analyzed with each analytical batch at a minimum frequency of 1 per 20 or fewer samples. Analytical accuracy was expressed as the percent difference (PD) between the measured and the certified value. The freshwater SRMs were 1641d for Hg and 1640 for all other metals. The differences were within the QC acceptance criterion of $\leq 20\%$.

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002)

Date: 10/15/2010



... Putting Technology To Work

Pacific Northwest Division
Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382

Project Name: ENWEST Non-drydock Stormwater

Project Manager: Brandenberger

Phone Number:

Shipment Method: samples created at lab

Preservation: samples preserved with nitric at lab

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters					Laboratory ID	Observations/Comments
					Total Metals						
1	Unclean tubing blank	10/15/10 1323	freshwater	1	x					3174-1	SW1005
2	Micro cleaned tubing	10/15/10 1323	freshwater	1	x					3174-2	SW1006
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
15											

Relinquished By: J. Brandenberger
Signature/Printed Name: *[Signature]*
Company: MSL
Date/Time: 10/15/10 1500

Received By: C. Suslick
Signature/Printed Name: *[Signature]*
Company: MSL
Date/Time: 10/15/10 1500

Relinquished By: _____
Signature/Printed Name: _____
Company: _____
Date/Time: _____

Received By: _____
Signature/Printed Name: _____
Company: _____
Date/Time: _____

SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 10/15/2010

Batch: 1

Login Designee: CSuslick

Project: **ENVVEST Drydock Stormwater**



Marine Sciences Laboratory

1529 West Sequim Bay Road

Sequim, Washington 98382

PH: (360) 681-4565

Sponsor ID	Site Description	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SW1005	Unclean tubing blank	3174-1	freshwater	Prep Lab J-3-C	Total Metals	10/15/10
SW1006	Micro cleaned tubing	3174-2	freshwater	Prep Lab J-3-C	Total Metals	10/15/10

SAMPLE CHAIN OF CUSTODY FORM

Date: 1 of 1

Page: 1 of 1

Project No.:

Project: Non-dry Dock SW 2010

Battelle

Marine Sciences Laboratory
1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	TPH	Turbidity	No. containers	Sample Type (grab vs. Comp)	Storm#	Notes
PSNS126 102810RB	PSNS126	10-28-10 0120	W					X			1	G	NA	Rinse Blank
PSNS081 102810RB	PSNS081.1	10-28-10 0220	W					X			1	G		
PSNS096 102810RB	PSNS096	10-28-10 0320	W					X			1	G		
PSNS0825 102810RB	PSNS082.5	10-28-10 0445	W					X			1	G		
Dissolved														
SW1001	PSNS126	10/28/10 1200						X			1	G	NA	is dissolved
SW1002	PSNS081.1							X			1			
SW1003	PSNS096							X			1			
SW1004	PSNS082.5							X			1			

Relinquished by: Dave Metello 10-28-10 0555
Signature Date Time
Dave Metello TAI/TEC
Printed Name Company

Received by: R/V Burlingame
Signature
R/V Burlingame
Printed Name

Total # of Containers 4
Shipment Method: hand delivery

Relinquished by: Jacquelyn Young 10-28-10 10:40
Signature Date Time
Jacquelyn Young PSNS 3IMF
Printed Name Company

Received by: Jm Brandenberger 10/28/10 1158
Signature
Jm Brandenberger
Printed Name

Distribution:
1) PNNL
2) CAS
3) TAI

SAMPLE LOGIN

Project Manager: JMB

Date Received: 10/28/2010

Batch: 2

Login Designee: Brandenberger

Project: **Non Dry Dock SW**



*Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382
PH: (360) 681-4565*

Sponsor ID	Site Description	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SW0001	PSNS126	3174-3	DI water	L-1-C	TME	10/28/10
SW0002	PSNS081.1	3174-4	DI water	L-1-C	TME	10/28/10
SW0003	PSNS096	3174-5	DI water	L-1-C	TME	10/28/10
SW0004	PSNS082.5	3174-6	DI water	L-1-C	TME	10/28/10
SW1001	PSNS126	3174-7	DI water	L-1-C	DME	10/28/10
SW1002	PSNS081.1	3174-8	DI water	L-1-C	DME	10/28/10
SW1003	PSNS096	3174-9	DI water	L-1-C	DME	10/28/10
SW1004	PSNS082.5	3174-10	DI water	L-1-C	DME	10/28/10

Non-dry dock SW

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 3174 Sample No(s): 3-10

Batch: 2

Project Name: Non Dry Dock SW

Project Manager: JMB

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: DI water WP#

Yes No

☐
☒

Navy-type Project (requires high-level sample tracking procedures)

☐
☒

USDA Samples (see Compliance Agreement Checklist)

PM Verification:

☒
☐

Filter Samples:

Amount:

Entire sample

Half of sample

☐
☒

Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Login Lab)

☒
☐

Special instructions:

Sample Preservation Instructions:

0.2% HNO₃

See LIMS for archive/disposal information

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes No N/A Indicate in Appropriate Box

☐
☐
☒

Custody seal present

Seal intact?

YES

NO

☒
☐
☐

Cooler temperature (acceptable range: 4±2°C or solids:frozen)
(if multiple coolers, note temp. of each)

4.2 °C

4.6 °C

☐
☐
☒

Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)

Comment/Remedy:

☒
☐
☐

Were all chain of custody forms signed and dated?

☒
☐
☐

Were samples filtered at MSL?

Sample condition(s):

Acceptable

Other (explain):

Container type:

Teflon

Poly

Glass

Cap. Vial

Other:

Notes:

Completed By: JMB

Date/Time: 10/28/10

SAMPLE PRESERVATION

☐

Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)

☐

Random pH checked for ~10% of samples (use dip paper)

Sample IDs:

☐

Complete pH check required for project (use pH meter and record on pH Record form)

☒

Sample(s) were preserved at MSL

Type:

☒

0.2% HNO₃

Notes:

Optima

Lot#

1206096

☐

0.5% HCl (Hg samples)

Notes:

Lot#

☐

Refrigerate/Freeze

Notes:

☐

Other

Notes:

Completed By: JMB

Date/Time: 10/28/10

Storage Shelf:

L-1-C

SAMPLE CHAIN OF CUSTODY FORM

Date: 11/17/10

Page: 1 of 1

Project No.:

Project: Non-dry Dock SW 2010

Battelle

Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	TPH	Turbidity					No. containers	Sample Type (grab vs. Comp)	Storm#	Notes	
SW01-0001	PS096	11/17/10 2030	SW						X						1	Grab	SW01	low flow	
SW01-0002	PS001.1	11/17/10 2053	SW						X						1	Grab	SW01		
SW01-0003	PS02.5	11/17/10 2114	SW						X						1	Grab	SW01	Swamp collection	
SW01-0004	PS126	11/17/10 2140	SW						X						1	Grab	SW01		
SW01-0005	PSNS081.1	11-18-10 0512	SW	X	X	X	X	X		X					1	Comp	SW01		
SW01-0006	PSNS082.5	11-18-10 0524	SW	X	X	X	X	X		X					1	Comp	SW01		
SW01-0007	PSNS126	11-18-10 0849	SW	X	X	X	X	X		X					1	Comp	SW01		
SW01-0020	PSNS081.1	11/18/10 0512	SW					X								Comp	SW01	TME	
SW01-0021	PSNS081.1	11/18/10 1750	SW					X										DME	
SW01-0022	PSNS082.5	11/18/10 0524						X										TME	
SW01-0023	PSNS082.5	11/18/10 1750						X										DME	
SW01-0024	PSNS126	11/18/10 0849						X										TME	
SW01-0025	PSNS126	11/18/10 1750						X										DME	
Relinquished by: <i>[Signature]</i> 11-18-2010 1530				Received by: <i>[Signature]</i> 11/18/10 1600												Total # of Containers		Shipment Method:	
Signature: <i>[Signature]</i> Date: TAI-TEC Time:				Signature: <i>[Signature]</i> Printed Name: Jill Brandenberger															
Printed Name: Dave Metallo Company:				Printed Name:												Sample Disposition:			
Relinquished by:				Received by:												Distribution:			
Signature: Date: Time:				Signature:												1) PNLL			
Printed Name: Company:				Printed Name:												2) CAS			
																3) TAI			

3174 * 11
12
13
14
15
16
3174 14

SW - stormwater

Note: grab samples forwarded to CAS. composite samples spit and forwarded to CAS & PNLL. jmb 11/18/10

SAMPLE LOGIN

Project Manager: Brandenberger
Date Received: 11/19/2020
Batch: 3
Login Designee: Suslick/Brandenberger

Project: **Non-Dry Dock SW (Storm Water)**



Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382
PH: (360) 681-4565

Sponsor ID	Site Description	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SW01-0020	PSNS 081.1	3174-11	WAT	Prep Lab	TOTAL Metals	11/18/10
SW01-0021	PSNS 081.1	3174-12	WAT	Prep Lab	DISSOLVED Metals	11/18/10
SW01-0022	PSNS 082.5	3174-13	WAT	Prep Lab	TOTAL Metals	11/18/10
SW01-0023	PSNS 082.5	3174-14	WAT	Prep Lab	DISSOLVED Metals	11/18/10
SW01-0024	PSNS 126	3174-15	WAT	Prep Lab	TOTAL Metals	11/18/10
SW01-0025	PSNS 126	3174-16	WAT	Prep Lab	DISSOLVED Metals	11/18/10

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 3174

Sample No(s): 11-16

Batch: 3

Project Name: AMBAS SW01

Project Manager: JMB

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: storm water (fresh)

WP# H 234774

Yes

No

☐☒

Navy-type Project (requires high-level sample tracking procedures)

☐☒

USDA Samples (see Compliance Agreement Checklist)

PM Verification:

☒☐

Filter Samples:

Amount:

Entire sample

Half of sample

☐☒

Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Login Lab)

☒☐

Special instructions:

split composite into parameter bottles

Sample Preservation Instructions:

filter / acidify metals 0.2% HNO₃

See LIMS for archive/disposal information

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes

No

N/A

Indicate in Appropriate Box

☐☐☒

Custody seal present

Seal intact?

YES

NO

☒☐☐Cooler temperature (acceptable range: 4±2°C or solids:frozen)
(if multiple coolers, note temp. of each)#1/1.2 #3/2.0
#2/3.0 °C #4/2.0☐☐☒

Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)

Comment/Remedy:

☒☐☐

Were all chain of custody forms signed and dated?

☒☐☐

Were samples filtered at MSL?

Sample condition(s):

Acceptable

Other (explain):

Container type:

Teflon

Poly

Glass

Cap. Vial

Other:

Notes:

Completed By: JMB

Date/Time:

11/18/10 1750

SAMPLE PRESERVATION

☐

Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)

☐

Random pH checked for ~10% of samples (use dip paper)

Sample IDs:

☐

Complete pH check required for project (use pH meter and record on pH Record form)

☒

Sample(s) were preserved at MSL

Type:

☒0.2% HNO₃

Notes:

Optima

Lot#

1602090

☐

0.5% HCl (Hg samples)

Notes:

Lot#

☐

Refrigerate/Freeze

Notes:

☐

Other

Notes:

Completed By: JMB

Date/Time:

11/19/10

Storage Shelf:

Prep Lab

K1013/03

SAMPLE CHAIN OF CUSTODY FORM

Date: 11/19/10

Page: 1 of 2

Project No.:

Project: Non-dry Dock SW 2010

Battelle

Marine Sciences Laboratory

1529 West Sequim Bay Road

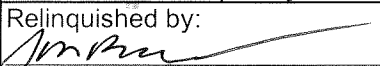
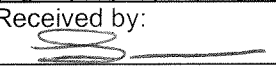
Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	TPH	Turbidity					No. containers	Sample Type (grab vs. Comp)	Storm#	Notes
SW01-0001	PS096	11/17/10 2030	SW = Stormwater						X						1	grab	SW01	low flow
SW01-0002	PS081.1	11/17/10 2053							X						1			
SW01-0003	PS82.5	11/17/10 2114							X						1			Sump collection
SW01-0004	PS126	11/17/10 2140							X						1			
SW01-0008	PSNS081.1	11/18/10 0512	0512 SW	X												comp		parent SW01-0005
SW01-0009		11/18/10 0512			X													
SW01-0010						X												
-0011							X											
-0012	PSNS082.5	11/18/10 0524		X				X										
-0013					X													
-0014						X												
-0015							X											
-0016	PSNS126	11/18/10 0849		X														
-0017				X														

Relinquished by:			Received by:			Total # of Containers	
 11/19/10 to FedEx Signature Date Time Jill Brandenberger PNNL Printed Name Company			 CAS Signature Date Time Les Kennedy 11/20/10 0815 Printed Name			Shipment Method:	
Relinquished by:			Received by:			Sample Disposition:	
Signature Date Time Printed Name Company			Signature Printed Name			Distribution: 1) PNNL 2) CAS 3) TAI	

SAMPLE CHAIN OF CUSTODY FORM

Date: 11/19/10

Page: 2 of 2

Project No.:

Project: Non-dry Dock SW 2010

Battelle

Marine Sciences Laboratory
1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

[illegible]

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC H2

Client / Project: Battelle Service Request **K10** 13103

Received: 11/20/10 Opened: 11/20/10 By: W

1. Samples were received via? *Mail* Fed Ex *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) Cooler *Box* *Envelope* *Other* NA
3. Were custody seals on coolers? *NA* *Y* N If yes, how many and where? _____
- If present, were custody seals intact? *Y* *N* If present, were they signed and dated? *Y* *N*

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID	NA	Tracking Number	NA	Filed
2.8	2.1	294					✓

7. Packing material used. *Inserts* *Baggies* Bubble Wrap Gel Packs *Wet Ice* *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? *NA* Y *N*
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* *NA* Y *N*
10. Were all sample labels complete (i.e analysis, preservation, etc.)? *NA* Y *N*
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* *NA* Y *N*
12. Were appropriate bottles/containers and volumes received for the tests indicated? *NA* Y *N*
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* *NA* Y *N*
14. Were VOA vials received without headspace? *Indicate in the table below.* NA *Y* *N*
15. Was C12/Res negative? NA *Y* *N*

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request No.: K1013103
Date Received: 11/20/10

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Sixteen water samples were received for analysis at Columbia Analytical Services on 11/20/10. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.


Diesel Range Organics by EPA Method 8015B

Surrogate Exceptions:

The control criteria were exceeded for n-Triacontane and o-Terphenyl in SW01-0004. An accident occurred during the extraction process in which some of the sample extract was lost. A re-analysis was not performed because insufficient sample was available. No further corrective action was possible.

No other anomalies associated with the analysis of these samples were observed.

Approved by



Date

12-16-10

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value that was detected outside the quantitation range.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Collected: 11/18/10
Date Received: 11/20/10

Analysis Method: SM 2340 C

Units: mg/L

Basis: NA

Hardness, Total as CaCO₃

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW01-0008	K1013103-005	23.1		2.0	0.8	1	NA	12/2/10 09:10	
SW01-0012	K1013103-009	23.5		2.0	0.8	1	NA	12/2/10 09:10	
SW01-0016	K1013103-013	44.9		2.0	0.8	1	NA	12/2/10 09:10	
Method Blank	K1013103-MB1	ND	U	2.0	0.8	1	NA	12/2/10 09:10	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Collected: NA
Date Received: NA
Date Analyzed: 12/ 2/10

Replicate Sample Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: K1013073-001

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	Batch QCDUP Duplicate Sample K1013073-001DUP3		RPD	RPD Limit
					Result	Average		
Hardness, Total as CaCO3	SM 2340 C	2.0	0.8	14.3	14.3	14.3	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Collected: NA
Date Received: NA
Date Analyzed: 12/ 2/10

Replicate Sample Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: K1013091-004

Units: mg/L
Basis: NA

Batch QCDUP								
Duplicate Sample								
K1013091-004DUP5								
Analyte Name	Method	MRL	MDL	Sample Result	Result	Average	RPD	RPD Limit
Hardness, Total as CaCO ₃	SM 2340 C	2.0	0.8	77.7	79.0	78.4	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Analyzed: 12/ 2/10

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Analyte Name	Method	Lab Control Sample K1013103-LCS1			
		Result	Spike Amount	% Rec	% Rec Limits
Hardness, Total as CaCO3	SM 2340 C	48.7	46.3	105	90 - 116

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Collected: 11/18/10
Date Received: 11/20/10

Analysis Method: SM 5310 C

Units: mg/L
Basis: NA

Carbon, Dissolved Organic (DOC)

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW01-0010	K1013103-007	8.45		0.50	0.07	1	NA	11/30/10 20:41	
SW01-0014	K1013103-011	6.83		0.50	0.07	1	NA	11/30/10 20:41	
SW01-0018	K1013103-015	7.63		0.50	0.07	1	NA	11/30/10 20:41	
Method Blank	K1013103-MB1	ND	U	0.50	0.07	1	NA	11/30/10 20:41	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Collected: 11/18/10
Date Received: 11/20/10
Date Analyzed: 11/30/10

Replicate Sample Summary
General Chemistry Parameters

Sample Name: SW01-0010
Lab Code: K1013103-007

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	SW01-0010DUP Duplicate Sample K1013103-007DUP		RPD	RPD Limit
					Result	Average		
Carbon, Dissolved Organic (DOC)	SM 5310 C	0.50	0.07	8.45	8.52	8.49	<1	33

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Collected: 11/18/10
Date Received: 11/20/10
Date Analyzed: 11/30/10

Matrix Spike Summary
General Chemistry Parameters

Sample Name: SW01-0010
Lab Code: K1013103-007

Units: mg/L
Basis: NA

Analytical Method: SM 5310 C

SW01-0010MS					
Matrix Spike					
K1013103-007MS					
Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Dissolved Organic (DOC)	8.45	32.4	25.0	96	85 - 108

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Analyzed: 11/30/10

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Lab Control Sample K1013103-LCS1					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Dissolved Organic (DOC)	SM 5310 C	26.5	24.7	107	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010

Service Request: K1013103

Continuing Calibration Verification (CCV) Summary
Carbon, Dissolved Organic (DOC)

Analytical Method: SM 5310 C**Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	227270	KQ1013251-05	11/30/10 20:41	25.0	26.4	106	90 - 110
CCV2	227270	KQ1013251-06	11/30/10 20:41	25.0	26.6	106	90 - 110

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010

Service Request: K1013103

Continuing Calibration Blank (CCB) Summary
Carbon, Dissolved Organic (DOC)

Analytical Method: SM 5310 C**Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	Result Q
CCB1	227270	KQ1013251-07	11/30/10 20:41	0.50	ND U
CCB2	227270	KQ1013251-08	11/30/10 20:41	0.50	ND U

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Collected: 11/18/10
Date Received: 11/20/10

Analysis Method: SM 5310 C

Units: mg/L
Basis: NA

Carbon, Total Organic

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW01-0009	K1013103-006	8.28		0.50	0.07	1	NA	11/30/10 20:41	
SW01-0013	K1013103-010	6.08		0.50	0.07	1	NA	11/30/10 20:41	
SW01-0017	K1013103-014	6.90		0.50	0.07	1	NA	11/30/10 20:41	
Method Blank	K1013103-MB1	ND	U	0.50	0.07	1	NA	11/30/10 20:41	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Collected: NA
Date Received: NA
Date Analyzed: 11/30/10

Replicate Sample Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: K1013133-001

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	Batch QC Duplicate Sample K1013133-001DUP9		RPD	RPD Limit
					Result	Average		
Carbon, Total Organic	SM 5310 C	5.0	0.8	57.4	55.9	56.6	3	33

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Collected: NA
Date Received: NA
Date Analyzed: 11/30/10

Replicate Sample Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: K1013159-001

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	Batch QC Duplicate Sample		RPD	RPD Limit
					K1013159-001	DUP10 Average		
Carbon, Total Organic	SM 5310 C	0.50	0.07	3.59	4.17	3.88	15	33

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Collected: NA
Date Received: NA
Date Analyzed: 11/30/10

Matrix Spike Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: K1013133-001

Units: mg/L
Basis: NA

Analytical Method: SM 5310 C

Batch QCMS
Matrix Spike
K1013133-001MS2

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	57.4	312	250	102	85 - 108

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Analyzed: 11/30/10

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Analyte Name	Method	Lab Control Sample K1013103-LCS1			
		Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	SM 5310 C	26.3	24.7	106	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010

Service Request: K1013103

Continuing Calibration Verification (CCV) Summary
Carbon, Total Organic

Analytical Method: SM 5310 C

Units: mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	227271	KQ1013253-07	11/30/10 20:41	25.0	26.4	106	90 - 110
CCV2	227271	KQ1013253-08	11/30/10 20:41	25.0	26.6	106	90 - 110
CCV3	227271	KQ1013253-09	11/30/10 20:41	25.0	26.7	107	90 - 110
CCV4	227271	KQ1013253-10	11/30/10 20:41	25.0	26.3	105	90 - 110

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010

Service Request: K1013103

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analytical Method: SM 5310 C

Units: mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	Result	Q
CCB1	227271	KQ1013253-11	11/30/10 20:41	0.50	ND	U
CCB2	227271	KQ1013253-12	11/30/10 20:41	0.50	ND	U
CCB3	227271	KQ1013253-13	11/30/10 20:41	0.50	ND	U
CCB4	227271	KQ1013253-14	11/30/10 20:41	0.50	ND	U

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Collected: 11/18/10
Date Received: 11/20/10

Analysis Method: SM 2540 D

Units: mg/L
Basis: NA

Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW01-0011	K1013103-008	15.0		5.0	5.0	1	NA	11/22/10 10:30	
SW01-0015	K1013103-012	14.0		5.0	5.0	1	NA	11/22/10 10:30	
SW01-0019	K1013103-016	12.5		5.0	5.0	1	NA	11/22/10 10:30	
Method Blank	K1013103-MB1	ND	U	5.0	5.0	1	NA	11/22/10 10:30	
Method Blank	K1013103-MB2	ND	U	5.0	5.0	1	NA	11/22/10 10:30	
Method Blank	K1013103-MB3	ND	U	5.0	5.0	1	NA	11/22/10 10:30	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Collected: NA
Date Received: NA
Date Analyzed: 11/22/10

Replicate Sample Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: K1013038-003

Units: mg/L
Basis: NA

Batch QCDUP Duplicate Sample K1013038-003DUP2								
Analyte Name	Method	MRL	MDL	Sample Result	Result	Average	RPD	RPD Limit
Solids, Total Suspended (TSS)	SM 2540 D	5.0	5.0	8.5	7.5	8.00	13	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Collected: NA
Date Received: NA
Date Analyzed: 11/22/10

Replicate Sample Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: K1013089-004

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	Batch QCDUP Duplicate Sample K1013089-004DUP4		RPD	RPD Limit
					Result	Average		
Solids, Total Suspended (TSS)	SM 2540 D	5.0	5.0	ND U	ND U	NC	NC	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Analyzed: 11/22/10

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Lab Control Sample K1013103-LCS1					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Solids, Total Suspended (TSS)	SM 2540 D	314	320	98	80 - 115

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Analyzed: 11/22/10

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Lab Control Sample K1013103-LCS2					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Solids, Total Suspended (TSS)	SM 2540 D	324	320	101	80 - 115

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Analyzed: 11/22/10

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Lab Control Sample K1013103-LCS3					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Solids, Total Suspended (TSS)	SM 2540 D	334	320	104	80 - 115

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010

Service Request: K1013103

Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics

Sample Name	Lab Code	Date Collected	Date Received
SW01-0001	K1013103-001	11/17/2010	11/20/2010
SW01-0002	K1013103-002	11/17/2010	11/20/2010
SW01-0003	K1013103-003	11/17/2010	11/20/2010
SW01-0004	K1013103-004	11/17/2010	11/20/2010

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____

Name: Shane Murray

Date: 12/7/10

Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Collected: 11/17/2010
Date Received: 11/20/2010

Diesel and Residual Range Organics

Sample Name: SW01-0001
Lab Code: K1013103-001
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	170	J	250	11	1	11/22/10	12/04/10	KWG1013078	
Residual Range Organics (RRO)	450	J	500	19	1	11/22/10	12/04/10	KWG1013078	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	107	50-150	12/04/10	Acceptable
n-Triacontane	97	50-150	12/04/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Collected: 11/17/2010
Date Received: 11/20/2010

Diesel and Residual Range Organics

Sample Name: SW01-0002
Lab Code: K1013103-002
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	61	J	250	11	1	11/22/10	12/04/10	KWG1013078	
Residual Range Organics (RRO)	130	J	500	19	1	11/22/10	12/04/10	KWG1013078	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	87	50-150	12/04/10	Acceptable
n-Triacontane	80	50-150	12/04/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Collected: 11/17/2010
Date Received: 11/20/2010

Diesel and Residual Range Organics

Sample Name: SW01-0003
Lab Code: K1013103-003
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	1100	H	260	12	1	11/22/10	12/04/10	KWG1013078	
Residual Range Organics (RRO)	1600	O	520	20	1	11/22/10	12/04/10	KWG1013078	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	102	50-150	12/04/10	Acceptable
n-Triacontane	95	50-150	12/04/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Collected: 11/17/2010
Date Received: 11/20/2010

Diesel and Residual Range Organics

Sample Name: SW01-0004
Lab Code: K1013103-004
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	280	13	1	11/22/10	12/04/10	KWG1013078	
Residual Range Organics (RRO)	ND	U	560	22	1	11/22/10	12/04/10	KWG1013078	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	19	50-150	12/04/10	Outside Control Limits
n-Triacontane	16	50-150	12/04/10	Outside Control Limits

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Collected: NA
Date Received: NA

Diesel and Residual Range Organics

Sample Name: Method Blank
Lab Code: KWG1013078-3
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	250	11	1	11/22/10	12/04/10	KWG1013078	
Residual Range Organics (RRO)	ND	U	500	19	1	11/22/10	12/04/10	KWG1013078	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	80	50-150	12/04/10	Acceptable
n-Triacontane	73	50-150	12/04/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103

Surrogate Recovery Summary
Diesel and Residual Range Organics

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
SW01-0001	K1013103-001	107	97
SW01-0002	K1013103-002	87	80
SW01-0003	K1013103-003	102	95
SW01-0004	K1013103-004	19 *	16 *
Method Blank	KWG1013078-3	80	73
Lab Control Sample	KWG1013078-1	88	80
Duplicate Lab Control Sample	KWG1013078-2	102	87

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl	50-150
Sur2 = n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: KI013103
Date Extracted: 11/22/2010
Date Analyzed: 12/04/2010

Lab Control Spike/Duplicate Lab Control Spike Summary
Diesel and Residual Range Organics

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1013078

Analyte Name	Lab Control Sample KWG1013078-1 Lab Control Spike			Duplicate Lab Control Sample KWG1013078-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Diesel Range Organics (DRO)	1600	1600	100	1800	1600	113	46-140	12	30
Residual Range Organics (RRO)	713	800	89	787	800	98	45-159	10	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Extracted: 11/22/2010
Date Analyzed: 12/04/2010
Time Analyzed: 01:26

Method Blank Summary
Diesel and Residual Range Organics

Sample Name:	Method Blank	File ID:	J:\GC21\DATA\120310F\1203F022.D
Lab Code:	KWG1013078-3	Instrument ID:	GC21
Extraction Method:	EPA 3510C	Level:	Low
Analysis Method:	NWTPH-Dx	Extraction Lot:	KWG1013078

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1013078-1	J\GC21\DATA\120310F\1203F018.D	12/04/10	00:38
Duplicate Lab Control Sample	KWG1013078-2	J\GC21\DATA\120310F\1203F020.D	12/04/10	01:00
SW01-0004	K1013103-004	J\GC21\DATA\120310F\1203F024.D	12/04/10	01:48
SW01-0002	K1013103-002	J\GC21\DATA\120310F\1203F026.D	12/04/10	02:10
SW01-0001	K1013103-001	J\GC21\DATA\120310F\1203F028.D	12/04/10	02:33
SW01-0003	K1013103-003	J\GC21\DATA\120310F\1203F030.D	12/04/10	02:55

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Extracted: 11/22/2010
Date Analyzed: 12/04/2010
Time Analyzed: 00:38

Lab Control Sample Summary
Diesel and Residual Range Organics

Sample Name: Lab Control Sample
Lab Code: KWG1013078-1
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

File ID: J:\GC21\DATA\120310F\1203F018.D
Instrument ID: GC21
Level: Low
Extraction Lot: KWG1013078

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1013078-3	J\GC21\DATA\120310F\1203F022.D	12/04/10	01:26
SW01-0004	K1013103-004	J\GC21\DATA\120310F\1203F024.D	12/04/10	01:48
SW01-0002	K1013103-002	J\GC21\DATA\120310F\1203F026.D	12/04/10	02:10
SW01-0001	K1013103-001	J\GC21\DATA\120310F\1203F028.D	12/04/10	02:33
SW01-0003	K1013103-003	J\GC21\DATA\120310F\1203F030.D	12/04/10	02:55

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle Marine Sciences Lab
 Project: Non-dry Dock SW 2010

Service Request: K1013103
 Calibration Date: 11/02/2010

Initial Calibration Summary
 Diesel and Residual Range Organics

Calibration ID: CAL10004
 Instrument ID: GC21

Column: ZB-1 15m

Level ID	File ID
A	JAGC21\DATA\110110F\1101F108.D
B	JAGC21\DATA\110110F\1101F110.D
C	JAGC21\DATA\110110F\1101F112.D
D	JAGC21\DATA\110110F\1101F114.D
E	JAGC21\DATA\110110F\1101F116.D
F	JAGC21\DATA\110110F\1101F118.D
G	JAGC21\DATA\110110F\1101F128.D
H	JAGC21\DATA\110110F\1101F130.D

Level ID	File ID
I	JAGC21\DATA\110110F\1101F132.D
J	JAGC21\DATA\110110F\1101F134.D
K	JAGC21\DATA\110110F\1101F136.D
L	JAGC21\DATA\110110F\1101F138.D
M	JAGC21\DATA\110110F\1101F140.D
N	JAGC21\DATA\110110F\1101F142.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Diesel Range Organics (DRO)				G	20	895	H	50	1000	I	200	1070	J	500	1090
	K	2000	988	L	5000	1030	M	20000	956	N	50000	989			
Residual Range Organics (RRO)				B	50	717	C	200	608	D	500	607	E	2000	593
	F	5000	665												
o-Terphenyl				G	1.0	1360	H	2.5	1320	I	10	1450	J	25	1370
	K	100	1330	L	250	1280									
n-Triacontane				G	1.0	1270	H	2.5	1170	I	10	1230	J	25	1170
	K	100	1140	L	250	1110									

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010

Service Request: K1013103
Calibration Date: 11/02/2010

Initial Calibration Summary
Diesel and Residual Range Organics

Calibration ID: CAL10004
Instrument ID: GC21

Column: ZB-1 15m

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Diesel Range Organics (DRO)	MS	AverageRF	% RSD	6.2		≤ 20
Residual Range Organics (RRO)	MS	AverageRF	% RSD	8.2		≤ 20
o-Terphenyl	SURR	AverageRF	% RSD	4.3		≤ 20
n-Triacontane	SURR	AverageRF	% RSD	5.0		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010

Service Request: K1013103
Calibration Date: 11/02/2010
Date Analyzed: 11/02/2010

Second Source Calibration Verification
Diesel and Residual Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration ID: CAL10004
Units: ppm

File ID: J:\GC2\DATA\110110F\1101F124.D
J:\GC2\DATA\110110F\1101F160.D

Column ID: ZB-1 15m

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	950	1000	951	-5	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	980	638	628	-2	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010

Service Request: K1013103
Date Analyzed: 12/03/2010

Continuing Calibration Verification Summary
Diesel and Residual Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 11/02/2010
Calibration ID: CAL10004
Analysis Lot: KWG1013305
Units: ppm
Column ID: ZB-1 15m

File ID: J:\GC21\DATA\120310F\1203F010.D
J:\GC21\DATA\120310F\1203F012.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	1000	1040	3	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	950	638	609	-5	NA	± 15 %	AverageRF
o-Terphenyl	50	49	1350	1310	-3	NA	± 15 %	AverageRF
n-Triacontane	50	45	1180	1050	-11	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103

Surrogate Recovery Summary
Diesel and Residual Range Organics

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
SW01-0001	K1013103-001	107	97
SW01-0002	K1013103-002	87	80
SW01-0003	K1013103-003	102	95
SW01-0004	K1013103-004	19 *	16 *
Method Blank	KWG1013078-3	80	73
Lab Control Sample	KWG1013078-1	88	80
Duplicate Lab Control Sample	KWG1013078-2	102	87

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl	50-150
Sur2 = n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Extracted: 11/22/2010
Date Analyzed: 12/04/2010

Lab Control Spike/Duplicate Lab Control Spike Summary
Diesel and Residual Range Organics

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1013078

Analyte Name	Lab Control Sample KWG1013078-1 Lab Control Spike			Duplicate Lab Control Sample KWG1013078-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Diesel Range Organics (DRO)	1600	1600	100	1800	1600	113	46-140	12	30
Residual Range Organics (RRO)	713	800	89	787	800	98	45-159	10	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Extracted: 11/22/2010
Date Analyzed: 12/04/2010
Time Analyzed: 01:26

Method Blank Summary
Diesel and Residual Range Organics

Sample Name: Method Blank
Lab Code: KWG1013078-3
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

File ID: J:\GC21\DATA\120310F\1203F022.D
Instrument ID: GC21
Level: Low
Extraction Lot: KWG1013078

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1013078-1	JAGC21\DATA\120310F\1203F018.D	12/04/10	00:38
Duplicate Lab Control Sample	KWG1013078-2	JAGC21\DATA\120310F\1203F020.D	12/04/10	01:00
SW01-0004	K1013103-004	JAGC21\DATA\120310F\1203F024.D	12/04/10	01:48
SW01-0002	K1013103-002	JAGC21\DATA\120310F\1203F026.D	12/04/10	02:10
SW01-0001	K1013103-001	JAGC21\DATA\120310F\1203F028.D	12/04/10	02:33
SW01-0003	K1013103-003	JAGC21\DATA\120310F\1203F030.D	12/04/10	02:55

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010
Sample Matrix: Water

Service Request: K1013103
Date Extracted: 11/22/2010
Date Analyzed: 12/04/2010
Time Analyzed: 00:38

Lab Control Sample Summary
Diesel and Residual Range Organics

Sample Name: Lab Control Sample
Lab Code: KWG1013078-1
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

File ID: J:\GC21\DATA\120310F\1203F018.D
Instrument ID: GC21
Level: Low
Extraction Lot: KWG1013078

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1013078-3	J:\GC21\DATA\120310F\1203F022.D	12/04/10	01:26
SW01-0004	K1013103-004	J:\GC21\DATA\120310F\1203F024.D	12/04/10	01:48
SW01-0002	K1013103-002	J:\GC21\DATA\120310F\1203F026.D	12/04/10	02:10
SW01-0001	K1013103-001	J:\GC21\DATA\120310F\1203F028.D	12/04/10	02:33
SW01-0003	K1013103-003	J:\GC21\DATA\120310F\1203F030.D	12/04/10	02:55

Analytical Chemistry Data Package

Project: Non-Dry Dock Stormwater Events
SW02 November 29-30, 2010
SW03 December 11-12, 2010
Chemical Analyses

Battelle Project No. 54220
CF No. 3174



Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, WA 98382
PM: Jill Brandenberger
(360) 681-4564

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Analytical raw data available upon request

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Analytical raw data available upon request

BATTELLE MARINE SCIENCE LABORATORIES

1529 West Sequim Bay Road
Sequim, Washington 98382-9099
360/681-4564

**Non-Dry Dock Stormwater
ENVVEST 2010_SW02 and SW03**

Metals in Water

UNITS: µg/L

Sample ID -	Station	Code	Fraction	Type Name	Collection						
Metals			(Total/Diss)		MSL Code	Date	Turbidity	Hg	As	Ag	Al
					Units						
<i>Instrument:</i>					(NTU)	<i>CVAF</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	
Laboratory Achieved Detection Limits (Freshwater)					--	0.0001	0.03	0.002	0.3	0.004	
Freshwater Reporting Limit (MDL* 3.18)					--	0.0003	0.1	0.006	1.0	0.01	

SW02

SW02-0009	PSNS096	TME	Composite_equal_time	3174-17	11/30/10	20.2	0.00878	1.80	0.0255	445	0.770
SW02-0010	PSNS096	DME	Composite_equal_time	3174-18	11/30/10	NA	0.00146	1.33	0.002 U	22.1	0.476
SW02-0011	PSNS082.5	TME	Composite_equal_time	3174-19	11/30/10	33.4	0.00642	0.821	0.0287	912	0.830
SW02-0012	PSNS082.5	DME	Composite_equal_time	3174-20	11/30/10	NA	0.00164	0.597	0.002 U	37.1	0.286
SW02-0013	PSNS081.1	TME	Composite_equal_time	3174-21	11/30/10	38.2	0.0265	1.85	0.0714	775	0.370
SW02-0014	PSNS081.1	DME	Composite_equal_time	3174-22	11/30/10	NA	0.00255	1.38	0.0135	36.2	0.143
SW02-0015	PSNS126	TME	Composite_equal_time	3174-23	11/30/10	5.8	0.00436	2.59	0.0368	124	0.154
SW02-0016	PSNS126	DME	Composite_equal_time	3174-24	11/30/10	NA	0.00216	2.49	0.0143	15.1	0.113

SW03

SW03-0011	PSNS126	TME	Composite_equal_time	3174-25	12/12/10	3.12	0.00435	1.80	0.0304	91.7	0.139
SW03-0012	PSNS126	DME	Composite_equal_time	3174-26	12/12/10	NA	0.00166	1.64	0.00979	10.7	0.0712
SW03-0013	PSNS126DUP	TME	Composite_equal_time	3174-27	12/12/10	3.70	0.00339	1.72	0.0300	90.9	0.125
SW03-0014	PSNS126DUP	DME	Composite_equal_time	3174-28	12/12/10	NA	0.00147	1.62	0.0102	8.20	0.073
SW03-0015	PSNS096	TME	Composite_equal_time	3174-29	12/12/10	14.6	0.0133	1.38	0.0250	312	0.274
SW03-0016	PSNS096	DME	Composite_equal_time	3174-30	12/12/10	NA	0.00187	0.730	0.002 U	7.06	0.0845
SW03-0017	PSNS082.5	TME	Composite_equal_time	3174-31	12/12/10	13.1	0.00370	0.383	0.0120	255	0.596
SW03-0018	PSNS082.5	DME	Composite_equal_time	3174-32	12/12/10	NA	0.00198	0.292	0.002 U	24.5	0.277
SW03-0019	PSNS081.1	TME	Composite_equal_time	3174-33	12/12/10	22.0	0.0138	1.00	0.0399	354	0.266
SW03-0020	PSNS081.1	DME	Composite_equal_time	3174-34	12/12/10	NA	0.00216	0.679	0.00624	12.2	0.109

BATTELLE MARINE SCIENCE LABORATORIES

1529 West Sequim Bay Road
Sequim, Washington 98382-9099
360/681-4564

**Non-Dry Dock Stormwater
ENVVEST 2010_SW02 and SW03**

Metals in Water

UNITS: µg/L

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Type Name	MSL Code	Cr	Cu	Pb	Zn	CVAF Batch ID	ICP-MS Batch ID
Instrument:					ICP-MS	ICP-MS	ICP-MS	ICP-MS		
Laboratory Achieved Detection Limits (Freshwater)					0.08	0.007	0.002	0.05		
Freshwater Reporting Limit (MDL* 3.18)					0.3	0.02	0.006	0.2		

SW02

SW02-0009	PSNS096	TME	Composite_equal_time	3174-17	11.3	23.1	9.44	102	122110HGA	121110-6100
SW02-0010	PSNS096	DME	Composite_equal_time	3174-18	5.19	5.02	0.308	53.1	122110HGA	121110-6100
SW02-0011	PSNS082.5	TME	Composite_equal_time	3174-19	4.11	24.0	4.60	119	122110HGA	121110-6100
SW02-0012	PSNS082.5	DME	Composite_equal_time	3174-20	1.42	7.05	0.170	53.0	122110HGA	121110-6100
SW02-0013	PSNS081.1	TME	Composite_equal_time	3174-21	7.32	42.7	15.1	174	122110HGA	121110-6100
SW02-0014	PSNS081.1	DME	Composite_equal_time	3174-22	1.44	14.8	0.347	92.1	122110HGA	121110-6100
SW02-0015	PSNS126	TME	Composite_equal_time	3174-23	1.83	9.81	2.60	53.5	122110HGA	121110-6100
SW02-0016	PSNS126	DME	Composite_equal_time	3174-24	1.33	6.67	0.254	41.5	122110HGA	121110-6100

SW03

SW03-0011	PSNS126	TME	Composite_equal_time	3174-25	1.32	7.64	3.90	48.8	122110HGA	122010-6100
SW03-0012	PSNS126	DME	Composite_equal_time	3174-26	0.744	3.35	0.159	34.7	122110HGA	122010-6100
SW03-0013	PSNS126DUP	TME	Composite_equal_time	3174-27	1.12	7.00	3.20	46.5	122110HGA	122010-6100
SW03-0014	PSNS126DUP	DME	Composite_equal_time	3174-28	0.672	3.34	0.166	34.7	122110HGA	122010-6100
SW03-0015	PSNS096	TME	Composite_equal_time	3174-29	64.7	29.5	12.2	104	122110HGA	122010-6100
SW03-0016	PSNS096	DME	Composite_equal_time	3174-30	2.77	3.05	0.179	49.0	122110HGA	122010-6100
SW03-0017	PSNS082.5	TME	Composite_equal_time	3174-31	2.31	16.4	2.74	80.2	122110HGA	122010-6100
SW03-0018	PSNS082.5	DME	Composite_equal_time	3174-32	1.35	6.44	0.149	49.7	122110HGA	122010-6100
SW03-0019	PSNS081.1	TME	Composite_equal_time	3174-33	5.99	30.6	11.3	124	122110HGA	122010-6100
SW03-0020	PSNS081.1	DME	Composite_equal_time	3174-34	1.90	7.23	0.198	71.6	122110HGA	122010-6100

BATTELLE MARINE SCIENCE LABORATORIES

1529 West Sequim Bay Road
Sequim, Washington 98382-9099
360/681-4564

**Non-Dry Dock Stormwater
ENVVEST 2010_SW02 and SW03
STE#2 and STE#3**

Station Code	Type Name	Collection Date	Analysis Date	Analysis Method	Component	Units	Result	Detection Limit	Reporting Limit
SW02									
PSNS096	Composite_equal_time	11/30/2010	12/09/2010	SM 2340 C	Hardness, Total as CaCO3	mg/L	37.8 =	0.8	2.0
PSNS082.5	Composite_equal_time	11/30/2010	12/09/2010	SM 2340 C	Hardness, Total as CaCO3	mg/L	18.9 =	0.8	2.0
PSNS081.1	Composite_equal_time	11/30/2010	12/09/2010	SM 2340 C	Hardness, Total as CaCO3	mg/L	16.8 =	0.8	2.0
PSNS126	Composite_equal_time	11/30/2010	12/09/2010	SM 2340 C	Hardness, Total as CaCO3	mg/L	30.2 =	0.8	2.0
PSNS096	Composite_equal_time	11/30/2010	12/06/2010	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	26.5 =	5.0	5.0
PSNS082.5	Composite_equal_time	11/30/2010	12/06/2010	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	16.5 =	5.0	5.0
PSNS081.1	Composite_equal_time	11/30/2010	12/06/2010	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	48.5 =	5.0	5.0
PSNS126	Composite_equal_time	11/30/2010	12/06/2010	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	5.0 =	5.0	5.0
PSNS096	Composite_equal_time	11/30/2010	12/09/2010	SM 5310 C	Carbon, Total Organic	mg/L	1.45 =	0.07	0.50
PSNS082.5	Composite_equal_time	11/30/2010	12/09/2010	SM 5310 C	Carbon, Total Organic	mg/L	1.70 =	0.07	0.50
PSNS081.1	Composite_equal_time	11/30/2010	12/09/2010	SM 5310 C	Carbon, Total Organic	mg/L	4.20 =	0.07	0.50
PSNS126	Composite_equal_time	11/30/2010	12/09/2010	SM 5310 C	Carbon, Total Organic	mg/L	2.56 =	0.07	0.50
PSNS096	Composite_equal_time	11/30/2010	12/11/2010	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	2.08 =	0.07	0.50
PSNS082.5	Composite_equal_time	11/30/2010	12/11/2010	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	2.25 =	0.07	0.50
PSNS081.1	Composite_equal_time	11/30/2010	12/11/2010	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	5.15 =	0.07	0.50
PSNS126	Composite_equal_time	11/30/2010	12/11/2010	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	2.71 =	0.07	0.50
PSNS096	Grab	11/30/2010	12/11/2010	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	100 =, J	11	130
PSNS096	Grab	11/30/2010	12/11/2010	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	320 =, O	19	250
PSNS082.5	Grab	11/30/2010	12/11/2010	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	82 =, J	11	120
PSNS082.5	Grab	11/30/2010	12/11/2010	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	280 =, O	19	240
PSNS081.1	Grab	11/30/2010	12/11/2010	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	260 =, H	11	130
PSNS081.1	Grab	11/30/2010	12/11/2010	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	840 =, O	19	250
PSNS126	Grab	11/30/2010	12/11/2010	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	62 =, J	11	130
PSNS126	Grab	11/30/2010	12/11/2010	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	210 =, J	19	250
EB	Grab	12/01/2010	12/11/2010	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	11 =, J	11	130
EB	Grab	12/01/2010	12/11/2010	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	ND ND	19	250

BATTELLE MARINE SCIENCE LABORATORIES

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**Non-Dry Dock Stormwater
ENVVEST 2010_SW02 and SW03
STE#2 and STE#3**

Station Code	Type Name	Collection Date	Analysis Date	Analysis Method	Component	Units	Result	Detection Limit	Reporting Limit
SW03									
PSNS126	Composite_equal_time	12/12/2010	12/16/2010	SM 2340 C	Hardness, Total as CaCO3	mg/L	12.6 =	0.8	2.0
PSNS126DUP	Composite_equal_time	12/12/2010	12/16/2010	SM 2340 C	Hardness, Total as CaCO3	mg/L	14.7 =	0.8	2.0
PSNS096	Composite_equal_time	12/12/2010	12/16/2010	SM 2340 C	Hardness, Total as CaCO3	mg/L	21.0 =	0.8	2.0
PSNS082.5	Composite_equal_time	12/12/2010	12/16/2010	SM 2340 C	Hardness, Total as CaCO3	mg/L	11.8 =	0.8	2.0
PSNS081.1	Composite_equal_time	12/12/2010	12/16/2010	SM 2340 C	Hardness, Total as CaCO3	mg/L	12.1 =	0.8	2.0
PSNS126	Composite_equal_time	12/12/2010	12/15/2010	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	9.5 =	5.0	5.0
PSNS126DUP	Composite_equal_time	12/12/2010	12/15/2010	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	9.5 =	5.0	5.0
PSNS096	Composite_equal_time	12/12/2010	12/15/2010	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	34.5 =	5.0	5.0
PSNS082.5	Composite_equal_time	12/12/2010	12/15/2010	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	13.0 =	5.0	5.0
PSNS081.1	Composite_equal_time	12/12/2010	12/15/2010	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	41.5 =	5.0	5.0
PSNS126	Composite_equal_time	12/12/2010	12/23/2010	SM 5310 C	Carbon, Total Organic	mg/L	1.38 =	0.07	0.50
PSNS126DUP	Composite_equal_time	12/12/2010	12/23/2010	SM 5310 C	Carbon, Total Organic	mg/L	1.56 =	0.07	0.50
PSNS096	Composite_equal_time	12/12/2010	12/23/2010	SM 5310 C	Carbon, Total Organic	mg/L	1.26 =	0.07	0.50
PSNS082.5	Composite_equal_time	12/12/2010	12/23/2010	SM 5310 C	Carbon, Total Organic	mg/L	1.40 =	0.07	0.50
PSNS081.1	Composite_equal_time	12/12/2010	12/23/2010	SM 5310 C	Carbon, Total Organic	mg/L	2.46 =	0.07	0.50
PSNS126	Composite_equal_time	12/12/2010	12/23/2010	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	1.92 =	0.07	0.50
PSNS126DUP	Composite_equal_time	12/12/2010	12/23/2010	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	1.90 =	0.07	0.50
PSNS096	Composite_equal_time	12/12/2010	12/23/2010	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	1.43 =	0.07	0.50
PSNS082.5	Composite_equal_time	12/12/2010	12/23/2010	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	2.09 =	0.07	0.50
PSNS081.1	Composite_equal_time	12/12/2010	12/23/2010	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	3.11 =	0.07	0.50
PSNS126	Grab	12/12/2010	12/21/2010	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	38 =, J	11	250
PSNS126	Grab	12/12/2010	12/21/2010	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	67 =, J	19	500
PSNS126DUP	Grab	12/12/2010	12/21/2010	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	41 =, J	11	250
PSNS126DUP	Grab	12/12/2010	12/21/2010	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	79 =, J	19	500
PSNS096	Grab	12/12/2010	12/22/2010	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	81 =, J	11	240
PSNS096	Grab	12/12/2010	12/22/2010	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	170 =, J	19	480
PSNS082.5	Grab	12/12/2010	12/21/2010	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	72 =, J	12	270
PSNS082.5	Grab	12/12/2010	12/21/2010	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	170 =, J	21	540
PSNS081.1	Grab	12/12/2010	12/21/2010	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	79 =, J	11	250
PSNS081.1	Grab	12/12/2010	12/21/2010	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	180 =, J	19	500

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Sample Type	MSL Code	As	Ag	Al	Cd	Cr	Cu	Pb	Zn	ICP-MS Batch ID
Instrument:					ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	
Laboratory Achieved Detection Limits (Freshwater)					0.03	0.002	0.3	0.004	0.08	0.007	0.002	0.05	
Freshwater Reporting Limit (MDL* 3.18)					0.1	0.006	1.0	0.01	0.3	0.02	0.006	0.2	
METHOD BLANKS													
MB-1		TME	Freshwater	TRMBlank121110	0.03 U	0.002 U	0.3 U	0.004 U	0.08 U	0.007 U	0.002 U	0.05 U	121110-6100
MB-2		TME	Freshwater	TRMBlank122010	0.03 U	0.002 U	0.3 U	0.004 U	0.08 U	0.007 U	0.002 U	0.0574 J	122010-6100
LABORATORY CONTROL SAMPLES													
Spiking Level					2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
MB-1		TME	Freshwater	TRMBlank121110	0.03 U	0.002 U	0.3 U	0.004 U	0.08 U	0.007 U	0.002 U	0.05 U	121110-6100
LCS (1)		TME	Freshwater	TRM LCS121110	2.03	1.95	1.96	2.00	2.22	2.01	2.03	1.99	121110-6100
Percent Recovery, LCS					102%	98%	98%	100%	111%	101%	102%	100%	
Spiking Level					1.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0	
MB-2		TME	Freshwater	TRMBlank122010	0.03 U	0.002 U	0.3 U	0.004 U	0.08 U	0.007 U	0.002 U	0.0574 J	122010-6100
LCS (2)		TME	Freshwater	TRM LCS122010	0.948	0.941	2.26	0.984	0.990	0.987	1.02	1.08	122010-6100
Percent Recovery, LCS					95%	94%	113%	98%	99%	99%	102%	102%	
MATRIX SPIKE RESULTS													
SW02-0010	PSNS096	DME	Composite_equal_time	3174-18	1.33	0.002 U	22.1	0.476	5.19	5.02	0.308	53.1	121110-6100
MS1	PSNS096	DME	Composite_equal_time	3174-18MS	12.2	9.34	32.1	10.5	15.2	14.8	10.9	62.9	121110-6100
MSD1	PSNS096	DME	Composite_equal_time	3174-18MSD	12.2	9.43	31.1	10.6	15.3	14.7	10.8	62.6	121110-6100
Spiking Level					10	10	10	10	10	10	10	10	
Percent Recovery, MS					109%	93%	100%	100%	100%	98%	106%	98%	
Percent Recovery, MSD					109%	94%	90%	101%	101%	97%	105%	95%	
RPD					0.0%	1.0%	10.5%	1.0%	1.0%	1.0%	0.9%	3.1%	
SW03-0012	PSNS126	DME	Composite_equal_time	3174-26	1.64	0.00979	10.7	0.0712	0.744	3.35	0.159	34.7	122010-6100
MS1	PSNS126	DME	Composite_equal_time	3174-26MS	3.6	1.85	60.5	2.0	2.6	5.3	2.3	84.2	122010-6100
MSD1	PSNS126	DME	Composite_equal_time	3174-26MSD	3.6	1.85	60.0	2.0	2.7	5.4	2.2	82.7	122010-6100
Spiking Level					2.0	2.0	50	2.0	2.0	2.0	2.0	50	
Percent Recovery, MS					100%	92%	100%	96%	93%	99%	105%	99%	
Percent Recovery, MSD					97%	92%	99%	97%	96%	103%	104%	96%	
RPD					2.5%	0.0%	1.0%	1.0%	2.6%	4.0%	0.5%	3.1%	
REPLICATE PRECISION													
SW02-0011	PSNS082.5	TME	Composite_equal_time	3174-19	0.821	0.0287	912	0.830	4.11	24.0	4.60	119	121110-6100
DUP1	PSNS082.5	TME	Composite_equal_time	3174-19r2	0.823	0.0301	835	0.865	4.09	24.1	4.82	120	121110-6100
Mean					0.822	0.0294	874	0.848	4.10	24.1	4.71	120	
RPD					0.2%	4.8%	8.8%	4.1%	0.5%	0.4%	4.7%	0.8%	

BATTELLE MARINE SCIENCE LABORATORIES
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Non-Dry Dock Stormwater
ENVVEST 2010_SW02 and SW03
Metals in Water
UNITS: µg/L

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Sample Type	MSL Code	As	Ag	Al	Cd	Cr	Cu	Pb	Zn	ICP-MS Batch ID
<i>Instrument:</i>					<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	
<u>REPLICATE PRECISION (cont)</u>													
SW03-0011	PSNS126	TME	Composite_equal_time	3174-25	1.80	0.0304	91.7	0.139	1.32	7.64	3.90	48.8	122010-6100
DUP2	PSNS126	TME	Composite_equal_time	3174-25r2	1.75	0.0265	91.0	0.147	1.26	7.76	3.90	48.5	122010-6100
<i>Mean</i>					<i>1.78</i>	<i>0.0285</i>	<i>91.4</i>	<i>0.143</i>	<i>1.29</i>	<i>7.70</i>	<i>3.90</i>	<i>48.7</i>	
RPD					2.8%	13.7%	0.8%	5.6%	4.7%	1.6%	0.0%	0.6%	
<u>STANDARD REFERENCE MATERIAL, Seawater</u>													
SRM 1640 (1)		TME	Freshwater	TRM1640121110	26.7	7.18	51.7	22.9	40.6	86.9	28.6	55.3	121110-6100
Certified Value					26.7	7.62	52.0	22.8	38.6	85.2	27.9	53.2	
PD					0.1%	5.8%	0.6%	0.5%	5.2%	2.0%	2.5%	3.9%	
SRM 1640a (1)		TME	Freshwater	TRM1640122010	7.8	7.50	56.7	4.0	39.0	87.4	12.3	58.1	122010-6100
Certified Value					8.08	8.08	53.0	3.99	40.5	85.8	12.1	55.6	
PD					3.9%	7.2%	7.0%	0.1%	3.8%	1.9%	1.6%	4.4%	

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Sample Type	MSL Code	Hg	CVAF Batch ID
<i>Instrument:</i>					<i>CVAF</i>	
Laboratory Achieved Detection Limits					0.0001	
Reporting Limit (MDL* 3.18)					0.0003	

METHOD BLANKS

MB-1		TME	Freshwater	MB1_122110	0.0001 U	122110HGA
MB-2		TME	Freshwater	MB2_122110	0.0001 U	122110HGA
MB-3		TME	Freshwater	MB3_122110	0.0001 U	122110HGA

LABORATORY CONTROL SAMPLES

Spiking Level					0.00496	
LCS (1)		TME	Freshwater	OPR 121710 run1	0.00487	122110HGA
LCS (2)		TME	Freshwater	OPR 121710 run2	0.00499	122110HGA
LCS Blank (1)		TME	Freshwater	Blank 121710	0.000107 J	122110HGA
Percent Recovery, LCS 1					96%	
Percent Recovery, LCS 2					98%	

MATRIX SPIKE RESULTS

SW02-0010	PSNS096	DME	Composite_equal_time	3174-18	0.00146	122110HGA
MS1	PSNS096	DME	Composite_equal_time	3174-18MS	0.0163	122110HGA
MSD1	PSNS096	DME	Composite_equal_time	3174-18MSD	0.0162	122110HGA
Spiking Level, MS					0.0149	
Spiking Level, MSD					0.0148	
Percent Recovery, MS					100%	
Percent Recovery, MSD					100%	
RPD					0.2%	
SW03-0013	PSNS126DUP	TME	Composite_equal_time	3174-27	0.00339	122110HGA
MS1	PSNS126DUP	TME	Composite_equal_time	3174-27MS	0.0415	122110HGA
MSD1	PSNS126DUP	TME	Composite_equal_time	3174-27MSD	0.0422	122110HGA
Spiking Level, MS					0.0370	
Spiking Level, MSD					0.0383	
Percent Recovery, MS					103%	
Percent Recovery, MSD					101%	
RPD					1.8%	

REPLICATE PRECISION

SW02-0011	PSNS082.5	TME	Composite_equal_time	3174-19	0.00642	122110HGA
DUP	PSNS082.5	TME	Composite_equal_time	3174-19r2	0.00633	122110HGA
Mean					0.00637	
RPD					1%	

STANDARD REFERENCE MATERIAL

SRM 1641 (1)		TME	Freshwater	1641d 121710	1696	122110HGA
Certified Value					1590	
range					±18	
SRM 1641 (1)					PD	
					7%	

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**Non-Dry Dock Stormwater
ENVVEST 2010_SW02 and SW03
Metals in Water**

DATA QUALIFIERS:

- c Exceeds DQO but meets contingency criteria of either:
 - 1 SRM certified <10x MDL
 - 2 Insufficient spiking level relative to native sample concentrations
 - 3 Sample concentration <10x MDL
- U Analyte not detected at or above the MDL, MDL reported
- J Analyte detected above the MDL, but less than the RL
- N Spiked sample recovery outside QC criterion of 70-130%
- & Accuracy result outside QC criterion of $\leq 20\%$ PD
- * Precision result outside QC criterion of <30%
- NS Sample not spiked for this analyte
- B Analyte detected in the method blank > RL
 - and sample concentration < 10 times detected blank value
- b Data are blank corrected using the batch specific procedural blank
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- ND Not detected

Notes:

Composite_equal_time Equal portion composite of time integrated sample (ISCO samples)

NC Not Certified

-- Not analyzed

NA Not applicable/available

TME Total Metals Fraction

DME Dissolved Metals Fraction

2 Sample specific MDLs and RLs reported

QA/QC NARRATIVE

PROJECT: Non-Dry Dock Stormwater Sampling for SW02 and SW03

PARAMETER: Total and Dissolved Metals – Al, Ag, As, Cd, Cr, Cu, Pb, Zn, Hg

LABORATORY: Battelle Marine Sciences Laboratory (MSL), Sequim, Washington

MATRIX: Stormwater (as a freshwater matrix)

**SAMPLE
CUSTODY AND
PROCESSING:**

Samples were collected from stormwater outfalls located within the Confined Industrial Area (CIA) of the Puget Sound Naval Shipyard and Intermediate Maintenance Facility (PSNS & IMF) by TEC, MSL, and the U.S. Navy. The samples reported in this delivery group were from two independent storm events (SW02 and SW03). The storm event identified as STE#2 or SW02 began on November 29, 2010 with the composite ending 24 hours later. The storm event identified as STE#3 or SW03 began on December 11, 2010 with the composite ending 24 hours later. Two types of samples were collected during each storm event. The first was a time proportionate composite sample collected using an ISCO sampler at each of the four outfall locations. The second was a grab sample collected during the storm event in an amber glass jar provided by Columbia Analytical Services (CAS) for total petroleum hydrocarbons (TPH). For SW02, one composite sample and one grab sample were collected from each of the four outfalls (PSNS81.1, 82.5, and 126) plus one grab equipment blank. For SW03, one composite sample and one grab sample were collected from each of the four outfalls (PSNS81.1, 82.5, and 126) plus one field duplicate. The grab samples were stored at 4°C until delivery to MSL. The individual time interval composites collected in the 24 wedge bottles located inside the ISCO sampler were carried back to the stormwater lab at PSNS&IMF and composited into a single event mean composite (EMC) in a pre-cleaned glass jar (see Project Field Sampling and Quality Assurance Plan). The glass composite jars and glass grab samples for TPH were then hand delivered the day of collection to MSL.

Upon receipt at MSL, the condition of all the samples were verified as acceptable and tracked back to the field chain of custody (COC). In the clean laboratory at MSL, each glass composite sample jar was shaken vigorously (prior and between aliquot removal) and aliquots were poured into the following types of containers:

1. 500 mL Teflon bottle for total metals (TME),
2. 500 mL 0.45µm polyvinylidene fluoride (PVDF) filter unit, vacuum filtered in a class 100 clean bench and then poured into a 500 mL Teflon bottle for dissolved metals (DME),
3. 250 mL low-density polyethylene (LDPE) bottle provided by CAS that included a nitric acid preservative for samples to be analyzed for hardness (HRD),
4. 500 mL LDPE container with sulfuric acid preservative provided by CAS for the analysis of total organic carbon (TOC),
5. 60 mL syringe and 0.45 µm syringe filter both rinsed with deionized water. An aliquot of the sample was filtered into a 250 mL LDPE container with sulfuric acid preservative provided by CAS for the analysis of dissolved organic carbon (DOC),
6. 500 mL or 1L LDPE bottle provided by CAS for the analysis of total suspended solids (TSS), and
7. Glass vial for the analysis of turbidity as each sample was aliquoted.

The total metal fractions and dissolved metal fractions were each acidified inside a Class 100 clean bench to a pH of < 2.0 with double distilled nitric acid. The samples were then assigned a Battelle Central File (CF) identification number (3174) and were entered into Battelle's sample tracking system.

The TPH grab samples and composite aliquots for TOC, DOC, hardness, and TSS were all forwarded to CAS for analysis. The quality control narrative for these parameters was

QA/QC NARRATIVE

provided separately.

The following lists information on sample receipt and processing activities:

Sample Receipt Dates:	12/01/10 and 12/12/10
Cooler temp. on arrival	All coolers were at 4.0±2°C
Collection dates	12/01/10 and 12/12/10
CVAF analysis dates (Hg)	12/21/10
TRM Prep/Freshwater Analysis by ICP-MS (As, Ag, Al, Cd, Cr, Cu, Pb, Zn)	12/11/10 and 12/20/10

QA/QC DATA QUALITY OBJECTIVES:

Analyte	Analytical Method for Seawater	MS Range of Recovery	SRM Percent Difference	Replicate Precision	Method Detection Limits (µg/L)	Reporting Limits (µg/L)
Aluminum	ICP-MS	70-130%	≤20%	≤30%	0.3	1.0
Arsenic	ICP-MS	70-130%	≤20%	≤30%	0.03	0.1
Cadmium	ICP-MS	70-130%	≤20%	≤30%	0.004	0.01
Chromium	ICP-MS	70-130%	≤20%	≤30%	0.08	0.3
Copper	ICP-MS	70-130%	≤20%	≤30%	0.007	0.02
Lead	ICP-MS	70-130%	≤20%	≤30%	0.002	0.006
Silver	ICP-MS	70-130%	≤20%	≤30%	0.002	0.006
Zinc	ICP-MS	70-130%	≤20%	≤30%	0.05	0.2
Mercury	CVAF	70-130%	≤20%	≤30%	0.0001	0.0003

METHODS:

Samples were analyzed for nine metals: aluminum (Al), arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), silver (Ag), zinc (Zn), and mercury (Hg). Samples were submitted for analyses following two methods. All samples were analyzed for Hg by Cold Vapor Atomic Fluorescence (CVAF) in accordance with Battelle SOP *MSL-I-013, Total Mercury in Aqueous Samples by CVAF*, following EPA Method 1631 revision E.

All samples were analyzed for other metals by Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) in accordance with Battelle SOP *MSL-I-022, Determination of Elements in Aqueous and Digestate Samples by ICP/MS*. The base methods for this procedure are EPA Method 1638 and EPA Method 1640. All samples were digested following the total metal recoverable (TRM) method established in EPA Method 1640 prior to analysis by ICP-MS. In summary, this preparation brings the pH of the sample to 2% and heats the capped samples for 2.5 hours in a 85°C oven to solubilize particulates. Both the filtered and unfiltered fractions were prepared using this method to destroy any colloidal particles remaining in the filtered (aka. Dissolved) fraction.

All results were reported in units of µg/L. Data are not blank corrected.

QA/QC NARRATIVE

HOLDING TIMES:	All samples were analyzed within the established holding times of 90 days for Hg and six months for all other metals.
DETECTION LIMITS:	<p>Laboratory method detection limits (MDLs) for TRM freshwater were reported from the Annual MDL Study as determined by seven replicates of deionized water spiked at appropriate concentrations and prepared using the TRM method. Reporting limits are determined as 3.18 times the laboratory achieved MDL. The data are evaluated and flagged as follows:</p> <ul style="list-style-type: none">U Analyte not detected at or above the MDL, MDL reportedJ Analyte detected above the MDL, but less than the RLN Spiked sample recovery outside QC criterion of 70-130%& Accuracy result outside QC criterion of $\leq 20\%$ PD* Precision result outside QC criterion of $< 30\%$B Analyte detected in the method blank $>$ RL and sample concentration $<$ 10 times detected blank valuec Exceeds data quality objective but meets contingency criterionb Result is reagent blank corrected using the batch specific blank (BMRB)
METHOD BLANKS:	A minimum of one method blank was prepared and analyzed by each instrument with each analytical batch. The method blanks were all less than the RL.
LABORATORY CONTROL SAMPLES:	A minimum of one LCS (OPR or blank spike) was prepared and analyzed with each analytical batch of 20 or fewer samples. Percent recoveries for LCS samples were within the QC acceptance criterion of 70% to 130% for all metals. They also met a secondary criterion of $\pm 15\%$ recovery.
MATRIX SPIKE ACCURACY:	A minimum of one set of duplicate matrix spikes (MS/MSD) was prepared and analyzed with each analytical batch of 20 or fewer samples. Percent recoveries for matrix spikes were within the QC limits of 70% to 130% for all metals.
REPLICATE PRECISION:	Laboratory precision was expressed as the relative percent difference (RPD) between laboratory duplicates. The RPD values for the laboratory duplicates were within the QC acceptance criterion of $\pm 30\%$ for all metals detected above the RL.
STANDARD REFERENCE MATERIAL ACCURACY:	Standard reference materials (SRM) were prepared and analyzed with each analytical batch at a minimum frequency of 1 per 20 or fewer samples. Analytical accuracy was expressed as the percent difference (PD) between the measured and the certified value. The freshwater SRMs were 1641d for Hg and 1640 for all other metals. The differences were within the QC acceptance criterion of $\leq 20\%$.

Date: 11/30/10

Page: 1 of 1

Project No.: N4523A10MP00034 Amend.1

Project: PSNSNon-dry Dock SW 2010

Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Non-Dry Dock Stormwater Events SW02 & SW03 Chemistry Data Package

SAMPLE CHAIN OF CUSTODY FORM

Date: 12/01/10

Page: _____ of _____

SW = Stormwater

Project No.: 54220

Project: Non-dry Dock SW 2010 SW02

Battelle

Marine Sciences Laboratory
1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH	Turbidity				No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW02-0009	PSNS096	11/30/10 1927	SW					x							1	comp	SW02	3174*17
SW02-0010	PSNS096	11/30/10 1927	SW						x						1	comp	SW02	3174*18
SW02-0011	PSNS082.5	11/30/10 1834	SW					x							1	comp	SW02	3174*19
SW02-0012	PSNS082.5	11/30/10 1834	SW						x						1	comp	SW02	3174*20
SW02-0013	PSNS081.1	11/30/10 1931	SW					x							1	comp	SW02	3174*21
SW02-0014	PSNS081.1	11/30/10 1931	SW						x						1	comp	SW02	3174*22
SW02-0015	PSNS126	11/30/10 2124	SW					x							1	comp	SW02	3174*23
SW02-0016	PSNS126	11/30/10 2124	SW						x						1	comp	SW02	3174*24
Relinquished by:				Received by: <i>[Signature]</i> 12/1/10 1432											Total # of Containers			
Signature _____ Date _____ Time _____				Signature <i>Jill Brandenberger</i>											Shipment Method:			
Printed Name _____ Company _____				Printed Name _____											Sample Disposition:			
Relinquished by:				Received by:											Distribution:			
Signature _____ Date _____ Time _____				Signature _____											1) PNNL			
Printed Name _____ Company _____				Printed Name _____											2) CAS			
															3) TAI			

I-4-C

SAMPLE CHAIN OF CUSTODY FORM

Date: 12/01/10

Page: 1 of 2

Project No.: 54220

Project: Non-dry Dock SW 2010 SW02

SW = Stormwater

Analyze parameters per QAP/FSP

Battelle

Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH	Turbidity				No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW02-0001	PSNS096	11/30/10 0535	SW							x					1	grab	SW02	
SW02-0002	PSNS082.5	11/30/10 0730	SW							x					1	grab	SW02	
SW02-0003	PSNS081.1	11/30/10 0750	SW							x					1	grab	SW02	
SW02-0004	PSNS126	11/30/10 0807	SW							x					1	grab	SW02	
SW0005	EB	12/01/10 1220	SW							x					1	grab	SW02	
SW02-0017	PSNS096	11/30/10 0535	SW	x											1	comp	SW02	
SW02-0018	PSNS096	11/30/10 0535	SW		x										1	comp	SW02	
SW02-0019	PSNS096	11/30/10 0535	SW			x									1	comp	SW02	
SW02-0020	PSNS096	11/30/10 0535	SW				x								1	comp	SW02	
SW02-0021	PSNS082.5	11/30/10 0730	SW	x											1	comp	SW02	
SW02-0022	PSNS082.5	11/30/10 0730	SW		x										1	comp	SW02	
SW02-0023	PSNS082.5	11/30/10 0730	SW			x									1	comp	SW02	
SW02-0024	PSNS082.5	11/30/10 0730	SW				x								1	comp	SW02	
SW02-0025	PSNS081.1	11/30/10 0750	SW	x											1	comp	SW02	

Relinquished by:	Received by:	Total # of Containers
<i>Jm Brandenberger</i> 12/2/10 Fcdex		
Signature Date Time	Signature	Shipment Method:
Jm Brandenberger PNNL		shipped to CAS
Printed Name Company	Printed Name	Sample Disposition:
Relinquished by:	Received by:	Distribution:
Signature Date Time	Signature	1) PNNL
Printed Name Company	Printed Name	2) CAS
		3) TAI

Date: 12/01/10

Project No.: 54220

Project:	Non-dry Dock SW 2010 SW02
----------	---------------------------

SW = Stormwater

Analyze parameters per QAP/FSP

Marine Sciences Laboratory
1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

[illegible]

SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 12/1/2010

Batch: 4

Login Designee: Brandenberger

Project: **Non-Dry Dock SW (Storm Water)**



*Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382
PH: (360) 681-4565*

Sponsor ID	Site Description	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SW02-0009	PSNS096	3174-17	WAT	I-4-C	TOTAL Metals	11/30/10
SW02-0010	PSNS096	3174-18	WAT	I-4-C	DISSOLVED Metals	11/30/10
SW02-0011	PSNS082.5	3174-19	WAT	I-4-C	TOTAL Metals	11/30/10
SW02-0012	PSNS082.5	3174-20	WAT	I-4-C	DISSOLVED Metals	11/30/10
SW02-0013	PSNS081.1	3174-21	WAT	I-4-C	TOTAL Metals	11/30/10
SW02-0014	PSNS081.1	3174-22	WAT	I-4-C	DISSOLVED Metals	11/30/10
SW02-0015	PSNS126	3174-23	WAT	I-4-C	TOTAL Metals	11/30/10
SW02-0016	PSNS126	3174-24	WAT	I-4-C	DISSOLVED Metals	11/30/10

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 3174 Sample No(s): 17-24 Batch: _____
Project Name: Non Dry dock SW SW02 Project Manager: Jm

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: Water WP# _____

Yes No

☐ ☒ Navy-type Project (requires high-level sample tracking procedures)☐ ☒ USDA Samples (see Compliance Agreement Checklist)

PM Verification:

Filter Samples: ☒ ☐ Amount: Entire sample Half of sample☐ ☒ Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Login Lab)☒ ☐ Special instructions: split samples

Sample Preservation Instructions:

See LIMS for archive/disposal information

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes No N/A Indicate in Appropriate Box

☐ ☐ ☒ Custody seal present Seal intact? YES NO☒ ☐ ☐ Cooler temperature (acceptable range: $4 \pm 2^\circ\text{C}$ or solids: frozen) #1 = 4.8, #2 = 3.8 °C #5 = 2.8
(if multiple coolers, note temp. of each) #3 = 4.1, #4 = 4.8 °C☐ ☐ ☒ Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)
Comment/Remedy: _____☒ ☐ ☐ Were all chain of custody forms signed and dated?☒ ☐ ☐ Were samples filtered at MSL?

Sample condition(s):

Acceptable Other (explain): _____

Container type:

Teflon Poly Glass Cap. Vial Other: _____

Notes: _____

Completed By: JmDate/Time: 12/1/10 1432

SAMPLE PRESERVATION

☐ Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)☐ Random pH checked for ~10% of samples (use dip paper) Sample IDs: _____☐ Complete pH check required for project (use pH meter and record on pH Record form)☒ Sample(s) were preserved at MSLType: ☒ 0.2% HNO₃ Notes: Optima Lot#: _____☐ 0.5% HCl (Hg samples) Notes: _____ Lot#: _____☐ Refrigerate/Freeze Notes: _____☐ Other Notes: _____Completed By: JmDate/Time: 12/1/10 1630Storage Shelf: I-4-C

101013444

SAMPLE CHAIN OF CUSTODY FORM

Date: 12/01/10

Page: 1 of 2

SW = Stormwater

Project No.: 54220

Project: Non-dry Dock SW 2010 SW02

Battelle

Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH	Turbidity				No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW02-0001	PSNS096	11/30/10 0535	SW							x					1	grab	SW02	
SW02-0002	PSNS082.5	11/30/10 0730	SW							x					1	grab	SW02	
SW02-0003	PSNS081.1	11/30/10 0750	SW							x					1	grab	SW02	
SW02-0004	PSNS126	11/30/10 0807	SW							x					1	grab	SW02	
SW0005	EB	12/01/10 1220	SW							x					1	grab	SW02	
SW02-0017	PSNS096	11/30/10 0535	SW	x											1	comp	SW02	
SW02-0018	PSNS096	11/30/10 0535	SW		x										1	comp	SW02	
SW02-0019	PSNS096	11/30/10 0535	SW			x									1	comp	SW02	
SW02-0020	PSNS096	11/30/10 0535	SW				x								1	comp	SW02	
SW02-0021	PSNS082.5	11/30/10 0730	SW	x											1	comp	SW02	
SW02-0022	PSNS082.5	11/30/10 0730	SW		x										1	comp	SW02	
SW02-0023	PSNS082.5	11/30/10 0730	SW			x									1	comp	SW02	
SW02-0024	PSNS082.5	11/30/10 0730	SW				x								1	comp	SW02	
SW02-0025	PSNS081.1	11/30/10 0750	SW	x											1	comp	SW02	

Relinquished by:

Jm Brandenberger 12/2/10 Fcdex
 Signature Date Time
Jm Brandenberger PNNL
 Printed Name Company

Received by:

SHOPKINS 12/3/10 0930
 Signature
SHOPKINS
 Printed Name

Total # of Containers

Shipment Method:

shipped to CAS

Sample Disposition:

Distribution:

- 1) PNNL
- 2) CAS
- 3) TAI

Relinquished by:

Signature Date Time
 Printed Name Company

Received by:

Signature
 Printed Name

K1013444

SAMPLE CHAIN OF CUSTODY FORM

Date: 12/01/10

Page: 2 of 2

SW = Stormwater

Project No.: 54220

Project: Non-dry Dock SW 2010 SW02

Battelle

Marine Sciences Laboratory
1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH	Turbidity					No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW02-0026	PSNS081.1	11/30/10 0750	SW		x											1	comp	SW02	
SW02-0027	PSNS081.1	11/30/10 0750	SW			x										1	comp	SW02	
SW02-0028	PSNS081.1	11/30/10 0750	SW				x									1	comp	SW02	
SW02-0029	PSNS126	11/30/10 0807	SW	x												1	comp	SW02	
SW02-0030	PSNS126	11/30/10 0807	SW		x											1	comp	SW02	
SW02-0031	PSNS126	11/30/10 0807	SW			x										1	comp	SW02	
SW02-0032	PSNS126	11/30/10 0807	SW				x									1	comp	SW02	

Relinquished by:

Jm Brandenberger 12/1/10 Fedex
Signature Date Time
Jm Brandenberger PNNL
Printed Name Company

Received by:

SHOOPKINS 12/3/10 0930
Signature
SHOOPKINS 0930
Printed Name

Total # of Containers

Shipment Method:

shipped to CAS

Sample Disposition:

Distribution:

- 1) PNNL
- 2) CAS
- 3) TAI

Relinquished by:

Signature Date Time

Printed Name Company

Received by:

Signature

Printed Name

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC HH

Client / Project: Battelle Service Request K10 13444
 Received: 12/3/10 Opened: 12/3/10 By: [Signature]

1. Samples were received via? Mail Fed Ex UPS DHL PDX Courier Hand Delivered
 2. Samples were received in: (circle) Cooler Box Envelope Other NA
 3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID	NA	Tracking Number	NA	Filed
4.1		265			7941 7427 2220		

7. Packing material used. Inserts Baggies Bubble Wrap Gel Packs Wet Ice Sleeves Other _____
 8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
 9. Did all bottles arrive in good condition (unbroken)? Indicate in the table below. NA Y N
 10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
 11. Did all sample labels and tags agree with custody papers? Indicate major discrepancies in the table on page 2. NA Y N
 12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
 13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? Indicate in the table below NA Y N
 14. Were VOA vials received without headspace? Indicate in the table below. NA Y N
 15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

Date: 12-12-2010

Page: 1 of 1

Project No.: N4523A10MP00034 Amend.1

Project: PSNSNon-dry Dock SW 2010

Marine Sciences Laboratory
1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Non-Dry Dock Stormwater Events SW02 & SW03 Chemistry Data Package

SAMPLE CHAIN OF CUSTODY FORM

Date: _____ of _____
 Page: _____ of _____
 Project No.: N4523A10MP00034 Amend.1
 Project: PSNSNon-dry Dock SW 2010

Battelle

Marine Sciences Laboratory
 1529 West Sequim Bay Road
 Laboratory: Battelle MSL
 Attention: Jill Brandenberger
 Phone: (360) 681-4564

Sample Label	Station ID	Collection Date/Time	Matrix	Analyze parameters per QAP/FSP										No. containers	Sample Type (Grab vs. Comp)	Storm#	Notes
				Hardness	TOC	DOC	TSS	TME/DME	TPH	Turbidity							
SW03-001#1	PSNS126	12/12/10 1430	SW											2	grab	SW03	1 of 2
-001#2	PSNS126	1430	SW											2			2 of 2
-002#1	PSNS082.5	96 1450	SW											2			1 of 2 bottle mislabeled
-002#2	PSNS082.5	96 1450	SW											"			2 of 2 bottle mislabeled
-003#1	PSNS081.1	1540	SW											2			1 of 2
-003#2	PSNS081.1	1540	SW														2 of 2
-004#1	PSNS082.5	1607												2			1 of 2
-004#2	PSNS082.5	1607															2 of 2
-005#1	↓ DUP	1614	↓											2			1 of 2 field dup
-005#2	↓ DUP	164	↓														2 of 2 field dup
Relinquished by: <u>RK Johnston</u> <u>12/12/2010</u> <u>1730</u> Signature Date Time <u>RK Johnston</u> <u>USN SSCPAC</u> Printed Name Company				Received by: <u>Jm Brandenberger</u> <u>12/12/10</u> Signature <u>Jm Brandenberger</u> <u>1840</u> Printed Name										Total # of Containers: Shipment Method:			
Relinquished by: _____ Signature Date Time Printed Name Company				Received by: _____ Signature Printed Name										Sample Disposition: Distribution: 1) PNNL 2) CAS 3) TAI			

SAMPLE CHAIN OF CUSTODY FORM

Date: 12/12/10

Page: 1 of 2

SW = Stormwater

Project No.: 54220

Project: Non-dry Dock SW 2010 SW03

Battelle

Marine Sciences Laboratory
1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH	Turbidity				No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW03-001	PSNS126	12/12/10 1430	SW							x					2	grab	SW03	
SW03-002	PSNS096	12/12/10 1450	SW							x					2	grab	SW03	
SW03-003	PSNS081.1	12/12/10 1540	SW							x					2	grab	SW03	
SW03-004	PSNS082.5	12/12/10 1607	SW							x					2	grab	SW03	
SW03-005	PSNS082.5DUP	12/12/10 1614	SW							x					2	grab	SW03	Field DUP
SW03-0021	PSNS126	12/12/10 1245	SW	x											1	comp	SW03	
SW03-0022	PSNS126	12/12/10 1245	SW		x										1	comp	SW03	
SW03-0023	PSNS126	12/12/10 1245	SW			x									1	comp	SW03	
SW03-0024	PSNS126	12/12/10 1245	SW				x								1	comp	SW03	
SW03-0025	PSNS126DUP	12/12/10 1245	SW	x											1	comp	SW03	Field DUP
SW03-0026	PSNS126DUP	12/12/10 1245	SW		x										1	comp	SW03	Field DUP
SW03-0027	PSNS126DUP	12/12/10 1245	SW			x									1	comp	SW03	Field DUP
SW03-0028	PSNS126DUP	12/12/10 1245	SW				x								1	comp	SW03	Field DUP
SW03-0029	PSNS096	12/12/10 1245	SW	x											1	comp	SW03	

Relinquished by:

Jill Brandenberger 12/13/10 1200
Signature Date Time
Jill Brandenberger PNNL
Printed Name Company

Received by:

Signature

Printed Name

Total # of Containers

Shipment Method:

FEDEX

Relinquished by:

Signature Date Time

Printed Name Company

Received by:

Signature

Printed Name

Sample Disposition:

Distribution:

- 1) PNNL
- 2) CAS
- 3) TAI

Date: 12/12/10

Project No.: 54220

Project: Non-dry Dock SW 2010 SW03

SW = Stormwater

Analyze parameters per QAP/FSP

Marine Sciences Laboratory
1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Relinquished by: Jim Hansen 12/13/10 1200
Signature Date Time
Jim Hansen PNWL
Printed Name Company

Signature _____

Printed Name

Shipment Method:

Fedex

[Sample Disposition:

Relinquished by:

Signature

Date _____

Time

Printed Name

Company

Received by:

Signature

Printed Name

Distribution:

- 1) PNNL
- 2) CAS
- 3) TAI

SAMPLE CHAIN OF CUSTODY FORM

Date: 12/12/10

Page: _____ of _____

Project No.: 54220

Project: Non-dry Dock SW 2010 SW03

SW = Stormwater

Analyze parameters per QAP/FSP

Battelle

Marine Sciences Laboratory
1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH	Turbidity				No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW03-0011	PSNS126	12/12/10 1245	SW				x								1	comp	SW03	3174*25
SW03-0012	PSNS126	12/12/10 1245	SW					x							1	comp	SW03	3174*26
SW03-0013	PSNS126DUP	12/12/10 1245	SW				x								1	comp	SW03	3174*27
SW03-0014	PSNS126DUP	12/12/10 1245	SW					x							1	comp	SW03	3174*28
SW03-0015	PSNS096	12/12/10 1245	SW				x								1	comp	SW03	3174*29
SW03-0016	PSNS096	12/12/10 1245	SW					x							1	comp	SW03	3174*30
SW03-0017	PSNS082.5	12/12/10 1245	SW				x								1	comp	SW03	3174*31
SW03-0018	PSNS082.5	12/12/10 1245	SW					x							1	comp	SW03	3174*32
SW03-0019	PSNS081.1	12/12/10 1245	SW				x								1	comp	SW03	3174*33
SW03-0020	PSNS081.1	12/12/10 1245	SW					x							1	comp	SW03	3174*34

Relinquished by:	Received by:	Total # of Containers
<i>J Brandenberger</i> 12/12/10 2350	<i>NA generated at</i>	Shipment Method:
Signature Date Time	Signature	
J Brandenberger PNNL	MSL	
Printed Name Company	Printed Name	Sample Disposition:
Relinquished by:	Received by:	Distribution:
Signature Date Time	Signature	1) PNNL
Printed Name Company	Printed Name	2) CAS
		3) TAI

SAMPLE LOGIN

Project Manager: Brandenberger
Date Received: 12/12/2010
Batch: 5
Login Designee: McGahan/Brandenberger

Project: **Non-Dry Dock SW (Storm Water)**



Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382
PH: (360) 681-4565

Sponsor ID	Site Description	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SW03-0011	PSNS126	3174-25	sea water	Prep Lab	TME	12/12/10
SW03-0012	PSNS126	3174-26	sea water	Prep Lab	DME	12/12/10
SW03-0013	PSNS126DUP	3174-27	sea water	Prep Lab	TME	12/12/10
SW03-0014	PSNS126DUP	3174-28	sea water	Prep Lab	DME	12/12/10
SW03-0015	PSNS096	3174-29	sea water	Prep Lab	TME	12/12/10
SW03-0016	PSNS096	3174-30	sea water	Prep Lab	DME	12/12/10
SW03-0017	PSNS082.5	3174-31	sea water	Prep Lab	TME	12/12/10
SW03-0018	PSNS082.5	3174-32	sea water	Prep Lab	DME	12/12/10
SW03-0019	PSNS081.1	3174-33	sea water	Prep Lab	TME	12/12/10
SW03-0020	PSNS081.1	3174-34	sea water	Prep Lab	DME	12/12/10

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 3174 Sample No(s): 25-34 Batch: _____
 Project Name: Non Dry Dock SW - SW03 Project Manager: JMB

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: water WP# _____

Yes ☐ No ☒ Navy-type Project (requires high-level sample tracking procedures)

Yes ☐ No ☒ USDA Samples (see Compliance Agreement Checklist) PM Verification: _____

☒ ☐ Filter Samples: Amount: _____ Entire sample _____ Half of sample _____

☐ ☒ Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Login Lab)

☒ ☐ Special instructions: split

Sample Preservation Instructions: varies

****See LIMS for archive/disposal information****

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes ☐ No ☐ N/A ☒ Indicate in Appropriate Box

☐ ☐ ☒ Custody seal present Seal intact? YES NO

☒ ☐ ☐ Cooler temperature (acceptable range: $4 \pm 2^\circ\text{C}$ or solids: frozen) #1/28 #3/18 #5/4.2
 (if multiple coolers, note temp. of each) #2/61 #4/20 $^\circ\text{C}$

☐ ☐ ☒ Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)
 Comment/Remedy: _____

☒ ☐ ☐ Were all chain of custody forms signed and dated?

☒ ☐ ☐ Were samples filtered at MSL?

Sample condition(s): Acceptable Other (explain): _____

Container type: Teflon Poly Glass Cap. Vial Other: _____

Notes: _____

Completed By: JMB Date/Time: 12/12/10 2430

SAMPLE PRESERVATION

☐ Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)

☐ Random pH checked for ~10% of samples (use dip paper) Sample IDs: _____

☐ Complete pH check required for project (use pH meter and record on pH Record form)

☒ Sample(s) were preserved at MSL

Type: ☒ 0.2% HNO₃ Notes: Optima HNO₃ Lot# 1206090

☐ 0.5% HCl (Hg samples) Notes: _____ Lot# _____

☐ Refrigerate/Freeze Notes: _____

☐ Other Notes: _____

Completed By: JMB Date/Time: 12/13/10 0130
 Storage Shelf: L-1-A

SAMPLE CHAIN OF CUSTODY FORM

Date: 12/12/10

Page: _____ of 2

Project No.: 54220

Project: Non-dry Dock SW 2010 SW03

SW = Stormwater

Battelle

Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH	Turbidity				No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW03-001	PSNS126	12/12/10 1430	SW							x					2	grab	SW03	
SW03-002	PSNS096	12/12/10 1450	SW							x					2	grab	SW03	
SW03-003	PSNS081.1	12/12/10 1540	SW							x					2	grab	SW03	
SW03-004	PSNS082.5	12/12/10 1607	SW							x					2	grab	SW03	
SW03-005	PSNS082.5DUP	12/12/10 1614	SW							x					2	grab	SW03	Field DUP
SW03-0021	PSNS126	12/12/10 1245	SW	x											1	comp	SW03	
SW03-0022	PSNS126	12/12/10 1245	SW		x										1	comp	SW03	
SW03-0023	PSNS126	12/12/10 1245	SW			x									1	comp	SW03	
SW03-0024	PSNS126	12/12/10 1245	SW				x								1	comp	SW03	
SW03-0025	PSNS126DUP	12/12/10 1245	SW	x											1	comp	SW03	Field DUP
SW03-0026	PSNS126DUP	12/12/10 1245	SW		x										1	comp	SW03	Field DUP
SW03-0027	PSNS126DUP	12/12/10 1245	SW			x									1	comp	SW03	Field DUP
SW03-0028	PSNS126DUP	12/12/10 1245	SW				x								1	comp	SW03	Field DUP
SW03-0029	PSNS096	12/12/10 1245	SW	x											1	comp	SW03	

Relinquished by:

[Signature] 12/13/10 1200
 Signature Date Time
Jill Brandenberger PNNL
 Printed Name Company

Received by:

[Signature] 12/14/10 1000
 Signature Date Time
SHORIKAS
 Printed Name

Total # of Containers

Shipment Method:

FedEx

Relinquished by:

 Signature Date Time

 Printed Name Company

Received by:

 Signature

 Printed Name

Distribution:

- 1) PNNL
- 2) CAS
- 3) TAI

K1013816

SAMPLE CHAIN OF CUSTODY FORM

Date: 12/12/10

Page: 2 of 2

Project No.: 54220

Project: Non-dry Dock SW 2010 SW03

SW = Stormwater

Battelle

Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH	Turbidity				No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW03-0030	PSNS096	12/12/10 1245	SW		x										1	comp	SW03	
SW03-0031	PSNS096	12/12/10 1245	SW			x									1	comp	SW03	
SW03-0032	PSNS096	12/12/10 1245	SW				x								1	comp	SW03	
SW03-0033	PSNS082.5	12/12/10 1245	SW	x											1	comp	SW03	
SW03-0034	PSNS082.5	12/12/10 1245	SW		x										1	comp	SW03	
SW03-0035	PSNS082.5	12/12/10 1245	SW			x									1	comp	SW03	
SW03-0036	PSNS082.5	12/12/10 1245	SW				x								1	comp	SW03	
SW03-0037	PSNS081.1	12/12/10 1245	SW	x											1	comp	SW03	
SW03-0038	PSNS081.1	12/12/10 1245	SW		x										1	comp	SW03	
SW03-0039	PSNS081.1	12/12/10 1245	SW			x									1	comp	SW03	
SW03-0040	PSNS081.1	12/12/10 1245	SW				x								1	comp	SW03	

Relinquished by:

Jim Brandenberger 12/13/10 1200
 Signature Date Time
Jim Brandenberger PNNL
 Printed Name Company

Received by:

Shirley 12/14/10
 Signature
SHIRKINS 1000
 Printed Name

Total # of Containers

Shipment Method:

Fedex

Relinquished by:

 Signature Date Time

 Printed Name Company

Received by:

 Signature

 Printed Name

Sample Disposition:

Distribution:

- 1) PNNL
- 2) CAS
- 3) TAI

**Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form**

PC HH

Client / Project: Bottle Service Request K10 13816
 Received: 12/14/10 Opened: 12/14/10 By: SAW

1. Samples were received via? Mail FedEx UPS DHL PDX Courier Hand Delivered
 2. Samples were received in: (circle) Cooler Box Envelope Other _____ NA
 3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID	NA	Tracking Number	NA	Filed
-0.3	2.9	287			7942 1364 1120		
-0.5		296			11 1244		

7. Packing material used. Inserts Baggies Bubble Wrap Gel Packs Wet Ice Sleeves Other _____
 8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
 9. Did all bottles arrive in good condition (unbroken)? Indicate in the table below. NA Y N
 10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
 11. Did all sample labels and tags agree with custody papers? Indicate major discrepancies in the table on page 2. NA Y N
 12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
 13. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below. NA Y N
 14. Were VOA vials received without headspace? Indicate in the table below. NA Y N
 15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:
<u>SW03-004</u>	<u>SW03-005</u>	<u>process of elimination</u>

Sample ID	Bottle Count Bottle Type	Out of Temp	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02
Sample Matrix: Water

Service Request No.: K1013444
Date Received: 12/3/10

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Twenty one water samples were received for analysis at Columbia Analytical Services on 12/3/10. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Diesel Range Organics by EPA Method 8015B

No anomalies associated with the analysis of these samples were observed.

Approved by



Date

12-27-10

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value that was detected outside the quantitation range.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: 11/30/10
Date Received: 12/ 3/10

Analysis Method: SM 2340 C

Units: mg/L
Basis: NA

Hardness, Total as CaCO3

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW02-0017	K1013444-006	37.8		2.0	0.8	1	NA	12/9/10 13:50	
SW02-0021	K1013444-010	18.9		2.0	0.8	1	NA	12/9/10 13:50	
SW02-0025	K1013444-014	16.8		2.0	0.8	1	NA	12/9/10 13:50	
SW02-0029	K1013444-018	30.2		2.0	0.8	1	NA	12/9/10 13:50	
Method Blank	K1013444-MB1	0.8	J	2.0	0.8	1	NA	12/9/10 13:50	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: 11/30/10
Date Received: 12/3/10
Date Analyzed: 12/ 9/10

**Replicate Sample Summary
General Chemistry Parameters**

Sample Name: SW02-0017
Lab Code: K1013444-006

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	SW02-0017DUP Duplicate Sample K1013444-006DUP1		RPD	RPD Limit
					Result	Average		
Hardness, Total as CaCO3	SM 2340 C	2.0	0.8	37.8	39.1	38.5	3	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 12/21/10 13:44

Form 3B

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SuperSet Reference: 10-0000163660 rev 00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Analyzed: 12/ 9/10

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L

Basis: NA

Lab Control Sample K1013444-LCS1					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Hardness, Total as CaCO3	SM 2340 C	46.6	43.4	107	90 - 116

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: 11/30/10
Date Received: 12/ 3/10

Analysis Method: SM 2540 D

Units: mg/L
Basis: NA

Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW02-0020	K1013444-009	26.5		5.0	5.0	1	NA	12/6/10 08:00	
SW02-0024	K1013444-013	16.5		5.0	5.0	1	NA	12/6/10 08:00	
SW02-0028	K1013444-017	48.5		5.0	5.0	1	NA	12/6/10 08:00	
SW02-0032	K1013444-021	5.0		5.0	5.0	1	NA	12/6/10 08:00	
Method Blank	K1013444-MB1	ND	U	5.0	5.0	1	NA	12/6/10 08:00	
Method Blank	K1013444-MB2	ND	U	5.0	5.0	1	NA	12/6/10 08:00	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: NA
Date Received: NA
Date Analyzed: 12/ 6/10

Replicate Sample Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: K1013418-013

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	Batch QCDUP Duplicate Sample K1013418-013DUP6		RPD	RPD Limit
					Result	Average		
Solids, Total Suspended (TSS)	SM 2540 D	5.0	5.0	28.0	30.0	29.0	7	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: NA
Date Received: NA
Date Analyzed: 12/ 6/10

**Replicate Sample Summary
 General Chemistry Parameters**

Sample Name: Batch QC
Lab Code: K1013445-002

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	Batch QCDUP Duplicate Sample K1013445-002DUP10			RPD	RPD Limit
					Result	Average			
Solids, Total Suspended (TSS)	SM 2540 D	5.0	5.0	ND U	ND U	NC		NC	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: NA
Date Received: NA
Date Analyzed: 12/ 6/10

Replicate Sample Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: K1013445-006

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	Batch QCDUP Duplicate Sample K1013445-006DUP11		RPD	RPD Limit
					Result	Average		
Solids, Total Suspended (TSS)	SM 2540 D	20	20	96	98	97.0	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Analyzed: 12/ 6/10

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Lab Control Sample K1013444-LCS1					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Solids, Total Suspended (TSS)	SM 2540 D	296	320	93	80 - 115

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 12/21/10 13:44

Form 3C

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SuperSet Reference: 10-0000163660 rev 00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Analyzed: 12/ 6/10

**Lab Control Sample Summary
 General Chemistry Parameters**

Units: mg/L
Basis: NA

Lab Control Sample K1013444-LCS2					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Solids, Total Suspended (TSS)	SM 2540 D	300	320	94	80 - 115

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: 11/30/10
Date Received: 12/ 3/10

Analysis Method: SM 5310 C

Units: mg/L

Basis: NA

Carbon, Dissolved Organic (DOC)

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW02-0019	K1013444-008	2.08		0.50	0.07	1	NA	12/11/10 17:51	
SW02-0023	K1013444-012	2.25		0.50	0.07	1	NA	12/11/10 17:51	
SW02-0027	K1013444-016	5.15		0.50	0.07	1	NA	12/11/10 17:51	
SW02-0031	K1013444-020	2.71		0.50	0.07	1	NA	12/11/10 17:51	
Method Blank	K1013444-MB1	ND	U	0.50	0.07	1	NA	12/11/10 17:51	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: 11/30/10
Date Received: 12/3/10
Date Analyzed: 12/11/10

Replicate Sample Summary
General Chemistry Parameters

Sample Name: SW02-0019
Lab Code: K1013444-008

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	SW02-0019DUP Duplicate Sample K1013444-008DUP2		RPD	RPD Limit
					Result	Average		
Carbon, Dissolved Organic (DOC)	SM 5310 C	0.50	0.07	2.08	2.14	2.11	3	33

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: NA
Date Received: NA
Date Analyzed: 12/11/10

Matrix Spike Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: K1013292-001

Units: mg/L
Basis: NA

Analytical Method: SM 5310 C

	Batch QCMS Matrix Spike K1013292-001MS1				
Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Dissolved Organic (DOC)	2.72	28.0	25.0	101	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Printed 12/23/10 13:37

Form 3A

\\nflow2\Starlims\LimsReps\MatrixSpike.rpt

SuperSet Reference: 10-0000163660 rev 00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: 11/30/10
Date Received: 12/3/10
Date Analyzed: 12/11/10

Matrix Spike Summary
General Chemistry Parameters

Sample Name: SW02-0019
Lab Code: K1013444-008

Units: mg/L
Basis: NA

Analytical Method: SM 5310 C

SW02-0019MS
Matrix Spike
K1013444-008MS6

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Dissolved Organic (DOC)	2.08	29.0	25.0	108	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Form 3A

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SuperSet Reference: 10-0000163660 rev 00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Analyzed: 12/11/10

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Lab Control Sample K1013444-LCS1					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Dissolved Organic (DOC)	SM 5310 C	24.1	24.7	98	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Form 3C

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SuperSet Reference: 10-0000163660 rev 00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220

Service Request: K1013444

Continuing Calibration Verification (CCV) Summary
Carbon, Dissolved Organic (DOC)

Analytical Method: SM 5310 C**Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	228793	KQ1013784-07	12/11/10 17:51	25.0	22.8	91	90 - 110
CCV2	228793	KQ1013784-08	12/11/10 17:51	25.0	24.0	96	90 - 110
CCV3	228793	KQ1013784-09	12/11/10 17:51	25.0	23.6	95	90 - 110
CCV4	228793	KQ1013784-10	12/11/10 17:51	25.0	25.0	100	90 - 110

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220

Service Request: K1013444

Continuing Calibration Blank (CCB) Summary
Carbon, Dissolved Organic (DOC)

Analytical Method: SM 5310 C**Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	Result	Q
CCB1	228793	KQ1013784-11	12/11/10 17:51	0.50	ND	U
CCB2	228793	KQ1013784-12	12/11/10 17:51	0.50	ND	U
CCB3	228793	KQ1013784-13	12/11/10 17:51	0.50	ND	U
CCB4	228793	KQ1013784-14	12/11/10 17:51	0.50	ND	U

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: 11/30/10
Date Received: 12/ 3/10

Analysis Method: SM 5310 C

Units: mg/L
Basis: NA

Carbon, Total Organic

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW02-0018	K1013444-007	1.45		0.50	0.07	1	NA	12/9/10 13:06	
SW02-0022	K1013444-011	1.70		0.50	0.07	1	NA	12/9/10 13:06	
SW02-0026	K1013444-015	4.20		0.50	0.07	1	NA	12/9/10 13:06	
SW02-0030	K1013444-019	2.56		0.50	0.07	1	NA	12/9/10 13:06	
Method Blank	K1013444-MB1	ND	U	0.50	0.07	1	NA	12/9/10 13:06	
Method Blank	K1013444-MB2	ND	U	0.50	0.07	1	NA	12/9/10 13:06	
Method Blank	K1013444-MB3	ND	U	0.50	0.07	1	NA	12/9/10 13:06	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: NA
Date Received: NA
Date Analyzed: 12/ 9/10

Replicate Sample Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: K1013418-001

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	Batch QCDUP Duplicate Sample K1013418-001DUP5		RPD	RPD Limit
					Result	Average		
Carbon, Total Organic	SM 5310 C	0.50	0.07	5.94	5.92	5.93	<1	33

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: NA
Date Received: NA
Date Analyzed: 12/ 9/10

Matrix Spike Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: K1013375-001

Units: mg/L
Basis: NA

Analytical Method: SM 5310 C

Batch QCMS
Matrix Spike
K1013375-001MS2

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	1.29	26.6	25.0	101	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Form 3A

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SuperSet Reference: 10-0000163660 rev 00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: NA
Date Received: NA
Date Analyzed: 12/ 9/10

**Matrix Spike Summary
 General Chemistry Parameters**

Sample Name: Batch QC
Lab Code: K1013413-005

Units: mg/L
Basis: NA

Analytical Method: SM 5310 C

Batch QCMS
Matrix Spike
 K1013413-005MS3

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	15.5	279	250	105	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: NA
Date Received: NA
Date Analyzed: 12/ 9/10

**Matrix Spike Summary
 General Chemistry Parameters**

Sample Name: Batch QC
Lab Code: K1013418-001

Units: mg/L
Basis: NA

Analytical Method: SM 5310 C

Batch QCMS					
Matrix Spike					
K1013418-001MS4					
Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	5.94	31.7	25.0	103	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: NA
Date Received: NA
Date Analyzed: 12/ 9/10

Matrix Spike Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: K1013440-002

Units: mg/L
Basis: NA

Analytical Method: SM 5310 C

Batch QCMS
Matrix Spike
K1013440-002MS5

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	4.90	30.3	25.0	102	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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SuperSet Reference: 10-0000163660 rev 00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: NA
Date Received: NA
Date Analyzed: 12/ 9/10

Matrix Spike Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: K1013514-001

Units: mg/L
Basis: NA

Analytical Method: SM 5310 C

Batch QCMS
Matrix Spike
K1013514-001MS7

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	ND	26.3	25.0	105	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Analyzed: 12/ 9/10

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L**Basis:** NA

Lab Control Sample K1013444-LCS1					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	SM 5310 C	23.1	24.7	94	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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SuperSet Reference: 10-0000163660 rev 00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Analyzed: 12/ 9/10

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Lab Control Sample K1013444-LCS2					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	SM 5310 C	25.2	24.7	102	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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SuperSet Reference: 10-0000163660 rev 00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Analyzed: 12/ 9/10

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L

Basis: NA

Lab Control Sample K1013444-LCS3					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	SM 5310 C	25.7	24.7	104	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220

Service Request: K1013444

Continuing Calibration Verification (CCV) Summary
Carbon, Total Organic

Analytical Method: SM 5310 C

Units: mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	228529	KQ1013585-22	12/9/10 13:06	25.0	23.9	96	90 - 110
CCV2	228529	KQ1013585-23	12/9/10 13:06	25.0	24.9	100	90 - 110
CCV3	228529	KQ1013585-24	12/9/10 13:06	25.0	23.7	95	90 - 110
CCV4	228529	KQ1013585-25	12/9/10 13:06	25.0	23.6	94	90 - 110
CCV5	228529	KQ1013585-26	12/9/10 13:06	25.0	24.5	98	90 - 110
CCV6	228529	KQ1013585-27	12/9/10 13:06	25.0	25.0	100	90 - 110
CCV7	228529	KQ1013585-28	12/9/10 13:06	25.0	25.0	100	90 - 110
CCV8	228529	KQ1013585-29	12/9/10 13:06	25.0	25.5	102	90 - 110

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220

Service Request: K1013444

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analytical Method: SM 5310 C**Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	Result Q
CCB1	228529	KQ1013585-30	12/9/10 13:06	0.50	ND U
CCB2	228529	KQ1013585-31	12/9/10 13:06	0.50	ND U
CCB3	228529	KQ1013585-32	12/9/10 13:06	0.50	ND U
CCB4	228529	KQ1013585-33	12/9/10 13:06	0.50	ND U
CCB5	228529	KQ1013585-34	12/9/10 13:06	0.50	ND U
CCB6	228529	KQ1013585-35	12/9/10 13:06	0.50	ND U
CCB7	228529	KQ1013585-36	12/9/10 13:06	0.50	ND U
CCB8	228529	KQ1013585-37	12/9/10 13:06	0.50	ND U

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220

Service Request: K1013444

Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics

Sample Name	Lab Code	Date Collected	Date Received
SW02-0001	K1013444-001	11/30/2010	12/03/2010
SW02-0002	K1013444-002	11/30/2010	12/03/2010
SW02-0003	K1013444-003	11/30/2010	12/03/2010
SW02-0004	K1013444-004	11/30/2010	12/03/2010
SW0005	K1013444-005	12/01/2010	12/03/2010

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____

Name: Shane M. [Signature]

Date: 12/2/10

Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: 11/30/2010
Date Received: 12/03/2010

Diesel and Residual Range Organics

Sample Name: SW02-0001
Lab Code: K1013444-001
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	100	J	130	11	1	12/06/10	12/11/10	KWG1013527	
Residual Range Organics (RRO)	320	O	250	19	1	12/06/10	12/11/10	KWG1013527	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	67	50-150	12/11/10	Acceptable
n-Triacontane	66	50-150	12/11/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: 11/30/2010
Date Received: 12/03/2010

Diesel and Residual Range Organics

Sample Name: SW02-0002
Lab Code: K1013444-002
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	82	J	120	11	1	12/06/10	12/11/10	KWG1013527	
Residual Range Organics (RRO)	280	O	240	19	1	12/06/10	12/11/10	KWG1013527	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	61	50-150	12/11/10	Acceptable
n-Triacontane	61	50-150	12/11/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: 11/30/2010
Date Received: 12/03/2010

Diesel and Residual Range Organics

Sample Name: SW02-0003
Lab Code: K1013444-003
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	260	H	130	11	1	12/06/10	12/11/10	KWG1013527	
Residual Range Organics (RRO)	840	O	250	19	1	12/06/10	12/11/10	KWG1013527	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	63	50-150	12/11/10	Acceptable
n-Triacontane	64	50-150	12/11/10	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: 11/30/2010
Date Received: 12/03/2010

Diesel and Residual Range Organics

Sample Name: SW02-0004
Lab Code: K1013444-004
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	62	J	130	11	1	12/06/10	12/11/10	KWG1013527	
Residual Range Organics (RRO)	210	J	250	19	1	12/06/10	12/11/10	KWG1013527	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	68	50-150	12/11/10	Acceptable
n-Triacontane	69	50-150	12/11/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: 12/01/2010
Date Received: 12/03/2010

Diesel and Residual Range Organics

Sample Name: SW0005
Lab Code: K1013444-005
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	11	J	130	11	1	12/06/10	12/11/10	KWG1013527	
Residual Range Organics (RRO)	ND	U	250	19	1	12/06/10	12/11/10	KWG1013527	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	66	50-150	12/11/10	Acceptable
n-Triacontane	65	50-150	12/11/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Collected: NA
Date Received: NA

Diesel and Residual Range Organics

Sample Name: Method Blank
Lab Code: KWG1013527-3
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	16	J	130	11	1	12/06/10	12/11/10	KWG1013527	
Residual Range Organics (RRO)	24	J	250	19	1	12/06/10	12/11/10	KWG1013527	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	75	50-150	12/11/10	Acceptable
n-Triacontane	74	50-150	12/11/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444

Surrogate Recovery Summary
Diesel and Residual Range Organics

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
SW02-0001	K1013444-001	67	66
SW02-0002	K1013444-002	61	61
SW02-0003	K1013444-003	63	64
SW02-0004	K1013444-004	68	69
SW0005	K1013444-005	66	65
Method Blank	KWG1013527-3	75	74
Lab Control Sample	KWG1013527-1	76	74
Duplicate Lab Control Sample	KWG1013527-2	70	64

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl	50-150
Sur2 = n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Extracted: 12/06/2010
Date Analyzed: 12/11/2010

Lab Control Spike/Duplicate Lab Control Spike Summary
Diesel and Residual Range Organics

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1013527

Analyte Name	Lab Control Sample KWG1013527-1 Lab Control Spike			Duplicate Lab Control Sample KWG1013527-2 Duplicate Lab Control Spike			%Rec Limits	RPD	RPD Limit
	Result	Expected	%Rec	Result	Expected	%Rec			
Diesel Range Organics (DRO)	1420	1600	89	1250	1600	78	46-140	13	30
Residual Range Organics (RRO)	689	800	86	680	800	85	45-159	1	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Extracted: 12/06/2010
Date Analyzed: 12/11/2010
Time Analyzed: 09:28

Method Blank Summary
Diesel and Residual Range Organics

Sample Name: Method Blank
Lab Code: KWG1013527-3
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

File ID: J:\GC21\DATA\121010F\1210F074.D
Instrument ID: GC21
Level: Low
Extraction Lot: KWG1013527

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1013527-1	J:\GC21\DATA\121010F\1210F070.D	12/11/10	08:43
Duplicate Lab Control Sample	KWG1013527-2	J:\GC21\DATA\121010F\1210F072.D	12/11/10	09:06
SW0005	K1013444-005	J:\GC21\DATA\121010F\1210F076.D	12/11/10	09:50
SW02-0002	K1013444-002	J:\GC21\DATA\121010F\1210F078.D	12/11/10	10:13
SW02-0004	K1013444-004	J:\GC21\DATA\121010F\1210F080.D	12/11/10	10:35
SW02-0001	K1013444-001	J:\GC21\DATA\121010F\1210F082.D	12/11/10	10:57
SW02-0003	K1013444-003	J:\GC21\DATA\121010F\1210F084.D	12/11/10	11:20

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock SW 2010 SW02/54220
Sample Matrix: Water

Service Request: K1013444
Date Extracted: 12/06/2010
Date Analyzed: 12/11/2010
Time Analyzed: 08:43

Lab Control Sample Summary
Diesel and Residual Range Organics

Sample Name: Lab Control Sample
Lab Code: KWG1013527-1
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

File ID: J:\GC21\DATA\121010F\1210F070.D
Instrument ID: GC21
Level: Low
Extraction Lot: KWG1013527

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1013527-3	J:\GC21\DATA\121010F\1210F074.D	12/11/10	09:28
SW0005	K1013444-005	J:\GC21\DATA\121010F\1210F076.D	12/11/10	09:50
SW02-0002	K1013444-002	J:\GC21\DATA\121010F\1210F078.D	12/11/10	10:13
SW02-0004	K1013444-004	J:\GC21\DATA\121010F\1210F080.D	12/11/10	10:35
SW02-0001	K1013444-001	J:\GC21\DATA\121010F\1210F082.D	12/11/10	10:57
SW02-0003	K1013444-003	J:\GC21\DATA\121010F\1210F084.D	12/11/10	11:20

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03
Sample Matrix: Water

Service Request No.: K1013816
Date Received: 12/14/10

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier III validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Twenty-five water samples were received for analysis at Columbia Analytical Services on 12/14/10. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

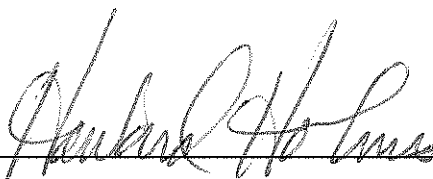
Diesel Range Organics by EPA Method 8015B

Relative Percent Difference Exceptions:

The Relative Percent Difference (RPD) criterion for the replicate analysis of DRO (Diesel Range Organics) and RRO (Residual Range Organics) in sample SW03-001 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Approved by



Date

1-3-11

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value that was detected outside the quantitation range.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Collected: 12/12/10
Date Received: 12/14/10

Analysis Method: SM 2340 C

Units: mg/L
Basis: NA

Hardness, Total as CaCO3

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW03-0021	K1013816-006	12.6		2.0	0.8	1	NA	12/16/10 08:30	
SW03-0025	K1013816-010	14.7		2.0	0.8	1	NA	12/16/10 08:30	
SW03-0029	K1013816-014	21.0		2.0	0.8	1	NA	12/16/10 08:30	
SW03-0033	K1013816-018	11.8		2.0	0.8	1	NA	12/16/10 08:30	
SW03-0037	K1013816-022	12.1		2.0	0.8	1	NA	12/16/10 08:30	
Method Blank	K1013816-MB	ND	U	2.0	0.8	1	NA	12/16/10 08:30	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Collected: 12/12/10
Date Received: 12/14/10
Date Analyzed: 12/16/10

Replicate Sample Summary
General Chemistry Parameters

Sample Name: SW03-0021
Lab Code: K1013816-006

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	SW03-0021DUP Duplicate Sample K1013816-006DUP1		RPD	RPD Limit
					Result	Average		
Hardness, Total as CaCO ₃	SM 2340 C	2.0	0.8	12.6	13.4	13.0	6	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Analyzed: 12/16/10

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Lab Control Sample K1013816-LCS					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Hardness, Total as CaCO3	SM 2340 C	46.2	43.4	106	90 - 116

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Collected: 12/12/10
Date Received: 12/14/10

Analysis Method: SM 2540 D

Units: mg/L
Basis: NA

Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW03-0024	K1013816-009	9.5		5.0	5.0	1	NA	12/15/10 09:00	
SW03-0028	K1013816-013	9.5		5.0	5.0	1	NA	12/15/10 09:00	
SW03-0032	K1013816-017	34.5		5.0	5.0	1	NA	12/15/10 09:00	
SW03-0036	K1013816-021	13.0		5.0	5.0	1	NA	12/15/10 09:00	
SW03-0040	K1013816-025	41.5		5.0	5.0	1	NA	12/15/10 09:00	
Method Blank	K1013816-MB	ND	U	5.0	5.0	1	NA	12/15/10 09:00	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Collected: 12/12/10
Date Received: 12/14/10
Date Analyzed: 12/15/10

Replicate Sample Summary
General Chemistry Parameters

Sample Name: SW03-0040
Lab Code: K1013816-025

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	SW03-0040DUP Duplicate Sample K1013816-025DUP4		RPD	RPD Limit
					Result	Average		
Solids, Total Suspended (TSS)	SM 2540 D	5.0	5.0	41.5	34.0	37.8	20	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Analyzed: 12/15/10

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Lab Control Sample K1013816-LCS					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Solids, Total Suspended (TSS)	SM 2540 D	300	320	94	80 - 115

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Collected: 12/12/10
Date Received: 12/14/10

Analysis Method: SM 5310 C

Units: mg/L
Basis: NA

Carbon, Dissolved Organic (DOC)

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW03-0023	K1013816-008	1.92		0.50	0.07	1	NA	12/23/10 15:19	
SW03-0027	K1013816-012	1.90		0.50	0.07	1	NA	12/23/10 15:19	
SW03-0031	K1013816-016	1.43		0.50	0.07	1	NA	12/23/10 15:19	
SW03-0035	K1013816-020	2.09		0.50	0.07	1	NA	12/23/10 15:19	
SW03-0039	K1013816-024	3.11		0.50	0.07	1	NA	12/23/10 15:19	
Method Blank	K1013816-MB	0.07	J	0.50	0.07	1	NA	12/23/10 15:19	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Collected: 12/12/10
Date Received: 12/14/10
Date Analyzed: 12/23/10

**Replicate Sample Summary
General Chemistry Parameters**

Sample Name: SW03-0023
Lab Code: K1013816-008

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	SW03-0023DUP Duplicate Sample K1013816-008DUP3		RPD	RPD Limit
					Result	Average		
Carbon, Dissolved Organic (DOC)	SM 5310 C	0.50	0.07	1.92	1.90	1.91	1	33

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Collected: 12/12/10
Date Received: 12/14/10
Date Analyzed: 12/23/10

Matrix Spike Summary
General Chemistry Parameters

Sample Name: SW03-0023
Lab Code: K1013816-008

Units: mg/L
Basis: NA

Analytical Method: SM 5310 C

SW03-0023MS
Matrix Spike
K1013816-008MS2

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Dissolved Organic (DOC)	1.92	26.9	25.0	100	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Form 3A

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SuperSet Reference: 10-0000164483 rev 00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Analyzed: 12/23/10

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Lab Control Sample K1013816-LCS					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Dissolved Organic (DOC)	SM 5310 C	25.6	26.0	98	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220

Service Request: K1013816

Continuing Calibration Verification (CCV) Summary
Carbon, Dissolved Organic (DOC)

Analytical Method: SM 5310 C

Units: mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	230350	KQ1014119-03	12/23/10 15:19	25.0	24.8	99	90 - 110
CCV2	230350	KQ1014119-04	12/23/10 15:19	25.0	25.3	101	90 - 110
CCV3	230350	KQ1014119-05	12/23/10 15:19	25.0	25.3	101	90 - 110
CCV4	230350	KQ1014119-06	12/23/10 15:19	25.0	25.6	102	90 - 110
CCV5	230350	KQ1014119-07	12/23/10 15:19	25.0	24.5	98	90 - 110

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220

Service Request: K1013816

Continuing Calibration Blank (CCB) Summary
Carbon, Dissolved Organic (DOC)

Analytical Method: SM 5310 C**Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	Result Q
CCB1	230350	KQ1014119-08	12/23/10 15:19	0.50	ND U
CCB2	230350	KQ1014119-10	12/23/10 15:19	0.50	ND U
CCB3	230350	KQ1014119-11	12/23/10 15:19	0.50	ND U
CCB4	230350	KQ1014119-12	12/23/10 15:19	0.50	ND U
CCB5	230350	KQ1014119-09	12/23/10 15:19	0.50	ND U

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Collected: 12/12/10
Date Received: 12/14/10

Analysis Method: SM 5310 C

Units: mg/L
Basis: NA

Carbon, Total Organic

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW03-0022	K1013816-007	1.38		0.50	0.07	1	NA	12/23/10 15:19	
SW03-0026	K1013816-011	1.56		0.50	0.07	1	NA	12/23/10 15:19	
SW03-0030	K1013816-015	1.26		0.50	0.07	1	NA	12/23/10 15:19	
SW03-0034	K1013816-019	1.40		0.50	0.07	1	NA	12/23/10 15:19	
SW03-0038	K1013816-023	2.46		0.50	0.07	1	NA	12/23/10 15:19	
Method Blank	K1013816-MB	0.07	J	0.50	0.07	1	NA	12/23/10 15:19	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Collected: 12/12/10
Date Received: 12/14/10
Date Analyzed: 12/23/10

Replicate Sample Summary
General Chemistry Parameters

Sample Name: SW03-0022
Lab Code: K1013816-007

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	SW03-0022DUP Duplicate Sample K1013816-007DUP2		RPD	RPD Limit
					Result	Average		
Carbon, Total Organic	SM 5310 C	0.50	0.07	1.38	1.41	1.40	2	33

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Collected: 12/12/10
Date Received: 12/14/10
Date Analyzed: 12/23/10

Matrix Spike Summary
General Chemistry Parameters

Sample Name: SW03-0022
Lab Code: K1013816-007

Units: mg/L
Basis: NA

Analytical Method: SM 5310 C

	SW03-0022MS Matrix Spike K1013816-007MS1				
Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	1.38	27.5	25.0	105	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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Form 3A

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SuperSet Reference: 10-0000164483 rev 00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Analyzed: 12/23/10

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Lab Control Sample K1013816-LCS					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	SM 5310 C	25.6	26.0	98	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220

Service Request: K1013816

Continuing Calibration Verification (CCV) Summary
Carbon, Total Organic

Analytical Method: SM 5310 C**Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	230352	KQ1014120-03	12/23/10 15:19	25.0	25.6	102	90 - 110
CCV2	230352	KQ1014120-04	12/23/10 15:19	25.0	24.5	98	90 - 110
CCV3	230352	KQ1014120-05	12/23/10 15:19	25.0	25.3	101	90 - 110
CCV4	230352	KQ1014120-07	12/23/10 15:19	25.0	25.0	100	90 - 110
CCV5	230352	KQ1014120-08	12/23/10 15:19	25.0	25.4	102	90 - 110

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220

Service Request: K1013816

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analytical Method: SM 5310 C

Units: mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	Result Q
CCB1	230352	KQ1014120-09	12/23/10 15:19	0.50	ND U
CCB2	230352	KQ1014120-10	12/23/10 15:19	0.50	ND U
CCB3	230352	KQ1014120-11	12/23/10 15:19	0.50	ND U
CCB4	230352	KQ1014120-12	12/23/10 15:19	0.50	ND U
CCB5	230352	KQ1014120-13	12/23/10 15:19	0.50	ND U

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220

Service Request: K1013816

**Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics**

Sample Name	Lab Code	Date Collected	Date Received
SW03-001	K1013816-001	12/12/2010	12/14/2010
SW03-002	K1013816-002	12/12/2010	12/14/2010
SW03-003	K1013816-003	12/12/2010	12/14/2010
SW03-004	K1013816-004	12/12/2010	12/14/2010
SW03-005	K1013816-005	12/12/2010	12/14/2010
SW03-001	KWG1013972-1	12/12/2010	12/14/2010

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____

Name: Shane M. J.

Date: 12/20/10

Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Collected: 12/12/2010
Date Received: 12/14/2010

Diesel and Residual Range Organics

Sample Name: SW03-001
Lab Code: K1013816-001
Extraction Method: Method
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	38	J	250	11	1	12/17/10	12/21/10	KWG1013972	
Residual Range Organics (RRO)	67	J	500	19	1	12/17/10	12/21/10	KWG1013972	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	87	50-150	12/21/10	Acceptable
n-Triacontane	90	50-150	12/21/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Collected: 12/12/2010
Date Received: 12/14/2010

Diesel and Residual Range Organics

Sample Name: SW03-002
Lab Code: K1013816-002
Extraction Method: Method
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	41	J	250	11	1	12/17/10	12/21/10	KWG1013972	
Residual Range Organics (RRO)	79	J	500	19	1	12/17/10	12/21/10	KWG1013972	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	80	50-150	12/21/10	Acceptable
n-Triacontane	79	50-150	12/21/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Collected: 12/12/2010
Date Received: 12/14/2010

Diesel and Residual Range Organics

Sample Name: SW03-003
Lab Code: K1013816-003
Extraction Method: Method
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	81	J	240	11	1	12/17/10	12/22/10	KWG1013972	
Residual Range Organics (RRO)	170	J	480	19	1	12/17/10	12/22/10	KWG1013972	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	97	50-150	12/22/10	Acceptable
n-Triacontane	95	50-150	12/22/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Collected: 12/12/2010
Date Received: 12/14/2010

Diesel and Residual Range Organics

Sample Name: SW03-004
Lab Code: K1013816-004
Extraction Method: Method
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	72	J	270	12	1	12/17/10	12/21/10	KWG1013972	
Residual Range Organics (RRO)	170	J	540	21	1	12/17/10	12/21/10	KWG1013972	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	87	50-150	12/21/10	Acceptable
n-Triacontane	87	50-150	12/21/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Collected: 12/12/2010
Date Received: 12/14/2010

Diesel and Residual Range Organics

Sample Name: SW03-005
Lab Code: K1013816-005
Extraction Method: Method
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	79	J	250	11	1	12/17/10	12/21/10	KWG1013972	
Residual Range Organics (RRO)	180	J	500	19	1	12/17/10	12/21/10	KWG1013972	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	84	50-150	12/21/10	Acceptable
n-Triacontane	83	50-150	12/21/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Collected: NA
Date Received: NA

Diesel and Residual Range Organics

Sample Name: Method Blank
Lab Code: KWG1013972-3
Extraction Method: Method
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	250	11	1	12/17/10	12/21/10	KWG1013972	
Residual Range Organics (RRO)	ND	U	500	19	1	12/17/10	12/21/10	KWG1013972	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	84	50-150	12/21/10	Acceptable
n-Triacontane	85	50-150	12/21/10	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816

Surrogate Recovery Summary
Diesel and Residual Range Organics

Extraction Method: Method
Analysis Method: NWTPH-Dx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
SW03-001	K1013816-001	87	90
SW03-002	K1013816-002	80	79
SW03-003	K1013816-003	97	95
SW03-004	K1013816-004	87	87
SW03-005	K1013816-005	84	83
SW03-001DUP	KWG1013972-1	78	79
Method Blank	KWG1013972-3	84	85
Lab Control Sample	KWG1013972-2	87	82

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl	50-150
Sur2 = n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Extracted: 12/17/2010
Date Analyzed: 12/22/2010

Duplicate Sample Summary
Diesel and Residual Range Organics

Sample Name: SW03-001
Lab Code: K1013816-001
Extraction Method: Method
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1013972

Analyte Name	MRL	MDL	Sample Result	SW03-001DUP KWG1013972-1 Duplicate Sample		Relative Percent Difference	RPD Limit
				Result	Average		
Diesel Range Organics (DRO)	250	11	38	38	38	0 #	30
Residual Range Organics (RRO)	490	19	67	71	69	6 #	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Extracted: 12/17/2010
Date Analyzed: 12/21/2010

Lab Control Spike Summary
Diesel and Residual Range Organics

Extraction Method: Method
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1013972

Lab Control Sample
KWG1013972-2
Lab Control Spike

Analyte Name	Result	Expected	%Rec	%Rec Limits
Diesel Range Organics (DRO)	1440	1600	90	46-140
Residual Range Organics (RRO)	678	800	85	45-159

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Extracted: 12/17/2010
Date Analyzed: 12/21/2010
Time Analyzed: 22:13

Method Blank Summary
Diesel and Residual Range Organics

Sample Name: Method Blank
Lab Code: KWG1013972-3
Extraction Method: Method
Analysis Method: NWTPH-Dx

File ID: J:\GC21\DATA\122110F\1221F116.D
Instrument ID: GC21
Level: Low
Extraction Lot: KWG1013972

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1013972-2	J:\GC21\DATA\122110F\1221F114.D	12/21/10	21:51
SW03-004	K1013816-004	J:\GC21\DATA\122110F\1221F118.D	12/21/10	22:36
SW03-005	K1013816-005	J:\GC21\DATA\122110F\1221F120.D	12/21/10	22:59
SW03-002	K1013816-002	J:\GC21\DATA\122110F\1221F122.D	12/21/10	23:21
SW03-001	K1013816-001	J:\GC21\DATA\122110F\1221F124.D	12/21/10	23:44
SW03-001DUP	KWG1013972-1	J:\GC21\DATA\122110F\1221F126.D	12/22/10	00:06
SW03-003	K1013816-003	J:\GC21\DATA\122110F\1221F128.D	12/22/10	00:29

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock SW 2010 SW03/54220
Sample Matrix: Water

Service Request: K1013816
Date Extracted: 12/17/2010
Date Analyzed: 12/21/2010
Time Analyzed: 21:51

Lab Control Sample Summary
Diesel and Residual Range Organics

Sample Name: Lab Control Sample
Lab Code: KWG1013972-2

File ID: J:\GC21\DATA\122110F\1221F114.D
Instrument ID: GC21

Extraction Method: Method
Analysis Method: NWTPH-Dx

Level: Low
Extraction Lot: KWG1013972

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1013972-3	J:\GC21\DATA\122110F\1221F116.D	12/21/10	22:13
SW03-004	K1013816-004	J:\GC21\DATA\122110F\1221F118.D	12/21/10	22:36
SW03-005	K1013816-005	J:\GC21\DATA\122110F\1221F120.D	12/21/10	22:59
SW03-002	K1013816-002	J:\GC21\DATA\122110F\1221F122.D	12/21/10	23:21
SW03-001	K1013816-001	J:\GC21\DATA\122110F\1221F124.D	12/21/10	23:44
SW03-001DUP	KWG1013972-1	J:\GC21\DATA\122110F\1221F126.D	12/22/10	00:06
SW03-003	K1013816-003	J:\GC21\DATA\122110F\1221F128.D	12/22/10	00:29

Analytical Chemistry Data Package

**Project: Non-Dry Dock Stormwater
SW04 February 28-March 2, 2011
Chemical Analyses**

Battelle Project No. 54220
CF No. 3174



Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, WA 98382
PM: Jill Brandenberger
(360) 681-4564

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SW04 February 28-March 2, 2011
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Analytical raw data available upon request

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Analytical raw data available upon request

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Analytical raw data available upon request

BATTELLE MARINE SCIENCE LABORATORIES

1529 West Sequim Bay Road
Sequim, Washington 98382-9099
360/681-4564

Non-Dry Dock Stormwater
ENVVEST 2010_SW04_NBK EB
Metals in Water
UNITS: µg/L

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Type Name	MSL Code	Collection Date	Hg	As	Ag	Al	Cd
<i>Instrument:</i>						<i>CVAF</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>
Laboratory Achieved Detection Limits (Freshwater)						0.0001	0.03	0.002	0.3	0.004
Freshwater Reporting Limit (MDL* 3.18)						0.0003	0.1	0.006	1.0	0.01
<u>SW04</u>										
SW04-0025	PSNS096	TME	Composite_equal_time	3174-43	03/01/11	0.00472	1.83	0.0138	255	0.208
SW04-0026	PSNS096	DME	Composite_equal_time	3174-44	03/01/11	0.00179	1.51	0.00341 J	34.6	0.108
SW04-0027	PSNS032	TME	Composite_equal_time	3174-45	03/02/11	0.0134	1.16	0.0343	571	0.198
SW04-0028	PSNS032	DME	Composite_equal_time	3174-46	03/02/11	0.00310	0.838	0.00380 J	66.4	0.104
SW04-0029	PSNS008	TME	Composite_equal_time	3174-47	03/02/11	0.0126	0.703	0.0216	907	0.316
SW04-0030	PSNS008	DME	Composite_equal_time	3174-48	03/02/11	0.00226	0.462	0.00284 J	67.6	0.148
SW04-0031	PSNS015	TME	Composite_equal_time	3174-49	03/02/11	0.0182	0.918	0.0140	500	0.0556
SW04-0032	PSNS015	DME	Composite_equal_time	3174-50	03/02/11	0.00544	0.781	0.00272 J	62.7	0.0337
<u>Equipment Blanks</u>										
SW0006	PSNS008	TME	Composite_equal_time	3174-35	02/01/11	0.000119 J	0.03 U	0.002 U	0.3 U	0.004 U
SW0007	PSNS032	TME	Composite_equal_time	3174-36	02/01/11	0.000124 J	0.03 U	0.002 U	0.483 J	0.004 U
SW0008	PSNS015	TME	Composite_equal_time	3174-37	02/01/11	0.000187 J	0.03 U	0.002 U	2.68	0.00838 J
SW0009	PSNS096	TME	Composite_equal_time	3174-38	02/01/11	0.000102 J	0.03 U	0.002 U	0.3 U	0.004 U
SW0006	PSNS008	DME	Composite_equal_time	3174-39	02/01/11	0.000107 J	0.03 U	0.002 U	0.562 J	0.00411 J
SW0007	PSNS032	DME	Composite_equal_time	3174-40	02/01/11	0.000190 J	0.03 U	0.002 U	0.829 J	0.004 U
SW0008	PSNS015	DME	Composite_equal_time	3174-41	02/01/11	0.000187 J	0.03 U	0.002 U	0.417 J	0.00630 J
SW0009	PSNS096	DME	Composite_equal_time	3174-42	02/01/11	0.000211 J	0.03 U	0.002 U	0.384 J	0.004 U

BATTELLE MARINE SCIENCE LABORATORIES

1529 West Sequim Bay Road
Sequim, Washington 98382-9099
360/681-4564

Non-Dry Dock Stormwater
ENVVEST 2010_SW04_NBK EB
Metals in Water
UNITS: µg/L

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Type Name	MSL Code	Cr	Cu	Pb	Zn	CVAF Batch ID	ICP-MS Batch ID
					<i>Instrument:</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	
Laboratory Achieved Detection Limits (Freshwater)					0.08	0.007	0.002	0.05		
Freshwater Reporting Limit (MDL* 3.18)					0.3	0.02	0.006	0.2		

SW04

SW04-0025	PSNS096	TME	Composite_equal_time	3174-43	2.71	17.8	5.35	74.5	031611HGA	030711-6100
SW04-0026	PSNS096	DME	Composite_equal_time	3174-44	1.20	6.06	0.453	47.5	031611HGA	030711-6100
SW04-0027	PSNS032	TME	Composite_equal_time	3174-45	3.20	9.12	7.19	77.5	031611HGA	030711-6100
SW04-0028	PSNS032	DME	Composite_equal_time	3174-46	1.58	3.90	0.623	37.0	031611HGA	030711-6100
SW04-0029	PSNS008	TME	Composite_equal_time	3174-47	4.55	16.9	6.00	132	031611HGA	030711-6100
SW04-0030	PSNS008	DME	Composite_equal_time	3174-48	1.45	6.30	0.351	82.8	031611HGA	030711-6100
SW04-0031	PSNS015	TME	Composite_equal_time	3174-49	2.34	8.23	8.12	65.0	031611HGA	030711-6100
SW04-0032	PSNS015	DME	Composite_equal_time	3174-50	1.53	4.98	1.86	48.5	031611HGA	030711-6100

Equipment Blanks

SW0006	PSNS008	TME	Composite_equal_time	3174-35	0.08 U	0.0491	0.0166	1.20	031611HGA	030711-6100
SW0007	PSNS032	TME	Composite_equal_time	3174-36	0.08 U	0.0515	0.0165	0.327	031611HGA	030711-6100
SW0008	PSNS015	TME	Composite_equal_time	3174-37	0.08 U	0.166	0.108	1.26	031611HGA	030711-6100
SW0009	PSNS096	TME	Composite_equal_time	3174-38	0.08 U	0.119	0.00277 J	0.161 J	031611HGA	030711-6100
SW0006	PSNS008	DME	Composite_equal_time	3174-39	0.08 U	0.0388	0.0144	1.66	031611HGA	030711-6100
SW0007	PSNS032	DME	Composite_equal_time	3174-40	0.08 U	0.0284	0.002 U	0.741	031611HGA	030711-6100
SW0008	PSNS015	DME	Composite_equal_time	3174-41	0.0847 J	0.133	0.0159	0.798	031611HGA	030711-6100
SW0009	PSNS096	DME	Composite_equal_time	3174-42	0.08 U	0.0292	0.0183	0.447	031611HGA	030711-6100

BATTELLE MARINE SCIENCE LABORATORIES

1529 West Sequim Bay Road
Sequim, Washington 98382-9099
360/681-4564

**Non-Dry Dock Stormwater
ENVVEST 2010_SW04_NBK EB
STE#4**

Station Code	Type Name	Collection Date	Analysis Date	Analysis Method	Component	Units	Result	Detection Limit	Reporting Limit
PSNS096	Composite_equal_time	03/01/2011	03/11/2011	SM 2340 C	Hardness, Total as CaCO3	mg/L	34.9 =	0.8	2.0
PSNS032	Composite_equal_time	03/02/2011	03/11/2011	SM 2340 C	Hardness, Total as CaCO3	mg/L	20.2 =	0.8	2.0
PSNS008	Composite_equal_time	03/02/2011	03/11/2011	SM 2340 C	Hardness, Total as CaCO3	mg/L	18.1 =	0.8	2.0
PSNS015	Composite_equal_time	03/02/2011	03/11/2011	SM 2340 C	Hardness, Total as CaCO3	mg/L	40.7 =	0.8	2.0
PSNS096	Composite_equal_time	03/01/2011	03/07/2011	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	9.5 =	5.0	5.0
PSNS032	Composite_equal_time	03/02/2011	03/07/2011	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	18 =	5.0	5.0
PSNS008	Composite_equal_time	03/02/2011	03/07/2011	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	38 =	5.0	5.0
PSNS015	Composite_equal_time	03/02/2011	03/07/2011	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	15.5 =	5.0	5.0
PSNS096	Composite_equal_time	03/01/2011	03/08/2011	SM 5310 C	Carbon, Total Organic	mg/L	0.9 =	0.07	0.50
PSNS032	Composite_equal_time	03/02/2011	03/08/2011	SM 5310 C	Carbon, Total Organic	mg/L	2.8 =	0.07	0.50
PSNS008	Composite_equal_time	03/02/2011	03/08/2011	SM 5310 C	Carbon, Total Organic	mg/L	2.07 =	0.07	0.50
PSNS015	Composite_equal_time	03/02/2011	03/08/2011	SM 5310 C	Carbon, Total Organic	mg/L	2.61 =	0.07	0.50
PSNS096	Composite_equal_time	03/01/2011	03/09/2011	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	1.52 =	0.07	0.50
PSNS032	Composite_equal_time	03/02/2011	03/09/2011	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	3.04 =	0.07	0.50
PSNS008	Composite_equal_time	03/02/2011	03/09/2011	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	3.22 =	0.07	0.50
PSNS015	Composite_equal_time	03/02/2011	03/09/2011	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	3.39 =	0.07	0.50
PSNS008	Grab	03/01/2011	03/18/2011	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	110 =, J	15	340
PSNS008	Grab	03/01/2011	03/18/2011	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	280 =, J	26	680
PSNS032	Grab	03/01/2011	03/18/2011	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	98 =, J	12	270
PSNS032	Grab	03/01/2011	03/18/2011	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	230 =, J	20	530
PSNS015	Grab	03/01/2011	03/18/2011	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	130 =, J	12	280
PSNS015	Grab	03/01/2011	03/18/2011	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	270 =, J	21	550
PSNS096	Grab	03/01/2011	03/18/2011	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	100 =, J	12	270
PSNS096	Grab	03/01/2011	03/18/2011	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	290 =, J	21	540
EB	Grab	03/01/2011	03/18/2011	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	12 =, J	12	260
EB	Grab	03/01/2011	03/18/2011	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	32 =, J	20	520

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Sample Type	MSL Code	As	Ag	Al	Cd	Cr	Cu	Pb	Zn	ICP-MS Batch ID
<i>Instrument:</i>					<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	
Laboratory Achieved Detection Limits (Freshwater)					0.03	0.002	0.3	0.004	0.08	0.007	0.002	0.05	
Freshwater Reporting Limit (MDL* 3.18)					0.1	0.006	1.0	0.01	0.3	0.02	0.006	0.2	

METHOD BLANKS

MB-1	TME	Freshwater	TRM Blank		0.03 U	0.002 U	0.457 J	0.004 U	0.08 U	0.007 U	0.002 U	0.05 U	030711-6100
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LABORATORY CONTROL SAMPLES

Spiking Level					2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
MB-1	TME	Freshwater	TRM Blank		0.03 U	0.002 U	0.457 J	0.004 U	0.08 U	0.007 U	0.002 U	0.05 U	030711-6100
LCS (1)	TME	Freshwater	TRM LCS		2.07	2.04	2.65	2.04	2.16	2.11	2.09	2.14	030711-6100
Percent Recovery, LCS					104%	102%	110%	102%	108%	106%	105%	107%	

MATRIX SPIKE RESULTS

SW04-0026	PSNS096	DME	Composite_equal_time	3174-44	1.51	0.00341 J	34.6	0.108	1.20	6.06	0.453	47.5	030711-6100
MS	PSNS096	DME	Composite_equal_time	3174-44MS	3.59	1.70	135	2.12	3.32	15.8	2.54	148	030711-6100
MSD	PSNS096	DME	Composite_equal_time	3174-44MSD	3.67	1.72	132	2.12	3.30	15.8	2.48	147	030711-6100
Spiking Level					2	2	100	2	2	10	2	100	
Percent Recovery, MS					104%	85%	100%	101%	106%	97%	104%	101%	
Percent Recovery, MSD					108%	86%	97%	101%	105%	97%	101%	100%	
RPD					3.8%	1.2%	3.0%	0.0%	0.9%	0.0%	2.9%	1.0%	

REPLICATE PRECISION

SW04-0027	PSNS032	TME	Composite_equal_time	3174-45	1.16	0.0343	571	0.198	3.20	9.12	7.19	77.5	030711-6100
DUP	PSNS032	TME	Composite_equal_time	3174-45r2	1.14	0.0357	588	0.191	3.36	9.13	7.28	77.4	030711-6100
Mean					<i>1.15</i>	<i>0.0350</i>	<i>580</i>	<i>0.195</i>	<i>3.28</i>	<i>9.13</i>	<i>7.24</i>	<i>77.5</i>	
RPD					1.7%	4.0%	2.9%	3.6%	4.9%	0.1%	1.2%	0.1%	

STANDARD REFERENCE MATERIAL, Seawater

SRM 1640 (1)	TME	Freshwater	TRM 1640		26.9	7.06	58.2	23.4	39.8	88.6	28.4	56.0	030711-6100
Certified Value					26.7	7.62	52.0	22.8	38.6	85.2	27.9	53.2	
PD					0.7%	7.3%	11.9%	2.6%	3.1%	4.0%	1.8%	5.3%	

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Sample Type	MSL Code	Hg	CVA Batch ID
<i>Instrument:</i>					<i>CVA</i>	
Laboratory Achieved Detection Limits					0.0001	
Reporting Limit (MDL* 3.18)					0.0003	

METHOD BLANKS

MB-1		TME	Freshwater	MB1_031511	0.0001 U	031611HGA
MB-2		TME	Freshwater	MB2_031511	0.0001 U	031611HGA
MB-3		TME	Freshwater	MB3_031511	0.0001 U	031611HGA

LABORATORY CONTROL SAMPLES

Spiking Level					0.00496	
LCS (1)		TME	Freshwater	OPR 031511 run1	0.00564	031611HGA
LCS (2)		TME	Freshwater	OPR 031511 run2	0.00511	031611HGA
LCS Blank (1)		TME	Freshwater	Blank031511	0.000141 J	031611HGA
Percent Recovery, LCS 1					111%	
Percent Recovery, LCS 2					100%	

MATRIX SPIKE RESULTS

SW04-0028	PSNS032	DME	Composite_equal_time	3174-46	0.00310	031611HGA
MS1	PSNS032	DME	Composite_equal_time	3174-46MS	0.0163	031611HGA
MSD1	PSNS032	DME	Composite_equal_time	3174-46MSD	0.0167	031611HGA
Spiking Level, MS					0.0146	
Spiking Level, MSD					0.0149	
Percent Recovery, MS					90%	
Percent Recovery, MSD					91%	
RPD					1.1%	
SW04-0030	PSNS008	DME	Composite_equal_time	3174-48	0.00226	031611HGA
MS1	PSNS008	DME	Composite_equal_time	3174-48MS	0.0173	031611HGA
MSD1	PSNS008	DME	Composite_equal_time	3174-48MSD	0.0175	031611HGA
Spiking Level, MS					0.0148	
Spiking Level, MSD					0.0147	
Percent Recovery, MS					102%	
Percent Recovery, MSD					104%	
RPD					1.9%	

REPLICATE PRECISION

SW04-0027	PSNS032	TME	Composite_equal_time	3174-45	0.0134	031611HGA
DUP	PSNS032	TME	Composite_equal_time	3174-45r2	0.0148	031611HGA
Mean					0.0141	
RPD					10%	

STANDARD REFERENCE MATERIAL

SRM 1641 (1)		TME	Freshwater	1641d 031511	1570	031611HGA
Certified Value					1590	
range					±18	
SRM 1641 (1)					PD	
					1%	

BATTELLE MARINE SCIENCE LABORATORIES

1529 West Sequim Bay Road
Sequim, Washington 98382-9099
360/681-4564

**Non-Dry Dock Stormwater
ENVVEST 2010_SW04_NBK EB
Metals in Water**

DATA QUALIFIERS:

- c Exceeds DQO but meets contingency criteria of either:
 - 1 SRM certified <10x MDL
 - 2 Insufficient spiking level relative to native sample concentrations
 - 3 Sample concentration <10x MDL
- U Analyte not detected at or above the MDL, MDL reported
- J Analyte detected above the MDL, but less than the RL
- N Spiked sample recovery outside QC criterion of 70-130%
- & Accuracy result outside QC criterion of $\leq 20\%$ PD
- * Precision result outside QC criterion of $< 30\%$
- NS Sample not spiked for this analyte
- B Analyte detected in the method blank > RL
 - and sample concentration < 10 times detected blank value
- b Data are blank corrected using the batch specific procedural blank
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- ND Not detected

Notes:

Composite_equal_time Equal portion composite of time integrated sample (ISCO samples)

NC Not Certified

-- Not analyzed

NA Not applicable/available

TME Total Metals Fraction

DME Dissolved Metals Fraction

2 Sample specific MDLs and RLs reported

QA/QC NARRATIVE

PROJECT: Non-Dry Dock Stormwater Sampling for SW04

PARAMETER: Total and Dissolved Metals – Al, Ag, As, Cd, Cr, Cu, Pb, Zn, Hg

LABORATORY: Battelle Marine Sciences Laboratory (MSL), Sequim, Washington

MATRIX: Stormwater (as a freshwater matrix)

SAMPLE CUSTODY AND PROCESSING: Samples were collected from stormwater outfalls located within the Confined Industrial Area (CIA) and Naval Base Kitsap (NBK) at the Puget Sound Naval Shipyard and Intermediate Maintenance Facility (PSNS & IMF) by TEC, MSL, and the U.S. Navy. The samples reported in this delivery group include equipment blanks collected from the new equipment deployed at stations PSNS096, PSNS008, PSNS032, PSNS015 prior to stormwater collection and samples collected from those stations during STE#4 or SW04. The storm event identified as STE#4 began on February 28, 2011 and March 1, 2011 with the composites ending 24 hours later.

The equipment blanks were collected to ensure the Teflon tubing, composite glass jar, filtration units, and sample containers would not significantly contribute metals to the sample (see QAPP Taylor Associates, Inc. 2010). The rinse blanks were collected by pumping deionized water through the length of tubing deployed in the field at each station. Glass composite jars were hand delivered the day of collection to MSL. Upon receipt at MSL, the samples were shaken vigorously and approximately 500mL was filtered through a pre-cleaned 0.45µm polyvinylidene fluoride (PVDF) filter membrane inside a class 100 clean bench and the filtrate was transferred to a trace metal clean Teflon bottle. A separate unfiltered aliquot was poured into a precleaned Teflon bottle. The total metal fractions (TME) and dissolved metal fractions (DME) were each acidified to a pH of < 2.0 with double distilled nitric acid.

Two types of samples were collected during STE#4. The first was a time proportionate composite sample collected using an ISCO sampler at each of the four outfall locations. The second was a grab sample collected during the storm event in an amber glass jar provided by Columbia Analytical Services (CAS) for total petroleum hydrocarbons (TPH). The grab samples were stored at 4°C until delivery to MSL. The individual time interval composites collected in the 24 wedge bottles inside the ISCO sampler were carried back to the stormwater lab at PSNS & IMF and composited into a single event mean composite (EMC) in a pre-cleaned glass jar. All samples were hand delivered within 24 hours of collection to MSL.

Upon receipt at MSL, the condition of all the samples were verified as acceptable and tracked back to the field chain of custody (COC). In the clean laboratory at MSL, each glass composite sample jar was shaken vigorously (prior and between aliquot removal) and aliquots were poured into the following types of containers:

1. 500 mL Teflon bottle for total metals (TME),
2. 500 mL 0.45µm polyvinylidene fluoride (PVDF) filter unit, vacuum filtered in a class 100 clean bench and then poured into a 500 mL Teflon bottle for dissolved metals,
3. 250 mL low-density polyethylene (LDPE) bottle provided by CAS that included a nitric acid preservative for samples to be analyzed for hardness (HRD),
4. 500 mL LDPE container with sulfuric acid preservative provided by CAS for the analysis of total organic carbon (TOC),
5. 60 mL syringe and ashed glass fiber filter (GFF) in a cleaned filter holder. An aliquot of the sample was filtered into a 250 mL LDPE container with sulfuric acid preservative provided by CAS for the analysis of dissolved organic carbon (DOC),
6. 500 mL or 1L LDPE bottle provided by CAS for the analysis of total suspended solids (TSS), and turbidity was measured in the field.

QA/QC NARRATIVE

The total metal fractions and dissolved metal fractions were each acidified inside a Class 100 clean bench to a pH of < 2.0 with double distilled nitric acid. The samples were then assigned a Battelle Central File (CF) identification number (3174) and were entered into Battelle's sample tracking system.

The TPH grab samples and composite aliquots for TOC, DOC, hardness, and TSS were all forwarded to CAS for analysis. The quality control narrative for these parameters was provided separately.

The following lists information on sample receipt and processing activities:

Sample Receipt Dates:	02/02/11 and 03/02/11
Cooler temp. on arrival	All coolers were at 4.0±2°C
Collection dates	02/01/11, 03/01/11, 03/02/11
CVAF analysis dates (Hg)	03/16/11
TRM Prep/Freshwater Analysis by ICP-MS (As, Ag, Al, Cd, Cr, Cu, Pb, Zn)	03/07/11

QA/QC DATA QUALITY OBJECTIVES:

Analyte	Analytical Method for Seawater	MS Range of Recovery	SRM Percent Difference	Replicate Precision	Method Detection Limits (µg/L)	Reporting Limits (µg/L)
Aluminum	ICP-MS	70-130%	≤20%	≤30%	0.3	1.0
Arsenic	ICP-MS	70-130%	≤20%	≤30%	0.03	0.1
Cadmium	ICP-MS	70-130%	≤20%	≤30%	0.004	0.01
Chromium	ICP-MS	70-130%	≤20%	≤30%	0.08	0.3
Copper	ICP-MS	70-130%	≤20%	≤30%	0.007	0.02
Lead	ICP-MS	70-130%	≤20%	≤30%	0.002	0.006
Silver	ICP-MS	70-130%	≤20%	≤30%	0.002	0.006
Zinc	ICP-MS	70-130%	≤20%	≤30%	0.05	0.2
Mercury	CVAF	70-130%	≤20%	≤30%	0.0001	0.0003

METHODS:

Samples were analyzed for nine metals: aluminum (Al), arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), silver (Ag), zinc (Zn), and mercury (Hg). Samples were submitted for analyses following two methods. All samples were analyzed for Hg by Cold Vapor Atomic Fluorescence (CVAF) in accordance with Battelle SOP *MSL-I-013, Total Mercury in Aqueous Samples by CVAF*, following EPA Method 1631 revision E.

All samples were analyzed for other metals by Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) in accordance with Battelle SOP *MSL-I-022, Determination of Elements in Aqueous and Digestate Samples by ICP/MS*. The base methods for this procedure are EPA Method 1638 and EPA Method 1640. All samples were digested following the total metal recoverable (TRM) method established in EPA Method 1640 prior to analysis by ICP-MS. In summary, this preparation brings the pH of the sample to 2% and heats the capped samples for 2.5 hours in a 85°C oven to solubilize particulates. Both the filtered and unfiltered fractions were prepared using this method

QA/QC NARRATIVE

to destroy any colloidal particles remaining in the filtered (aka. Dissolved) fraction. All results were reported in units of $\mu\text{g/L}$. Data are not blank corrected.

HOLDING TIMES: All samples were analyzed within the established holding times of 90 days for Hg and six months for all other metals.

DETECTION LIMITS: Laboratory method detection limits (MDLs) for TRM freshwater were reported from the MDL (annually verified) as determined by seven replicates of deionized water spiked at appropriate concentrations and prepared using the TRM method. Reporting limits are determined as 3.18 times the laboratory achieved MDL. The data are evaluated and flagged as follows:

- U Analyte not detected at or above the MDL, MDL reported
- J Analyte detected above the MDL, but less than the RL
- N Spiked sample recovery outside QC criterion of 70-130%
- & Accuracy result outside QC criterion of $\leq 20\%$ PD
- * Precision result outside QC criterion of $< 30\%$
- B Analyte detected in the method blank $>$ RL and sample concentration $<$ 10 times detected blank value
- c Exceeds data quality objective but meets contingency criterion
- b Result is reagent blank corrected using the batch specific blank (BMRB)

METHOD BLANKS: A minimum of one method blank was prepared and analyzed by each instrument with each analytical batch. The method blanks were all less than the RL.

LABORATORY CONTROL SAMPLES: A minimum of one LCS (OPR or blank spike) was prepared and analyzed with each analytical batch of 20 or fewer samples. Percent recoveries for LCS samples were within the QC acceptance criterion of 70% to 130% for all metals. They also met a secondary criterion of $\pm 15\%$ recovery.

MATRIX SPIKE ACCURACY: A minimum of one set of duplicate matrix spikes (MS/MSD) was prepared and analyzed with each analytical batch of 20 or fewer samples. Percent recoveries for matrix spikes were within the QC limits of 70% to 130% for all metals.

REPLICATE PRECISION: Laboratory precision was expressed as the relative percent difference (RPD) between laboratory duplicates. The RPD values for the laboratory duplicates were within the QC acceptance criterion of $\pm 30\%$ for all metals detected above the RL.

STANDARD REFERENCE MATERIAL ACCURACY: Standard reference materials (SRM) were prepared and analyzed with each analytical batch at a minimum frequency of 1 per 20 or fewer samples. Analytical accuracy was expressed as the percent difference (PD) between the measured and the certified value. The freshwater SRMs were 1641d for Hg and 1640 for all other metals. The differences were within the QC acceptance criterion of $\leq 20\%$.

REFERENCE: Taylor Associates, Inc. – Division of TEC, Inc. and Pacific Northwest National Laboratory (2011). Non-Dry Dock Stormwater Monitoring Conducted at Puget Sound Naval Shipyard Bremerton, WA, Project ENVVEST Study Area. Document prepared for the United States Navy Puget Sound Naval Shipyard.

SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 02/02/11

Batch: 6

Login Designee: McGahan

Project: **Non-Dry Dock SW (Storm Water)**

Pacific Northwest
NATIONAL LABORATORY

Battelle
The Business of Innovation

Marine Sciences Laboratory

1529 West Sequim Bay Road

Sequim, Washington 98382

PH: (360) 681-4565

Sponsor ID	Site Description	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SW0006 ✓	PSNS008 ✓	3174-35	DI water	Prep Lab J-2-B	TME	02/01/11
SW0007 ✓	PSNS032 ✓	3174-36	DI water	Prep Lab J-2-B	TME	02/01/11
SW0008 ✓	PSNS015 ✓	3174-37	DI water	Prep Lab J-2-B	TME	02/01/11
SW0009 ✓	PSNS096 ✓	3174-38	DI water	Prep Lab J-2-B	TME	02/01/11
SW0006	PSNS008	3174-39	DI water	Prep Lab J-2-B	DME	02/01/11
SW0007	PSNS032	3174-40	DI water	Prep Lab J-2-B	DME	02/01/11
SW0008	PSNS015	3174-41	DI water	Prep Lab J-2-B	DME	02/01/11
SW0009	PSNS096	3174-42	DI water	Prep Lab J-2-B	DME	02/01/11

✓

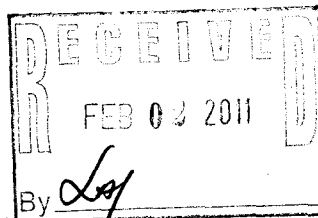
vide 3/4/11

Date:

Page: 1 of 1

Project No.: N4523A10MP00034 Amend.1

Project: PSNSNon-dry Dock SW 2010



Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

[illegible]

LOG-IN CHECKLIST

Non-dry dock SW samples (blanks)

Reference SOP# MSL-A-001

Central File #: 3174 Sample No(s): 35-42 Batch: 6
 Project Name: Non-dry Dock SW Project Manager: Brandenburg

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: waterWP# H23477

Yes

No

☐☒

Navy-type Project (requires high-level sample tracking procedures)

☐☒

USDA Samples (see Compliance Agreement Checklist)

PM Verification:

☒☐

Filter Samples:

Amount:

Entire sample

Half of sample

☐☒

Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Login Lab)

☒☐

Special instructions:

Sample Preservation Instructions:

Acidity to 0.2% HNO₃

See LIMS for archive/disposal information

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes

No

N/A

Indicate in Appropriate Box

☐☒☐

Custody seal present

Seal intact?

YES

NO

☒☐☐

Cooler temperature (acceptable range: 4±2°C or solids: frozen)

(if multiple coolers, note temp. of each)

#1 - +2 °C

#3 - +2 °C

#2 - +3 °C

☐☐☒

Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)

Comment/Remedy:

☒☒☐

Were all chain of custody forms signed and dated?

Name Received☒☐☐

Were samples filtered at MSL?

no

Sample condition(s):

Acceptable

Other (explain):

Container type:

Teflon

Poly

Glass

Cap. Vial

Other:

Notes:

Completed By: [Signature]

Date/Time:

02/02/111010

SAMPLE PRESERVATION

☐

Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)

☐

Random pH checked for ~10% of samples (use dip paper)

Sample IDs:

☐

Complete pH check required for project (use pH meter and record on pH Record form)

☒

Sample(s) were preserved at MSL

Type:

☒0.2% HNO₃

Notes:

Lot# 1206090☐

0.5% HCl (Hg samples)

Notes:

Lot#

☐

Refrigerate/Freeze

Notes:

☐

Other

Notes:

Completed By: [Signature]

Date/Time:

02/04/111010

Storage Shelf:

J-2-B marked as Jill's

All samples
filtered for
metals
2/3/11
1030

SAMPLE LOGIN

Project Manager: JMB

Date Received: 3/2/2011

Batch: 7

Login Designee: Brandenberger

Project: **Non Drydock SW04**



Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382
PH: (360) 681-4565

Sponsor ID	Site Description	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SW04-0025	PSNS096	3174*43	stormwater	Prep Lab J-2-B	Total Metals	03/01/11 2340
SW04-0026	PSNS096	3174*44	stormwater	Prep Lab J-2-B	Dissolved Metals	03/01/11 2340
SW04-0027	PSNS032	3174*45	stormwater	Prep Lab J-2-B	Total Metals	03/02/11 0834
SW04-0028	PSNS032	3174*46	stormwater	Prep Lab J-2-B	Dissolved Metals	03/02/11 0834
SW04-0029	PSNS008	3174*47	stormwater	Prep Lab J-2-B	Total Metals	03/02/11 1002
SW04-0030	PSNS008	3174*48	stormwater	Prep Lab J-2-B	Dissolved Metals	03/02/11 1002
SW04-0031	PSNS015	3174*49	stormwater	Prep Lab J-2-B	Total Metals	03/02/11 0931
SW04-0032	PSNS015	3174*50	stormwater	Prep Lab J-2-B	Dissolved Metals	03/02/11 0931

Date: _____
Page: 1 of 1
Project No.: N4523A10MP00034 Amend.1
Project: PSNSNon-dry Dock SW 2010

Marine Sciences Laboratory
1529 West Sequim Bay Road
Laboratory: Battelle MSL
Attention: Jill Brandenberger
Phone: (360) 681-4564

Data Package, Non-Dry Dock Stormwater, STE#4

SAMPLE CHAIN OF CUSTODY FORM

Date: 3/3/2011

Page: 1 of 2

Project No.: 54220

Project: Non-dry Dock Stormwater SW04

SW = Stormwater

Battelle

Marine Sciences Laboratory
1529 West Sequim Bay Road

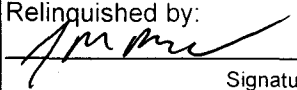
Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH						No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW04-0001	PSNS008	03/01/11 1950	SW							x						2	grab	SW04	
SW04-0002	PSNS032	03/01/11 1840	SW							x						2	grab	SW04	
SW04-0003	PSNS015	03/01/11 2000	SW							x						2	grab	SW04	
SW04-0004	PSNS096	03/01/11 2037	SW							x						2	grab	SW04	
SW0010	EB	03/01/11 2053	SW							x						2	grab	SW04	
SW04-0009	PSNS096	03/01/11 2340	SW	x												1	comp	SW04	
SW04-0010	PSNS096	03/01/11 2340	SW		x											1	comp	SW04	
SW04-0011	PSNS096	03/01/11 2340	SW			x										1	comp	SW04	
SW04-0012	PSNS096	03/01/11 2340	SW				x									1	comp	SW04	
SW04-0013	PSNS032	03/02/11 0834	SW	x												1	comp	SW04	
SW04-0014	PSNS032	03/02/11 0834	SW		x											1	comp	SW04	
SW04-0015	PSNS032	03/02/11 0834	SW			x										1	comp	SW04	
SW04-0016	PSNS032	03/02/11 0834	SW				x									1	comp	SW04	
SW04-0017	PSNS008	03/02/11 1002	SW	x												1	comp	SW04	

Relinquished by:			Received by:			Total # of Containers	
						Shipment Method:	
Signature	Date	Time	Signature			Fedex to CAS	
Printed Name Company			Printed Name			Sample Disposition:	
Relinquished by:			Received by:			Distribution:	
						1) PNNL	
Signature Date Time			Signature			2) CAS	
Printed Name Company			Printed Name			3) TAI	

Battelle

Marine Sciences Laboratory
1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

[illegible]

Battelle

Marine Sciences Laboratory
1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH						No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW04-0025	PSNS096	03/01/11 2340	SW					x		from SW04-005						1	comp	SW04	3174*43
SW04-0026	PSNS096	03/01/11 2340	SW						x	from SW04-005						1	comp	SW04	3174*44
SW04-0027	PSNS032	03/02/11 0834	SW					x		from SW04-006						1	comp	SW04	3174*45
SW04-0028	PSNS032	03/02/11 0834	SW						x	from SW04-006						1	comp	SW04	3174*46
SW04-0029	PSNS008	03/02/11 1002	SW					x		from SW04-007						1	comp	SW04	3174*47
SW04-0030	PSNS008	03/02/11 1002	SW						x	from SW04-007						1	comp	SW04	3174*48
SW04-0031	PSNS015	03/02/11 0931	SW					x		from SW04-008						1	comp	SW04	3174*49
SW04-0032	PSNS015	03/02/11 0931	SW						x	from SW04-008						1	comp	SW04	3174*50
Relinquished by:				Received by:										Total # of Containers					
														Shipment Method:					
Signature Date Time				Signature										Retained at Battelle					
JM Brandenberger Battelle				Printed Name										Sample Disposition:					
Printed Name Company				Printed Name										Distribution:					
Relinquished by:				Received by:										1) PNNL					
Signature Date Time				Signature										2) CAS					
Printed Name Company				Printed Name										3) TAI					

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 3174 Sample No(s): 43-50 (PNNL) Batch: 7
Project Name: Non-Dry Dock SW04 Project Manager: Jmr

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: Water WP# _____

Yes No
☐ ☒ Navy-type Project (requires high-level sample tracking procedures)
☐ ☒ USDA Samples (see Compliance Agreement Checklist) PM Verification: _____

☒ ☐ Filter Samples: Amount: Entire sample Half of sample
☐ ☒ Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Login Lab)
☒ ☐ Special instructions: split composite for CAS; MSL
Sample Preservation Instructions: metals 0.290 HNO₃
See LIMS for archive/disposal information

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes No N/A Indicate in Appropriate Box

☐ ☐ ☒ Custody seal present Seal intact? YES NO
☒ ☐ ☐ Cooler temperature (acceptable range: $4 \pm 2^\circ\text{C}$ or solids: frozen)
(if multiple coolers, note temp. of each)
☐ ☐ ☒ Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)
Comment/Remedy: _____

☒ ☐ ☐ Were all chain of custody forms signed and dated?
☒ ☐ ☐ Were samples filtered at MSL?

#3 = 4.0
#4 = 4.6
#5 = 4.2
#1 = 2.9 °C
#2 = 3.2 °C

Sample condition(s): Acceptable Other (explain): _____

Container type: Poly Glass Cap. Vial Other: _____

Notes: _____

Completed By: Jmr Date/Time: 3/2/11 1930

SAMPLE PRESERVATION - metals only

☐ Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)
☐ Random pH checked for ~10% of samples (use dip paper) Sample IDs: _____
☐ Complete pH check required for project (use pH meter and record on pH Record form)
☒ Sample(s) were preserved at MSL

Type: ☒ 0.2% HNO₃ Notes: _____ Lot# _____
☐ 0.5% HCl (Hg samples) Notes: _____ Lot# _____
☐ Refrigerate/Freeze Notes: _____
☐ Other Notes: _____

Completed By: Jmr Date/Time: 3/2/11 2000

Storage Shelf: J-2-B

101101848

SAMPLE CHAIN OF CUSTODY FORM

Date: 3/3/2011
 Page: 1 of 2
 Project No.: 54220
 Project: Non-dry Dock Stormwater SW04

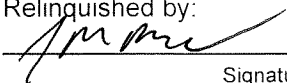

SW = Stormwater

Battelle

Marine Sciences Laboratory
 1529 West Sequim Bay Road
 Laboratory: Battelle MSL
 Attention: Jill Brandenberger
 Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH					No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW04-0001	PSNS008	03/01/11 1950	SW							x					2	grab	SW04	
SW04-0002	PSNS032	03/01/11 1840	SW							x					2	grab	SW04	
SW04-0003	PSNS015	03/01/11 2000	SW							x					2	grab	SW04	
SW04-0004	PSNS096	03/01/11 2037	SW							x					2	grab	SW04	
SW0010	EB	03/01/11 2053	SW							x					2	grab	SW04	
SW04-0009	PSNS096	03/01/11 2340	SW	x											1	comp	SW04	
SW04-0010	PSNS096	03/01/11 2340	SW		x										1	comp	SW04	
SW04-0011	PSNS096	03/01/11 2340	SW			x									1	comp	SW04	
SW04-0012	PSNS096	03/01/11 2340	SW				x								1	comp	SW04	
SW04-0013	PSNS032	03/02/11 0834	SW	x											1	comp	SW04	
SW04-0014	PSNS032	03/02/11 0834	SW		x										1	comp	SW04	
SW04-0015	PSNS032	03/02/11 0834	SW			x									1	comp	SW04	
SW04-0016	PSNS032	03/02/11 0834	SW				x								1	comp	SW04	
SW04-0017	PSNS008	03/02/11 1002	SW	x											1	comp	SW04	

Relinquished by:			Received by:			Total # of Containers		
	3/3/11	1200				Shipment Method:		
Signature	Date	Time	Signature			Fedex to CAS		
Printed Name Company			Printed Name			Sample Disposition:		
Relinquished by:			Received by:			Distribution:		
Signature Date Time			Signature			1) PNNL		
Printed Name Company			Printed Name			2) CAS		
						3) TAI		

10101848

Battelle

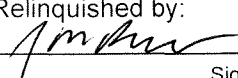

Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH						No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW04-0018	PSNS008	03/02/11 1002	SW		x											1	comp	SW04	
SW04-0019	PSNS008	03/02/11 1002	SW			x										1	comp	SW04	
SW04-0020	PSNS008	03/02/11 1002	SW				x									1	comp	SW04	
SW04-0021	PSNS015	03/02/11 0931	SW	x												1	comp	SW04	
SW04-0022	PSNS015	03/02/11 0931	SW		x											1	comp	SW04	
SW04-0023	PSNS015	03/02/11 0931	SW			x										1	comp	SW04	
SW04-0024	PSNS015	03/02/11 0931	SW				x									1	comp	SW04	
Relinquished by:  3/3/11 1200				Received by: 												Total # of Containers			
Signature _____ Date _____ Time _____				Signature _____ 3/4/11 0915												Shipment Method:			
Printed Name _____ Company _____				Printed Name _____												Sample Disposition:			
Relinquished by:				Received by:												Distribution:			
Signature _____ Date _____ Time _____				Signature _____												1) PNNL			
Printed Name _____ Company _____				Printed Name _____												2) CAS			
																3) TAI			

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC HH

Client / Project: Pattule Marine Sciences Service Request K11 01848

Received: 3/4/11 Opened: 3/4/11 By: 402 Unloaded: 3/4/11 By: 402

1. Samples were received via? *Mail* Fed Ex *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) Cooler *Box* *Envelope* *Other* NA
3. Were custody seals on coolers? *NA* *Y* N If yes, how many and where? _____
- If present, were custody seals intact? *Y* *N* If present, were they signed and dated? *Y* *N*

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID	NA	Tracking Number	NA	Filed
-4C	<u>✓</u> <u>100</u>	<u>289</u>			<u>7944 9186 3900</u>		
-4C		<u>300</u>			<u>7944 9186 4137</u>		

7. Packing material used. *Inserts* *Baggies* Bubble Wrap *Gel Packs* Wet Ice *Sleeves* *Other* _____
8. Were custody papers properly filled out (ink, signed, etc.)? *NA* Y *N*
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* *NA* Y *N*
10. Were all sample labels complete (i.e analysis, preservation, etc.)? *NA* Y *N*
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* *NA* Y *N*
12. Were appropriate bottles/containers and volumes received for the tests indicated? *NA* Y *N*
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* *NA* Y *N*
14. Were VOA vials received without headspace? *Indicate in the table below.* NA *Y* *N*
15. Was C12/Res negative? NA *Y* *N*

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW04
Sample Matrix: Water

Service Request No.: K1101848
Date Received: 3/4/11

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Twenty-one water samples were received for analysis at Columbia Analytical Services on 3/4/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

Total Suspended Solids by SM 2540 D:

The Relative Percent Difference (RPD) criterion for the replicate analysis of Total Suspended Solids in sample Batch QC was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

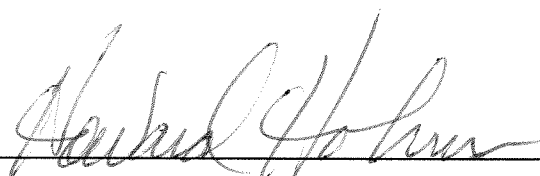
Diesel Range Organics by NWTPH-Dx

Relative Percent Difference Exceptions:

The Relative Percent Difference (RPD) criterion for the replicate analysis of Diesel Range Organics (DRO) and Residual Range Organics (RRO) in sample SW04-001; Residual Range Organics (RRO) in sample Batch QC was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Approved by _____



Date _____

3-30-11

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H In accordance with the 2007 EPA Methods Update Rule published in the Federal Register, the holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value that was detected outside the quantitation range.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value that was detected outside the quantitation range.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Collected: 3/ 1/11 - 3/ 2/11
Date Received: 3/ 4/11

Analysis Method: SM 2340 C

Units: mg/L
Basis: NA

Hardness, Total as CaCO3

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW04-009	K1101848-006	34.9		2.0	0.8	1	NA	3/11/11 15:00	
SW04-013	K1101848-010	20.2		2.0	0.8	1	NA	3/11/11 15:00	
SW04-017	K1101848-014	18.1		2.0	0.8	1	NA	3/11/11 15:00	
SW04-021	K1101848-018	40.7		2.0	0.8	1	NA	3/11/11 15:00	
Method Blank	K1101848-MB1	ND	U	2.0	0.8	1	NA	3/11/11 15:00	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Collected: 3/1/11
Date Received: 3/4/11
Date Analyzed: 3/11/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: SW04-009
Lab Code: K1101848-006

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	SW04-009DUP Duplicate Sample K1101848-006DUP1		RPD	RPD Limit
					Result	Average		
Hardness, Total as CaCO3	SM 2340 C	2.0	0.8	34.9	35.7	35.3	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Service Request: K1101848
Date Analyzed: 3/11/11

Units: mg/L
Basis: NA

Analyte Name	Method	Result	Spike		% Rec Limits
			Amount	% Rec	
Hardness, Total as CaCO3	SM 2340 C	48.3	43.4	111	90 - 116

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Collected: 3/ 1/11 - 3/ 2/11
Date Received: 3/ 4/11

Analysis Method: SM 5310 C

Units: mg/L
Basis: NA

Carbon, Dissolved Organic (DOC)

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW04-011	K1101848-008	1.52		0.50	0.07	1	NA	3/9/11 14:13	
SW04-015	K1101848-012	3.04		0.50	0.07	1	NA	3/9/11 14:13	
SW04-019	K1101848-016	3.22		0.50	0.07	1	NA	3/9/11 14:13	
SW04-023	K1101848-020	3.39		0.50	0.07	1	NA	3/9/11 14:13	
Method Blank	K1101848-MB1	0.07	J	0.50	0.07	1	NA	3/9/11 14:13	
Method Blank	K1101848-MB2	ND	U	0.50	0.07	1	NA	3/9/11 14:13	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Collected: 3/1/11
Date Received: 3/4/11
Date Analyzed: 3/9/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: SW04-011
Lab Code: K1101848-008

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	SW04-011DUP Duplicate Sample K1101848-008DUP3		RPD	RPD Limit
					Result	Average		
Carbon, Dissolved Organic (DOC)	SM 5310 C	0.50	0.07	1.52	1.85	1.69	19	33

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Collected: 3/1/11
Date Received: 3/4/11
Date Analyzed: 3/9/11

Matrix Spike Summary
General Chemistry Parameters

Sample Name: SW04-011
Lab Code: K1101848-008

Units: mg/L
Basis: NA

Analytical Method: SM 5310 C

SW04-011MS
Matrix Spike
K1101848-008MS2

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Dissolved Organic (DOC)	1.52	27.1	25.0	102	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Analyzed: 3/9/11

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Lab Control Sample K1101848-LCS1					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Dissolved Organic (DOC)	SM 5310 C	27.0	26.0	104	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Analyzed: 3/9/11

**Lab Control Sample Summary
 General Chemistry Parameters**

Units: mg/L
Basis: NA

Lab Control Sample K1101848-LCS2					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Dissolved Organic (DOC)	SM 5310 C	26.9	26.0	104	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Service Request: K1101848

Units: mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	238523	KQ1102097-14	3/9/11 14:13	25.0	24.2	97	90 - 110
CCV2	238523	KQ1102097-15	3/9/11 14:13	25.0	24.2	97	90 - 110
CCV3	238523	KQ1102097-16	3/9/11 14:13	25.0	23.7	95	90 - 110
CCV4	238523	KQ1102097-17	3/9/11 14:13	25.0	23.7	95	90 - 110
CCV5	238523	KQ1102097-18	3/9/11 14:13	25.0	23.7	95	90 - 110
CCV6	238523	KQ1102097-19	3/9/11 14:13	25.0	24.1	96	90 - 110

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220

Service Request: K1101848

Continuing Calibration Blank (CCB) Summary
Carbon, Dissolved Organic (DOC)

Analytical Method: SM 5310 C**Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	Result	Q
CCB1	238523	KQ1102097-20	3/9/11 14:13	0.50	ND	U
CCB2	238523	KQ1102097-21	3/9/11 14:13	0.50	ND	U
CCB3	238523	KQ1102097-22	3/9/11 14:13	0.50	ND	U
CCB4	238523	KQ1102097-23	3/9/11 14:13	0.50	ND	U
CCB5	238523	KQ1102097-24	3/9/11 14:13	0.50	ND	U
CCB6	238523	KQ1102097-25	3/9/11 14:13	0.50	ND	U

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Collected: 3/ 1/11 - 3/ 2/11
Date Received: 3/ 4/11

Analysis Method: SM 5310 C

Units: mg/L
Basis: NA

Carbon, Total Organic

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW04-010	K1101848-007	0.90		0.50	0.07	1	NA	3/8/11 12:51	
SW04-014	K1101848-011	2.80		0.50	0.07	1	NA	3/8/11 12:51	
SW04-018	K1101848-015	2.07		0.50	0.07	1	NA	3/8/11 12:51	
SW04-022	K1101848-019	2.61		0.50	0.07	1	NA	3/8/11 12:51	
Method Blank	K1101848-MB1	ND	U	0.50	0.07	1	NA	3/8/11 12:51	
Method Blank	K1101848-MB2	ND	U	0.50	0.07	1	NA	3/8/11 12:51	
Method Blank	K1101848-MB3	ND	U	0.50	0.07	1	NA	3/8/11 12:51	
Method Blank	K1101848-MB4	ND	U	0.50	0.07	1	NA	3/8/11 12:51	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Collected: 3/1/11
Date Received: 3/4/11
Date Analyzed: 3/8/11

**Replicate Sample Summary
General Chemistry Parameters**

Sample Name: SW04-010
Lab Code: K1101848-007

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	SW04-010DUP Duplicate Sample K1101848-007DUP2		RPD	RPD Limit
					Result	Average		
Carbon, Total Organic	SM 5310 C	0.50	0.07	0.90	1.12	1.01	22	33

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Collected: 3/1/11
Date Received: 3/4/11
Date Analyzed: 3/ 8/11

Matrix Spike Summary
General Chemistry Parameters

Sample Name: SW04-010
Lab Code: K1101848-007

Units: mg/L
Basis: NA

Analytical Method: SM 5310 C

SW04-010MS
Matrix Spike
K1101848-007MS1

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	0.90	25.8	25.0	99	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Analyzed: 3/ 8/11

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L**Basis:** NA

Lab Control Sample K1101848-LCS1					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	SM 5310 C	27.1	26.0	104	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Analyzed: 3/ 8/11

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Lab Control Sample K1101848-LCS2					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	SM 5310 C	26.8	26.0	103	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Analyzed: 3/ 8/11

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L**Basis:** NA

Lab Control Sample K1101848-LCS3					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	SM 5310 C	26.8	26.0	103	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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SuperSet Reference: 11-6000171-02 rev 00

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Analyzed: 3/ 8/11

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Lab Control Sample K1101848-LCS4					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	SM 5310 C	26.5	26.0	102	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Service Request: K1101848

Analytical Method: SM 5310 C

Units: mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	238321	KQ1102062-30	3/8/11 12:51	25.0	23.4	94	90 - 110
CCV2	238321	KQ1102062-31	3/8/11 12:51	25.0	24.5	98	90 - 110
CCV3	238321	KQ1102062-32	3/8/11 12:51	25.0	23.9	96	90 - 110
CCV4	238321	KQ1102062-33	3/8/11 12:51	25.0	23.5	94	90 - 110
CCV5	238321	KQ1102062-34	3/8/11 12:51	25.0	24.3	97	90 - 110
CCV6	238321	KQ1102062-35	3/8/11 12:51	25.0	23.8	95	90 - 110
CCV7	238321	KQ1102062-36	3/8/11 12:51	25.0	24.0	96	90 - 110
CCV8	238321	KQ1102062-37	3/8/11 12:51	25.0	24.0	96	90 - 110
CCV9	238321	KQ1102062-38	3/8/11 12:51	25.0	24.1	96	90 - 110

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220

Service Request: K1101848

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analytical Method: SM 5310 C**Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	Result	Q
CCB1	238321	KQ1102062-39	3/8/11 12:51	0.50	ND	U
CCB2	238321	KQ1102062-40	3/8/11 12:51	0.50	ND	U
CCB3	238321	KQ1102062-41	3/8/11 12:51	0.50	ND	U
CCB4	238321	KQ1102062-42	3/8/11 12:51	0.50	ND	U
CCB5	238321	KQ1102062-43	3/8/11 12:51	0.50	ND	U
CCB6	238321	KQ1102062-44	3/8/11 12:51	0.50	ND	U
CCB7	238321	KQ1102062-45	3/8/11 12:51	0.50	ND	U
CCB8	238321	KQ1102062-46	3/8/11 12:51	0.50	ND	U
CCB9	238321	KQ1102062-47	3/8/11 12:51	0.50	ND	U

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Collected: 3/ 1/11 - 3/ 2/11
Date Received: 3/ 4/11

Analysis Method: SM 2540 D

Units: mg/L
Basis: NA

Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW04-012	K1101848-009	9.5		5.0	5.0	1	NA	3/7/11 07:30	
SW04-016	K1101848-013	18.0		5.0	5.0	1	NA	3/7/11 07:30	
SW04-020	K1101848-017	38.0		5.0	5.0	1	NA	3/7/11 07:30	
SW04-024	K1101848-021	15.5		5.0	5.0	1	NA	3/7/11 07:30	
Method Blank	K1101848-MB1	ND	U	5.0	5.0	1	NA	3/7/11 07:30	
Method Blank	K1101848-MB2	ND	U	5.0	5.0	1	NA	3/7/11 07:30	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Collected: NA
Date Received: NA
Date Analyzed: 3/7/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: K1101710-007

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	Batch QCDUP Duplicate Sample K1101710-007DUP4		RPD	RPD Limit
					Result	Average		
Solids, Total Suspended (TSS)	SM 2540 D	5.0	5.0	11.0	9.5	10.3	15 *	10

Results flagged with an asterisk (*) indicate values outside control criteria.

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

QA/QC Report

Service Request: K1101848
Date Collected: NA
Date Received: NA
Date Analyzed: 3/ 7/11

Units: mg/L
Basis: NA

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Collected: NA
Date Received: NA
Date Analyzed: 3/7/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: K1101807-002

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	Batch QC Duplicate Sample		RPD	RPD Limit
					K1101807-002	DUP12		
					Result	Average		
Solids, Total Suspended (TSS)	SM 2540 D	5.0	5.0	47.0	53.0	50.0	12 *	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Collected: NA
Date Received: NA
Date Analyzed: 3/7/11

**Replicate Sample Summary
 General Chemistry Parameters**

Sample Name: Batch QC
Lab Code: K1101807-006

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	Batch QC DUP Duplicate Sample K1101807-006DUP13		RPD	RPD Limit
					Result	Average		
Solids, Total Suspended (TSS)	SM 2540 D	5.0	5.0	ND U	6.0	NC	NC	10

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Analyzed: 3/7/11

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Lab Control Sample K1101848-LCS1					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Solids, Total Suspended (TSS)	SM 2540 D	312	320	98	80 - 115

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Analyzed: 3/7/11

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L**Basis:** NA

Lab Control Sample K1101848-LCS2					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Solids, Total Suspended (TSS)	SM 2540 D	316	320	99	80 - 115

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220

Service Request: K1101848

**Cover Page - Organic Analysis Data Package
Diesel and Residual Range Organics**

Sample Name	Lab Code	Date Collected	Date Received
SW04-001	K1101848-001	03/01/2011	03/04/2011
SW04-002	K1101848-002	03/01/2011	03/04/2011
SW04-003	K1101848-003	03/01/2011	03/04/2011
SW04-004	K1101848-004	03/01/2011	03/04/2011
SW0010	K1101848-005	03/01/2011	03/04/2011
SW04-001	KWG1102237-1	03/01/2011	03/04/2011

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the case narrative. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Manager's designee, as verified by the following signature.

Signature: _____

Name: Shae My

Date: 3/29/11

Title: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Collected: 03/01/2011
Date Received: 03/04/2011

Diesel and Residual Range Organics

Sample Name: SW04-001
Lab Code: K1101848-001
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	110	J	340	15	1	03/10/11	03/18/11	KWG1102237	
Residual Range Organics (RRO)	280	J	680	26	1	03/10/11	03/18/11	KWG1102237	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	85	50-150	03/18/11	Acceptable
n-Triacontane	92	50-150	03/18/11	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Collected: 03/01/2011
Date Received: 03/04/2011

Diesel and Residual Range Organics

Sample Name: SW04-002
Lab Code: K1101848-002
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	98	J	270	12	1	03/10/11	03/18/11	KWG1102237	
Residual Range Organics (RRO)	230	J	530	20	1	03/10/11	03/18/11	KWG1102237	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	84	50-150	03/18/11	Acceptable
n-Triacontane	86	50-150	03/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Collected: 03/01/2011
Date Received: 03/04/2011

Diesel and Residual Range Organics

Sample Name: SW04-003
Lab Code: K1101848-003
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	130	J	280	12	1	03/10/11	03/18/11	KWG1102237	
Residual Range Organics (RRO)	270	J	550	21	1	03/10/11	03/18/11	KWG1102237	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	83	50-150	03/18/11	Acceptable
n-Triacontane	87	50-150	03/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Collected: 03/01/2011
Date Received: 03/04/2011

Diesel and Residual Range Organics

Sample Name: SW04-004
Lab Code: K1101848-004
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	100	J	270	12	1	03/10/11	03/18/11	KWG1102237	
Residual Range Organics (RRO)	290	J	540	21	1	03/10/11	03/18/11	KWG1102237	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	83	50-150	03/18/11	Acceptable
n-Triacontane	86	50-150	03/18/11	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Collected: 03/01/2011
Date Received: 03/04/2011

Diesel and Residual Range Organics

Sample Name: SW0010
Lab Code: K1101848-005
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	12	J	260	12	1	03/10/11	03/18/11	KWG1102237	
Residual Range Organics (RRO)	32	J	520	20	1	03/10/11	03/18/11	KWG1102237	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	89	50-150	03/18/11	Acceptable
n-Triacontane	93	50-150	03/18/11	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Collected: NA
Date Received: NA

Diesel and Residual Range Organics

Sample Name: Method Blank
Lab Code: KWG1102237-4
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	240	11	1	03/10/11	03/18/11	KWG1102237	
Residual Range Organics (RRO)	25	J	480	19	1	03/10/11	03/18/11	KWG1102237	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	84	50-150	03/18/11	Acceptable
n-Triacontane	89	50-150	03/18/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848

Surrogate Recovery Summary
Diesel and Residual Range Organics

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
SW04-001	K1101848-001	85	92
SW04-002	K1101848-002	84	86
SW04-003	K1101848-003	83	87
SW04-004	K1101848-004	83	86
SW0010	K1101848-005	89	93
Batch QC	K1102030-001	87	84
SW04-001DUP	KWG1102237-1	80	84
Batch QCDUP	KWG1102237-2	94	90
Method Blank	KWG1102237-4	84	89
Lab Control Sample	KWG1102237-3	92	95

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl	50-150
Sur2 = n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Extracted: 03/10/2011
Date Analyzed: 03/18/2011

Duplicate Sample Summary
Diesel and Residual Range Organics

Sample Name: SW04-001
Lab Code: K1101848-001
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1102237

Analyte Name	MRL	MDL	Sample Result	SW04-001DUP KWG1102237-1 Duplicate Sample		Relative Percent Difference	RPD Limit
				Result	Average		
Diesel Range Organics (DRO)	270	12	110	110	110	4 #	30
Residual Range Organics (RRO)	530	20	280	280	280	1 #	30

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Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Extracted: 03/10/2011
Date Analyzed: 03/18/2011

Duplicate Sample Summary
Diesel and Residual Range Organics

Sample Name: Batch QC
Lab Code: K1102030-001
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1102237

Analyte Name	MRL	MDL	Sample Result	Batch QCDUP KWG1102237-2 Duplicate Sample		Relative Percent Difference	RPD Limit
				Result	Average		
Diesel Range Organics (DRO)	270	12	910	990	950	9	30
Residual Range Organics (RRO)	540	21	190	210	200	13 #	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Extracted: 03/10/2011
Date Analyzed: 03/18/2011

Lab Control Spike Summary
Diesel and Residual Range Organics

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1102237

Lab Control Sample
KWG1102237-3
Lab Control Spike

Analyte Name	Result	Expected	%Rec	%Rec Limits
Diesel Range Organics (DRO)	1580	1600	99	46-140
Residual Range Organics (RRO)	752	800	94	45-159

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Extracted: 03/10/2011
Date Analyzed: 03/18/2011
Time Analyzed: 05:25

Method Blank Summary
Diesel and Residual Range Organics

Sample Name: Method Blank
Lab Code: KWG1102237-4
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

File ID: J:\GC21\DATA\031711F\0317F216.D
Instrument ID: GC21
Level: Low
Extraction Lot: KWG1102237

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1102237-3	J:\GC21\DATA\031711F\0317F214.D	03/18/11	05:02
SW0010	K1101848-005	J:\GC21\DATA\031711F\0317F218.D	03/18/11	05:47
Batch QC	K1102030-001	J:\GC21\DATA\031711F\0317F230.D	03/18/11	08:01
Batch QCDUP	KWG1102237-2	J:\GC21\DATA\031711F\0317F232.D	03/18/11	08:23
SW04-003	K1101848-003	J:\GC21\DATA\031711F\0317F250.D	03/18/11	11:44
SW04-001	K1101848-001	J:\GC21\DATA\031711F\0317F252.D	03/18/11	12:07
SW04-001DUP	KWG1102237-1	J:\GC21\DATA\031711F\0317F254.D	03/18/11	12:29
SW04-002	K1101848-002	J:\GC21\DATA\031711F\0317F256.D	03/18/11	12:52
SW04-004	K1101848-004	J:\GC21\DATA\031711F\0317F258.D	03/18/11	13:14

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Extracted: 03/10/2011
Date Analyzed: 03/18/2011
Time Analyzed: 05:02

Lab Control Sample Summary
Diesel and Residual Range Organics

Sample Name: Lab Control Sample
Lab Code: KWG1102237-3
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

File ID: J:\GC21\DATA\031711F\0317F214.D
Instrument ID: GC21
Level: Low
Extraction Lot: KWG1102237

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1102237-4	J:\GC21\DATA\031711F\0317F216.D	03/18/11	05:25
SW0010	K1101848-005	J:\GC21\DATA\031711F\0317F218.D	03/18/11	05:47
Batch QC	K1102030-001	J:\GC21\DATA\031711F\0317F230.D	03/18/11	08:01
Batch QCDUP	KWG1102237-2	J:\GC21\DATA\031711F\0317F232.D	03/18/11	08:23
SW04-003	K1101848-003	J:\GC21\DATA\031711F\0317F250.D	03/18/11	11:44
SW04-001	K1101848-001	J:\GC21\DATA\031711F\0317F252.D	03/18/11	12:07
SW04-001DUP	KWG1102237-1	J:\GC21\DATA\031711F\0317F254.D	03/18/11	12:29
SW04-002	K1101848-002	J:\GC21\DATA\031711F\0317F256.D	03/18/11	12:52
SW04-004	K1101848-004	J:\GC21\DATA\031711F\0317F258.D	03/18/11	13:14

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220

Service Request: K1101848
Calibration Date: 03/14/2011

Initial Calibration Summary
Diesel and Residual Range Organics

Calibration ID: CAL10358
Instrument ID: GC21

Column: ZB-1

Level ID	File ID
A	J:\GC21\DATA\031311F\0313F110.D
B	J:\GC21\DATA\031311F\0313F112.D
C	J:\GC21\DATA\031311F\0313F114.D
D	J:\GC21\DATA\031311F\0313F116.D
E	J:\GC21\DATA\031311F\0313F118.D
F	J:\GC21\DATA\031311F\0313F120.D
G	J:\GC21\DATA\031311F\0313F132.D
H	J:\GC21\DATA\031311F\0313F134.D

Level ID	File ID
I	J:\GC21\DATA\031311F\0313F136.D
J	J:\GC21\DATA\031311F\0313F138.D
K	J:\GC21\DATA\031311F\0313F140.D
L	J:\GC21\DATA\031311F\0313F142.D
M	J:\GC21\DATA\031311F\0313F144.D
N	J:\GC21\DATA\031311F\0313F146.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Diesel Range Organics (DRO)				G	20	914	H	50	923	I	200	981	J	500	971
	K	2000	936	L	5000	999	M	20000	902	N	50000	923			
Residual Range Organics (RRO)				B	50	695	C	200	587	D	500	618	E	2000	559
	F	5000	594												
o-Terphenyl				G	1.0	1260	H	2.5	1240	I	10	1310	J	25	1250
	K	100	1230	L	250	1260									
n-Triacontane				G	1.0	1130	H	2.5	1090	I	10	1120	J	25	1060
	K	100	1080	L	250	1080									

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220

Service Request: K1101848
Calibration Date: 03/14/2011

Initial Calibration Summary
Diesel and Residual Range Organics

Calibration ID: CAL10358
Instrument ID: GC21

Column: ZB-1

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Diesel Range Organics (DRO)	MS	AverageRF	% RSD	3.8		≤ 20
Residual Range Organics (RRO)	MS	AverageRF	% RSD	8.4		≤ 20
o-Terphenyl	SURR	AverageRF	% RSD	2.4		≤ 20
n-Triacontane	SURR	AverageRF	% RSD	2.4		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220

Service Request: K1101848
Calibration Date: 03/14/2011
Date Analyzed: 03/14/2011

Second Source Calibration Verification
Diesel and Residual Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration ID: CAL10358
Units: ppm

File ID: J:\GC21\DATA\031311F\0313F150.D
J:\GC21\DATA\031311F\0313F152.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	944	961	2	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	1000	611	616	1	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220

Service Request: K1101848
Date Analyzed: 03/18/2011

Continuing Calibration Verification Summary
Diesel and Residual Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 03/14/2011
Calibration ID: CAL10358
Analysis Lot: KWG1102579
Units: ppm
Column ID: ZB-1

File ID: J:\GC21\DATA\031711F\0317F208.D
J:\GC21\DATA\031711F\0317F210.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1100	944	995	5	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	960	611	588	-4	NA	± 15 %	AverageRF
o-Terphenyl	50	50	1260	1260	1	NA	± 15 %	AverageRF
n-Triacontane	50	50	1090	1090	0	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220

Service Request: K1101848
Date Analyzed: 03/18/2011

Continuing Calibration Verification Summary
Diesel and Residual Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 03/14/2011
Calibration ID: CAL10358
Analysis Lot: KWG1102579
Units: ppm
Column ID: ZB-1

File ID: J:\GC21\DATA\031711F\0317F242.D
J:\GC21\DATA\031711F\0317F244.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	944	983	4	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	930	611	565	-7	NA	± 15 %	AverageRF
o-Terphenyl	50	49	1260	1230	-2	NA	± 15 %	AverageRF
n-Triacontane	50	46	1090	1000	-8	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220

Service Request: K1101848
Date Analyzed: 03/18/2011

Continuing Calibration Verification Summary
Diesel and Residual Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 03/14/2011
Calibration ID: CAL10358
Analysis Lot: KWG1102579
Units: ppm
Column ID: ZB-1

File ID: J:\GC21\DATA\031711F\0317F270.D
J:\GC21\DATA\031711F\0317F272.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	944	973	3	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	970	611	592	-3	NA	± 15 %	AverageRF
o-Terphenyl	50	49	1260	1230	-2	NA	± 15 %	AverageRF
n-Triacontane	50	48	1090	1050	-4	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220

Service Request: K1101848

Analysis Run Log
Diesel and Residual Range Organics

Analysis Method: NWTPH-Dx**Analysis Lot:** KWG1102579**Instrument ID:** GC21**Column:** ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0317F208.D	Continuing Calibration Verification	KWG1102579-1	3/18/2011	03:55		3/18/2011	04:11
0317F210.D	Continuing Calibration Verification	KWG1102579-1	3/18/2011	04:17		3/18/2011	04:33
0317F212.D	Instrument Blank	KWG1102579-4	3/18/2011	04:40		3/18/2011	04:56
0317F214.D	Lab Control Sample	KWG1102237-3	3/18/2011	05:02		3/18/2011	05:18
0317F216.D	Method Blank	KWG1102237-4	3/18/2011	05:25		3/18/2011	05:41
0317F218.D	SW0010	K1101848-005	3/18/2011	05:47		3/18/2011	06:03
0317F220.D	ZZZZZZ	ZZZZZZ	3/18/2011	06:09		3/18/2011	06:25
0317F222.D	ZZZZZZ	ZZZZZZ	3/18/2011	06:31		3/18/2011	06:47
0317F224.D	ZZZZZZ	ZZZZZZ	3/18/2011	06:54		3/18/2011	07:10
0317F226.D	ZZZZZZ	ZZZZZZ	3/18/2011	07:16		3/18/2011	07:32
0317F228.D	ZZZZZZ	ZZZZZZ	3/18/2011	07:38		3/18/2011	07:54
0317F230.D	Batch QC	K1102030-001	3/18/2011	08:01		3/18/2011	08:17
0317F232.D	Batch QCDUP	KWG1102237-2	3/18/2011	08:23		3/18/2011	08:39
0317F234.D	ZZZZZZ	ZZZZZZ	3/18/2011	08:45		3/18/2011	09:01
0317F236.D	ZZZZZZ	ZZZZZZ	3/18/2011	09:08		3/18/2011	09:24
0317F242.D	Continuing Calibration Verification	KWG1102579-2	3/18/2011	10:15		3/18/2011	10:31
0317F244.D	Continuing Calibration Verification	KWG1102579-2	3/18/2011	10:37		3/18/2011	10:53
0317F246.D	Instrument Blank	KWG1102579-5	3/18/2011	11:00		3/18/2011	11:16
0317F248.D	ZZZZZZ	ZZZZZZ	3/18/2011	11:22		3/18/2011	11:38
0317F250.D	SW04-003	K1101848-003	3/18/2011	11:44		3/18/2011	12:00
0317F252.D	SW04-001	K1101848-001	3/18/2011	12:07		3/18/2011	12:23
0317F254.D	SW04-001DUP	KWG1102237-1	3/18/2011	12:29		3/18/2011	12:45
0317F256.D	SW04-002	K1101848-002	3/18/2011	12:52		3/18/2011	13:08
0317F258.D	SW04-004	K1101848-004	3/18/2011	13:14		3/18/2011	13:30
0317F260.D	ZZZZZZ	ZZZZZZ	3/18/2011	13:36		3/18/2011	13:52
0317F270.D	Continuing Calibration Verification	KWG1102579-3	3/18/2011	15:28		3/18/2011	15:44
0317F272.D	Continuing Calibration Verification	KWG1102579-3	3/18/2011	15:51		3/18/2011	16:07
0317F274.D	Instrument Blank	KWG1102579-6	3/18/2011	16:14		3/18/2011	16:30

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle Marine Sciences Lab
Project: Non-Dry Dock Stormwater SW04/54220
Sample Matrix: Water

Service Request: K1101848
Date Extracted: 03/10/2011

Extraction Prep Log
Diesel and Residual Range Organics

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Extraction Lot: KWG1102237
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
SW04-001	K1101848-001	03/01/11	03/04/11	370mL	1mL	NA	
SW04-002	K1101848-002	03/01/11	03/04/11	480mL	1mL	NA	
SW04-003	K1101848-003	03/01/11	03/04/11	460mL	1mL	NA	
SW04-004	K1101848-004	03/01/11	03/04/11	470mL	1mL	NA	
SW0010	K1101848-005	03/01/11	03/04/11	490mL	1mL	NA	
SW04-001DUP	KWG1102237-1	03/01/11	03/04/11	480mL	1mL	NA	
Batch QCDUP	KWG1102237-2	NA	NA	470mL	1mL	NA	
Method Blank	KWG1102237-4	NA	NA	1050mL	2mL	NA	
Batch QC	K1102030-001	NA	NA	460mL	1mL	NA	
Lab Control Sample	KWG1102237-3	NA	NA	1000mL	2mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

Analytical Chemistry Data Package

**Project: Non-Dry Dock Stormwater
SW05_06 March 8-11, 2011
Chemical Analyses**

Battelle Project No. 54220
CF No. 3174



Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, WA 98382
PM: Jill Brandenberger
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Non-Dry Dock Stormwater
SW05_06 March 8-11, 2011
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Analytical raw data available upon request

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Analytical raw data available upon request

BATTELLE MARINE SCIENCE LABORATORIES

1529 West Sequim Bay Road
Sequim, Washington 98382-9099
360/681-4564

Non-Dry Dock Stormwater
ENVVEST 2010_SW05_06
Metals in Water
UNITS: µg/L

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Type Name	MSL Code	Collection Date	Hg	As	Ag	Al	Cd
<i>Instrument:</i>						<i>CVAF</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>
Laboratory Achieved Detection Limits (Freshwater)						0.0001	0.03	0.002	0.3	0.004
Freshwater Reporting Limit (MDL* 3.18)						0.0003	0.1	0.006	1.0	0.01
<u>SW05</u>										
SW05-0032	PSNS032	TME	Composite_equal_time	3174-53	03/08/11	0.00669	0.936	0.0199	282	0.184
SW05-0033	PSNS032	DME	Composite_equal_time	3174-54	03/08/11	0.00246	0.694	0.00520 J	15.0	0.0931
SW05-0034	PSNS008	TME	Composite_equal_time	3174-55	03/08/11	0.0115	0.586	0.0251	629	0.366
SW05-0035	PSNS008	DME	Composite_equal_time	3174-56	03/08/11	0.00181	0.380	0.00380 J	26.2	0.177
SW05-0036	PSNS015	TME	Composite_equal_time	3174-57r1	03/08/11	0.163	0.991	0.0300	721	0.0607
SW05-0036	PSNS015	TME	Composite_equal_time	3174-57r2	03/08/11	0.0300	NA	NA	NA	NA
SW05-0036	PSNS015	TME	Composite_equal_time	3174-57r3	03/08/11	0.174	NA	NA	NA	NA
SW05-0036	PSNS015	TME	Composite_equal_time	3174-57r4	03/08/11	0.0307	NA	NA	NA	NA
SW05-0036	PSNS015	TME	Composite_equal_time	3174-57r5	03/08/11	0.0367	NA	NA	NA	NA
SW05-0036	PSNS015	TME	Composite_equal_time	3174-57r6	03/08/11	0.0280	NA	NA	NA	NA
SW05-0037	PSNS015	DME	Composite_equal_time	3174-58	03/08/11	0.00332	0.792	0.00482 J	25.7	0.0325
SW05-0038	PSNS008FD	TME	Composite_equal_time	3174-59	03/08/11	0.0131	0.551	0.0234	643	0.335
SW05-0039	PSNS008FD	DME	Composite_equal_time	3174-60	03/08/11	0.00210	0.387	0.00433 J	36.5	0.172
<u>SW06</u>										
SW06-0030	PSNS096	TME	Composite_equal_time	3174-51	03/09/11	0.00983	1.43	0.0252	511	0.295
SW06-0031	PSNS096	DME	Composite_equal_time	3174-52	03/09/11	0.00100	0.901	0.00289 J	10.9	0.108
SW06-0015	PSNS032	TME	Composite_equal_time	3174-61	03/10/11	0.0129	1.23	0.0253	772	0.317
SW06-0016	PSNS032	DME	Composite_equal_time	3174-62	03/10/11	0.00327	0.480	0.002 U	17.1	0.104

BATTELLE MARINE SCIENCE LABORATORIES

1529 West Sequim Bay Road
Sequim, Washington 98382-9099
360/681-4564

**Non-Dry Dock Stormwater
ENVVEST 2010_SW05_06**

Metals in Water

UNITS: µg/L

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Type Name	MSL Code	Cr	Cu	Pb	Zn	CVAF Batch ID	ICP-MS Batch ID
					<i>Instrument:</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	
Laboratory Achieved Detection Limits (Freshwater)					0.08	0.007	0.002	0.05		
Freshwater Reporting Limit (MDL* 3.18)					0.3	0.02	0.006	0.2		

SW05

SW05-0032	PSNS032	TME	Composite_equal_time	3174-53	1.74	6.97	4.17	71.8	040511HGA	031811-6100
SW05-0033	PSNS032	DME	Composite_equal_time	3174-54	0.862	3.41	0.179	30.4	040511HGA	031811-6100
SW05-0034	PSNS008	TME	Composite_equal_time	3174-55	3.20	12.9	5.37	156	040511HGA	031811-6100
SW05-0035	PSNS008	DME	Composite_equal_time	3174-56	0.946	4.92	0.195	108	040511HGA	031811-6100
SW05-0036	PSNS015	TME	Composite_equal_time	3174-57r1	4.46	10.7	11.7	76.4	040511HGA	031811-6100
SW05-0036	PSNS015	TME	Composite_equal_time	3174-57r2	NA	NA	NA	NA	040511HGA	NA
SW05-0036	PSNS015	TME	Composite_equal_time	3174-57r3	NA	NA	NA	NA	040511HGA	NA
SW05-0036	PSNS015	TME	Composite_equal_time	3174-57r4	NA	NA	NA	NA	040511HGA	NA
SW05-0036	PSNS015	TME	Composite_equal_time	3174-57r5	NA	NA	NA	NA	040811HGA	NA
SW05-0036	PSNS015	TME	Composite_equal_time	3174-57r6	NA	NA	NA	NA	040811HGA	NA
SW05-0037	PSNS015	DME	Composite_equal_time	3174-58	2.94	5.22	1.38	50.4	040511HGA	031811-6100
SW05-0038	PSNS008FD	TME	Composite_equal_time	3174-59	2.97	12.6	4.94	148	040511HGA	031811-6100
SW05-0039	PSNS008FD	DME	Composite_equal_time	3174-60	0.949	5.25	0.240	109	040511HGA	031811-6100

SW06

SW06-0030	PSNS096	TME	Composite_equal_time	3174-51	4.84	32.5	11.8	116	040511HGA	031811-6100
SW06-0031	PSNS096	DME	Composite_equal_time	3174-52	1.92	5.08	0.149	59.5	040511HGA	031811-6100
SW06-0015	PSNS032	TME	Composite_equal_time	3174-61	2.76	12.4	11.8	114	040511HGA	031811-6100
SW06-0016	PSNS032	DME	Composite_equal_time	3174-62	0.412	1.92	0.192	33.2	040511HGA	031811-6100

BATTELLE MARINE SCIENCE LABORATORIES

1529 West Sequim Bay Road
Sequim, Washington 98382-9099
360/681-4564

Non-Dry Dock Stormwater
ENNVEST 2010_SW05_06

Station	Code	Type Name	Collection			Component	Units	Result	Detection	Reporting
			Date	Analysis Date	Analysis Method				Limit	Limit
PSNS096		Composite_equal_time	03/10/2011	03/18/2011	SM 2340 C	Hardness, Total as CaCO3	mg/L	30.2 =	0.8	2.0
PSNS032		Composite_equal_time	03/10/2011	03/18/2011	SM 2340 C	Hardness, Total as CaCO3	mg/L	10.9 =	0.8	2.0
PSNS008		Composite_equal_time	03/10/2011	03/18/2011	SM 2340 C	Hardness, Total as CaCO3	mg/L	9.7 =	0.8	2.0
PSNS015		Composite_equal_time	03/08/2011	03/18/2011	SM 2340 C	Hardness, Total as CaCO3	mg/L	52.1 =	0.8	2.0
PSNS008DUP		Composite_equal_time	03/08/2011	03/18/2011	SM 2340 C	Hardness, Total as CaCO3	mg/L	8.8 =	0.8	2.0
PSNS032		Composite_equal_time	03/10/2011	03/18/2011	SM 2340 C	Hardness, Total as CaCO3	mg/L	10.1 =	0.8	2.0
PSNS096		Composite_equal_time	03/10/2011	03/14/2011	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	25.5 =	5.0	5.0
PSNS032		Composite_equal_time	03/10/2011	03/14/2011	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	10 =	5.0	5.0
PSNS008		Composite_equal_time	03/08/2011	03/14/2011	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	25 =	5.0	5.0
PSNS015		Composite_equal_time	03/08/2011	03/14/2011	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	19.5 =	5.0	5.0
PSNS008DUP		Composite_equal_time	03/08/2011	03/14/2011	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	25 =	5.0	5.0
PSNS032		Composite_equal_time	03/10/2011	03/14/2011	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	31.5 =	5.0	5.0
PSNS096		Composite_equal_time	03/10/2011	03/15/2011	SM 5310 C	Carbon, Total Organic	mg/L	1.17 =	0.07	0.50
PSNS032		Composite_equal_time	03/10/2011	03/15/2011	SM 5310 C	Carbon, Total Organic	mg/L	2.17 =	0.07	0.50
PSNS008		Composite_equal_time	03/08/2011	03/15/2011	SM 5310 C	Carbon, Total Organic	mg/L	2.92 =	0.07	0.50
PSNS015		Composite_equal_time	03/08/2011	03/15/2011	SM 5310 C	Carbon, Total Organic	mg/L	3.43 =	0.07	0.50
PSNS008DUP		Composite_equal_time	03/08/2011	03/15/2011	SM 5310 C	Carbon, Total Organic	mg/L	2.8 =	0.07	0.50
PSNS032		Composite_equal_time	03/10/2011	03/15/2011	SM 5310 C	Carbon, Total Organic	mg/L	1.4 =	0.07	0.50
PSNS096		Composite_equal_time	03/10/2011	03/15/2011	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	1.31 =	0.07	0.50
PSNS032		Composite_equal_time	03/10/2011	03/15/2011	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	3 =	0.07	0.50
PSNS008		Composite_equal_time	03/08/2011	03/15/2011	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	3.14 =	0.07	0.50
PSNS015		Composite_equal_time	03/08/2011	03/15/2011	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	2.85 =	0.07	0.50
PSNS008DUP		Composite_equal_time	03/08/2011	03/15/2011	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	3.59 =	0.07	0.50
PSNS032		Composite_equal_time	03/10/2011	03/15/2011	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	1.63 =	0.07	0.50
PSNS008		Grab	03/08/2011	03/22/2011	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	240 =, J	12	270
PSNS008		Grab	03/08/2011	03/22/2011	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	830 =, O	21	540
PSNS015		Grab	03/08/2011	03/22/2011	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	170 =, J	12	260
PSNS015		Grab	03/08/2011	03/22/2011	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	540 =, O	20	520
PSNS032		Grab	03/08/2011	03/22/2011	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	170 =, J	12	260
PSNS032		Grab	03/08/2011	03/22/2011	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	420 =, J	20	520
PSNS032DUP		Grab	03/09/2011	03/22/2011	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	170 =, J	12	270
PSNS032DUP		Grab	03/09/2011	03/22/2011	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	440 =, J	20	530
PSNS032		Grab	03/09/2011	03/22/2011	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	210 =, J	11	250
PSNS032		Grab	03/09/2011	03/22/2011	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	530 =, O	19	500
PSNS096		Grab	03/09/2011	03/22/2011	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	110 =, J	12	270
PSNS096		Grab	03/09/2011	03/22/2011	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	280 =, J	20	530

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Sample Type	MSL Code	As	Ag	Al	Cd	Cr	Cu	Pb	Zn	ICP-MS Batch ID
<i>Instrument:</i>					<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	
Laboratory Achieved Detection Limits (Freshwater)					0.03	0.002	0.3	0.004	0.08	0.007	0.002	0.05	
Freshwater Reporting Limit (MDL* 3.18)					0.1	0.006	1.0	0.01	0.3	0.02	0.006	0.2	

METHOD BLANKS

MB-1		TME	Freshwater	TRM Blank	0.03 U	0.002 U	0.3 U	0.004 U	0.08 U	0.007 U	0.002 U	0.0673 J	031811-6100
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LABORATORY CONTROL SAMPLES

Spiking Level					2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
MB-1		TME	Freshwater	TRM Blank	0.03 U	0.002 U	0.3 U	0.004 U	0.08 U	0.007 U	0.002 U	0.0673 J	031811-6100
LCS (1)		TME	Freshwater	TRM LCS	2.06	2.03	2.22	2.02	2.14	2.03	2.02	2.18	031811-6100
Percent Recovery, LCS					103%	102%	111%	101%	107%	102%	101%	106%	

MATRIX SPIKE RESULTS

SW06-0031	PSNS096	DME	Composite_equal_time	3174-52	0.901	0.00289 J	10.9	0.108	1.92	5.08	0.149	59.5	031811-6100
MS	PSNS096	DME	Composite_equal_time	3174-52 MS	3.10	1.97	59.8	2.12	3.82	52.9	2.27	107	031811-6100
MSD	PSNS096	DME	Composite_equal_time	3174-52 MSD	2.93	1.88	62.6	2.10	3.72	54.9	2.18	109	031811-6100
Spiking Level					2	2	50	2	2	50	2	50	
Percent Recovery, MS					110%	98%	98%	101%	95%	96%	106%	95%	
Percent Recovery, MSD					101%	94%	103%	100%	90%	100%	102%	99%	
RPD					8.0%	4.7%	5.6%	1.0%	5.4%	4.1%	4.3%	4.1%	

REPLICATE PRECISION

SW05-0032	PSNS032	TME	Composite_equal_time	3174-53	0.936	0.0199	282	0.184	1.74	6.97	4.17	71.8	031811-6100
DUP	PSNS032	TME	Composite_equal_time	3174-53DUP	0.973	0.0192	282	0.174	1.76	6.98	4.25	72.3	031811-6100
Mean					<i>0.955</i>	<i>0.0196</i>	282	<i>0.179</i>	<i>1.75</i>	<i>6.98</i>	<i>4.21</i>	<i>72.1</i>	
RPD					3.9%	3.6%	0.0%	5.6%	1.1%	0.1%	1.9%	0.7%	

STANDARD REFERENCE MATERIAL, Seawater

SRM 1640 (1)		TME	Freshwater	TRM 1640	26.9	7.06	58.2	23.4	38.9	88.6	28.4	56.0	031811-6100
Certified Value					26.7	7.62	52.0	22.8	38.6	85.2	27.9	53.2	
PD					0.9%	7.3%	11.9%	2.7%	0.8%	4.0%	1.8%	5.3%	

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Sample Type	MSL Code	Hg	CVAF Batch ID
<i>Instrument:</i>					<i>CVAF</i>	

Laboratory Achieved Detection Limits

0.0001

Reporting Limit (MDL* 3.18)

0.0003

METHOD BLANKS

MB-1	TME	Freshwater	MB1_040411	0.0001 U	040511HGA
MB-2	TME	Freshwater	MB2_040411	0.0001 U	040511HGA
MB-3	TME	Freshwater	MB3_040411	0.0001 U	040511HGA
MB-1	TME	Freshwater	MB1_040611	0.0001 U	040811HGA
MB-2	TME	Freshwater	MB2_040611	0.0001 U	040811HGA
MB-3	TME	Freshwater	MB3_040611	0.0001 U	040811HGA

LABORATORY CONTROL SAMPLES

Spiking Level				0.00496	
LCS (1)	TME	Freshwater	OPR 040411 run1	0.00487	040511HGA
LCS (2)	TME	Freshwater	OPR 040411 run2	0.00494	040511HGA
LCS Blank (1)	TME	Freshwater	Blank040411	0.000146 J	040511HGA

Percent Recovery, LCS 1

95%

Percent Recovery, LCS 2

97%

Spiking Level				0.00496	
LCS (1)	TME	Freshwater	OPR 040611 run1	0.00492	040811HGA
LCS (2)	TME	Freshwater	OPR 040611 run2	0.00594	040811HGA
LCS Blank (1)	TME	Freshwater	Blank040611	0.000128 J	040811HGA

Percent Recovery, LCS 1

97%

Percent Recovery, LCS 2

117%

MATRIX SPIKE RESULTS

SW06-0031	PSNS096	DME	Composite_equal_time	3174-52	0.00100	040511HGA
MS1	PSNS096	DME	Composite_equal_time	3174-52MS	0.0157	040511HGA
MSD1	PSNS096	DME	Composite_equal_time	3174-52MSD	0.0158	040511HGA

Spiking Level, MS

0.0153

Spiking Level, MSD

0.0154

Percent Recovery, MS

96%

Percent Recovery, MSD

96%

RPD

0.1%

SW05-0038	PSNS008FD	TME	Composite_equal_time	3174-59	0.0131	040511HGA
MS2	PSNS008FD	TME	Composite_equal_time	3174-59MS	0.0349	040511HGA
MSD2	PSNS008FD	TME	Composite_equal_time	3174-59MSD	0.0345	040511HGA

Spiking Level, MS

0.0219

Spiking Level, MSD

0.0243

Percent Recovery, MS

100%

Percent Recovery, MSD

88%

RPD

12.1%

REPLICATE PRECISION

SW05-0036	PSNS015	TME	Composite_equal_time	3174-57r1	0.163	040511HGA
DUP	PSNS015	TME	Composite_equal_time	3174-57r2	0.0300	040511HGA
TRP	PSNS015	TME	Composite_equal_time	3174-57r3	0.174	040511HGA
QRD	PSNS015	TME	Composite_equal_time	3174-57r4	0.0307	040511HGA

Mean

0.0995

RSD

80% *

(re-prepared sample)

SW05-0036	PSNS015	TME	Composite_equal_time	3174-57r5	0.0367	040811HGA
DUP	PSNS015	TME	Composite_equal_time	3174-57r6	0.0280	040811HGA

Mean

0.0323

RPD

27%

BATTELLE MARINE SCIENCE LABORATORIES
 1529 West Sequim Bay Road
 Sequim, Washington 98382-9099
 360/681-4564

Non-Dry Dock Stormwater
 ENVVEST 2010_SW05_06
 Metals in Water
 UNITS: µg/L

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Sample Type	MSL Code	Hg	CVAF Batch ID
<i>Instrument:</i>					<i>CVAF</i>	

STANDARD REFERENCE MATERIAL

SRM 1641 (1)	TME	Freshwater	1641d 040411	1529	040511HGA
			Certified Value	1590	
			range	±18	
SRM 1641 (1)			PD	4%	

BATTELLE MARINE SCIENCE LABORATORIES
1529 West Sequim Bay Road
Sequim, Washington 98382-9099
360/681-4564

Non-Dry Dock Stormwater
ENVVEST 2010_SW05_06
Metals in Water

DATA QUALIFIERS:

- c Exceeds DQO but meets contingency criteria of either:
 - 1 SRM certified <10x MDL
 - 2 Insufficient spiking level relative to native sample concentrations
 - 3 Sample concentration <10x MDL
- U Analyte not detected at or above the MDL, MDL reported
- J Analyte detected above the MDL, but less than the RL
- N Spiked sample recovery outside QC criterion of 70-130%
- & Accuracy result outside QC criterion of $\leq 20\%$ PD
- * Precision result outside QC criterion of $< 30\%$
- NS Sample not spiked for this analyte
- B Analyte detected in the method blank > RL
 - and sample concentration < 10 times detected blank value
- b Data are blank corrected using the batch specific procedural blank
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- ND Not detected
- NA Not Available

Notes:

- Composite_equal_time Equal portion composite of time integrated sample (ISCO samples)
- NC Not Certified
 - Not analyzed
 - NA Not applicable/available
 - TME Total Metals Fraction
 - DME Dissolved Metals Fraction
 - 2 Sample specific MDLs and RLs reported

QA/QC NARRATIVE

PROJECT:	Non-Dry Dock Stormwater Sampling for SW05 and SW06
PARAMETER:	Total and Dissolved Metals – Al, Ag, As, Cd, Cr, Cu, Pb, Zn, Hg
LABORATORY:	Battelle Marine Sciences Laboratory (MSL), Sequim, Washington
MATRIX:	Stormwater (as a freshwater matrix)
SAMPLE CUSTODY AND PROCESSING:	<p>Samples were collected from stormwater outfalls located within the Confined Industrial Area (CIA) and Naval Base Kitsap (NBK) at the Puget Sound Naval Shipyard and Intermediate Maintenance Facility (PSNS & IMF) by TEC, MSL, and the U.S. Navy. The samples reported in this delivery group include stormwater samples collected from those stations during STE#5 or SW05 and STE#6 or SW06. The storm event identified as SW05 began on March 8, 2011 and SW06 began on March 9-10, 2011 with the composites ending 24 hours later.</p> <p>Samples were collected and analyzed in accordance with the Quality Assurance Project Plan (Taylor Associates, Inc. and PNNL 2011). Two types of samples were collected. The first was a time proportionate composite sample collected using an ISCO sampler at each of the four outfall locations. The second was a grab sample collected during the storm event in amber glass jars provided by Columbia Analytical Services (CAS) for total petroleum hydrocarbons (TPH). The grab samples were stored at 4°C until delivery to MSL. The individual time interval composites collected in the 24 wedge bottles inside the ISCO sampler were carried back to the stormwater lab at PSNS & IMF and composited into a single event mean composite (EMC) in a pre-cleaned glass jar. All samples were hand delivered within 24 hours of collection to MSL.</p> <p>Upon receipt at MSL, the condition of all the samples were verified as acceptable and tracked back to the field chain of custody (COC). In the clean laboratory at MSL, each glass composite sample jar was shaken vigorously (prior and between aliquot removal) and aliquots were poured into the following types of containers:</p> <ol style="list-style-type: none">1. 500 mL Teflon bottle for total metals (TME),2. 500 mL 0.45µm polyvinylidene fluoride (PVDF) filter unit, vacuum filtered in a class 100 clean bench and then poured into a 500 mL Teflon bottle for dissolved metals,3. 250 mL low-density polyethylene (LDPE) bottle provided by CAS that included a nitric acid preservative for samples to be analyzed for hardness (HRD),4. 500 mL LDPE container with sulfuric acid preservative provided by CAS for the analysis of total organic carbon (TOC),5. 60 mL syringe and ashed glass fiber filter (GFF) in a cleaned filter holder. An aliquot of the sample was filtered into a 250 mL LDPE container with sulfuric acid preservative provided by CAS for the analysis of dissolved organic carbon (DOC),6. 500 mL or 1L LDPE bottle provided by CAS for the analysis of total suspended solids (TSS), and turbidity was measured in the field. <p>The total metal fractions and dissolved metal fractions were each acidified inside a Class 100 clean bench to a pH of < 2.0 with double distilled nitric acid. The samples were then assigned a Battelle Central File (CF) identification number (3174) and were entered into Battelle's sample tracking system.</p> <p>The TPH grab samples and composite aliquots for TOC, DOC, hardness, and TSS were all forwarded to CAS for analysis. The quality control narrative for these parameters was provided separately.</p>

QA/QC NARRATIVE

The following lists information on sample receipt and processing activities:

Sample Receipt Dates:	03/09/11 and 03/10/11
Cooler temp. on arrival	All coolers were at 4.0±2°C
Collection dates	03/08/11, 03/09/11, and 03/10/11
CVAF analysis dates (Hg)	04/05/11 and 04/08/11
TRM Prep/Freshwater Analysis by ICP-MS (As, Ag, Al, Cd, Cr, Cu, Pb, Zn)	03/18/11

QA/QC DATA QUALITY OBJECTIVES:

Analyte	Analytical Method for Seawater	MS Range of Recovery	SRM Percent Difference	Replicate Precision	Method Detection Limits (µg/L)	Reporting Limits (µg/L)
Aluminum	ICP-MS	70-130%	≤20%	≤30%	0.3	1.0
Arsenic	ICP-MS	70-130%	≤20%	≤30%	0.03	0.1
Cadmium	ICP-MS	70-130%	≤20%	≤30%	0.004	0.01
Chromium	ICP-MS	70-130%	≤20%	≤30%	0.08	0.3
Copper	ICP-MS	70-130%	≤20%	≤30%	0.007	0.02
Lead	ICP-MS	70-130%	≤20%	≤30%	0.002	0.006
Silver	ICP-MS	70-130%	≤20%	≤30%	0.002	0.006
Zinc	ICP-MS	70-130%	≤20%	≤30%	0.05	0.2
Mercury	CVAF	70-130%	≤20%	≤30%	0.0001	0.0003

METHODS:

Samples were analyzed for nine metals: aluminum (Al), arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), silver (Ag), zinc (Zn), and mercury (Hg). Samples were submitted for analyses following two methods. All samples were analyzed for Hg by Cold Vapor Atomic Fluorescence (CVAF) in accordance with Battelle SOP *MSL-I-013, Total Mercury in Aqueous Samples by CVAF*, following EPA Method 1631 revision E.

All samples were analyzed for other metals by Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) in accordance with Battelle SOP *MSL-I-022, Determination of Elements in Aqueous and Digestate Samples by ICP/MS*. The base methods for this procedure are EPA Method 1638 and EPA Method 1640. All samples were digested following the total metal recoverable (TRM) method established in EPA Method 1640 prior to analysis by ICP-MS. In summary, this preparation brings the pH of the sample to 2% and heats the capped samples for 2.5 hours in a 85°C oven to solubilize particulates. Both the filtered and unfiltered fractions were prepared using this method to destroy any colloidal particles remaining in the filtered (aka. Dissolved) fraction. All results were reported in units of µg/L. Data are not blank corrected.

HOLDING TIMES:

All samples were analyzed within the established holding times of 90 days for Hg and six months for all other metals.

DETECTION LIMITS:

Laboratory method detection limits (MDLs) for TRM freshwater were reported from the MDL study (annually verified) as determined by seven replicates of deionized

QA/QC NARRATIVE

water spiked at appropriate concentrations and prepared using the TRM method. Reporting limits are determined as 3.18 times the laboratory achieved MDL. The data are evaluated and flagged as follows:

- U Analyte not detected at or above the MDL, MDL reported
- J Analyte detected above the MDL, but less than the RL
- N Spiked sample recovery outside QC criterion of 70-130%
- & Accuracy result outside QC criterion of $\leq 20\%$ PD
- * Precision result outside QC criterion of $< 30\%$
- B Analyte detected in the method blank $>$ RL and sample concentration $<$ 10 times detected blank value
- c Exceeds data quality objective but meets contingency criterion
- b Result is reagent blank corrected using the batch specific blank (BMRB)

METHOD BLANKS: A minimum of one method blank was prepared and analyzed by each instrument with each analytical batch. The method blanks were all less than the RL.

LABORATORY CONTROL SAMPLES: A minimum of one LCS (OPR or blank spike) was prepared and analyzed with each analytical batch of 20 or fewer samples. Percent recoveries for LCS samples were within the QC acceptance criterion of 70% to 130% for all metals. They also met a secondary criterion of $\pm 15\%$ recovery for metals.

MATRIX SPIKE ACCURACY: A minimum of one set of duplicate matrix spikes (MS/MSD) was prepared and analyzed with each analytical batch of 20 or fewer samples. Percent recoveries for matrix spikes were within the QC limits of 70% to 130% for all metals.

REPLICATE PRECISION: Laboratory precision was expressed as the relative percent difference (RPD) between laboratory duplicates. The RPD values for the laboratory duplicates were within the QC acceptance criterion of $\pm 30\%$ for all metals detected above the RL. Sample 3174-57 (PSNS015) was analyzed a total of six times for Hg due to high heterogeneity. The original preparation of the duplicates demonstrated a high degree of heterogeneity and a second set of duplicates were prepared and analyzed. The heterogeneity was attributed to particulates and good laboratory precision was demonstrated by the duplicate matrix spikes and OPR.

STANDARD REFERENCE MATERIAL ACCURACY: Standard reference materials (SRM) were prepared and analyzed with each analytical batch at a minimum frequency of 1 per 20 or fewer samples. Analytical accuracy was expressed as the percent difference (PD) between the measured and the certified value. The freshwater SRMs were 1641d for Hg and 1640 for all other metals. The differences were within the QC acceptance criterion of $\leq 20\%$.

REFERENCE: Taylor Associates, Inc. – Division of TEC, Inc. and Pacific Northwest National Laboratory (2011). Non-Dry Dock Stormwater Monitoring Conducted at Puget Sound Naval Shipyard Bremerton, WA, Project ENVVEST Study Area. Document prepared for the United States Navy Puget Sound Naval Shipyard.

SAMPLE CHAIN OF CUSTODY FORM

Date: 3-9-11

Page: 1 of 1

Project No.: N4523A10MP00034 Amend.1

Project: PSNSNon-dry Dock SW 2010

Battelle

Marine Sciences Laboratory

1529 West Sequim Bay Road


Laboratory: Battelle MSL


Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	TPH	Turbidity					No. containers	Sample Type (Grab vs. Comp)	Storm#	Notes
SW05-0001	PSNS 008	3-8-11 (0829)	SW						X						2	Grab	5	
SW05-0002	PSNS 015	3-8-11 (0934)	SW						X						2	Grab	5	
SW05-0003	PSNS 032	3-8-11 (0852)	SW						X						2	Grab	5	
SW05-0004	PSNS 032 DUP	3-8-11 (0855)	SW						X						2	Grab	5	DUP of 032
SW05-0005	PSNS 008	3-8-11 (0855)	SW	X	X	X	X	X							1	Comp	5	Cond=36 Turb=30
SW05-0006	PSNS 008 DUP	3-8-11 (0855)	SW	X	X	X	X	X							1	Comp	5	Cond=37 Turb=29 DUP of 008
SW05-0007	PSNS 015	3-8-11 (1139)	SW	X	X	X	X	X							1	Comp	5	Cond=374 Turb=23
SW05-0008	PSNS 032	3-8-11 (0904)	SW	X	X	X	X	X							1	Comp	5	Cond=79 Turb=15

Relinquished by:  3/9/11 1605
 Signature Date Time
 Brian Ruppert TEC
 Printed Name Company

Received by:  3/9/11 1610
 Signature Date Time
 Brenda Lasorsa
 Printed Name

Total # of Containers:
 Shipment Method:
 Hand deliver TEC to PNNL
 Sample Disposition:

Relinquished by:
 Signature Date Time
 Printed Name Company

Received by:
 Signature
 Printed Name

Distribution:
 1) PNNL
 2) CAS
 3) JAT TEC JMB 3/11/11

Date: _____
Page: 1 of 1
Project No.: N4523A10MP00034 Amend.1
Project: PSNSNon-dry Dock SW 2010

Marine Sciences Laboratory
1529 West Sequim Bay Road
Laboratory: Battelle MSL
Attention: Jill Brandenberger
Phone: (360) 681-4564

Data Package, Non-Dry Dock Stormwater, STE#5 and 6

SAMPLE CHAIN OF CUSTODY FORM

Date: Reprinted 03/11/11 JMB

Page: 1 of 3

Project No.: 54220

Project: Non-dry Dock Stormwater SW05 and SW06

SW = Stormwater

Battelle

Marine Sciences Laboratory

1529 West Sequim Bay Road

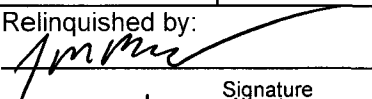
Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH						No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW05-0001	PSNS008	03/08/11 0829	SW							x						2	grab	SW05	
SW05-0002	PSNS015	03/08/11 0934	SW							x						2	grab	SW05	
SW05-0003	PSNS032	03/08/11 0852	SW							x						2	grab	SW05	
SW05-0004	PSNS032DUP	03/08/11 0855	SW							x						2	grab	SW05	
Removed line 3/11/11 JMB																			
SW06-0040	PSNS096	03/10/11 0111	SW	x												1	comp	SW06	
SW06-0041	PSNS096	03/10/11 0111	SW		x											1	comp	SW06	
SW06-0042	PSNS096	03/10/11 0111	SW			x										1	comp	SW06	
SW06-0043	PSNS096	03/10/11 0111	SW				x									1	comp	SW06	
SW05-0014	PSNS032	03/10/11 0904	SW	x												1	comp	SW05	
SW05-0015	PSNS032	03/10/11 0904	SW		x											1	comp	SW05	
SW05-0016	PSNS032	03/10/11 0904	SW			x										1	comp	SW05	
SW05-0017	PSNS032	03/10/11 0904	SW				x									1	comp	SW05	
SW05-0018	PSNS008	03/10/11 0855	SW	x												1	comp	SW05	

Relinquished by:  3/11/11 (reprinted) sent 3/16/10 see original	Signature	Date	Time
	Printed Name Company		
	Relinquished by:		
Relinquished by: Signature Date Time Printed Name Company	Received by:		Total # of Containers
	Signature		Shipment Method:
	Printed Name		Fedex to CAS
Relinquished by: Signature Date Time Printed Name Company	Received by:		Sample Disposition:
	Signature		Distribution:
	Printed Name		1) PNNL 2) CAS 3) TAI

SAMPLE CHAIN OF CUSTODY FORM

Date: 3/10/2011
 Page: 2 of 3
 Project No.: 54220
 Project: Non-dry Dock Stormwater SW05

SW = Stormwater

Battelle

Marine Sciences Laboratory
 1529 West Sequim Bay Road
 Laboratory: Battelle MSL
 Attention: Jill Brandenberger
 Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH							No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW05-0019	PSNS008	3/8/11 0855	SW		x												1	comp	SW05	
SW05-0020	PSNS008	3/8/11 0855	SW			x											1	comp	SW05	
SW05-0021	PSNS008	3/8/11 0855	SW				x										1	comp	SW05	
SW05-0022	PSNS015	3/8/11 1139	SW	x													1	comp	SW05	
SW05-0023	PSNS015	3/8/11 1139	SW		x												1	comp	SW05	
SW05-0024	PSNS015	3/8/11 1139	SW			x											1	comp	SW05	
SW05-0025	PSNS015	3/8/11 1139	SW				x										1	comp	SW05	
SW05-0026	PSNS 008 FD	3/8/11 0855	SW	x													1	comp	SW05	field dup
SW05-0027	PSNS 008 FD	3/8/11 0855	SW		x												1	comp	SW05	field dup
SW05-0028	PSNS 008 FD	3/8/11 0855	SW			x											1	comp	SW05	field dup
SW05-0029	PSNS 008 FD	3/8/11 0855	SW				x										1	comp	SW05	field dup

Relinquished by: Brenda Lasorsa 3/10/11 1400
 Signature Date Time
 Printed Name Company

Received by: _____
 Signature
 Printed Name

Total # of Containers _____
 Shipment Method: Fedex to CAS
 Sample Disposition:

Relinquished by: _____
 Signature Date Time
 Printed Name Company

Received by: _____
 Signature
 Printed Name

Distribution:
 1) PNNL
 2) CAS
 3) TAI

SAMPLE CHAIN OF CUSTODY FORM

Date: 3/10/2011

Page: 3 of 3

Project No.: 54220

Project: Non-dry Dock Stormwater SW06

SW = Stormwater

Battelle

Marine Sciences Laboratory
1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH							No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW06-0011	PSNS032	3/10/11 0513	SW	x													1	comp	SW06	
SW06-0012	PSNS032	3/10/11 0513	SW		x												1	comp	SW06	
SW06-0013	PSNS032	3/10/11 0513	SW			x											1	comp	SW06	
SW06-0014	PSNS032	3/10/11 0513	SW				x										1	comp	SW06	
SW06-0001	PSNS032	3/8/11 1310	SW							x							2	grab	SW06	
		3/9/11																		
		1mb																		
		3/10/11																		

Relinquished by:

Signature

Date

Time

Printed Name

Company

Relinquished by:

Signature

Date

Time

Printed Name

Company

Received by:

Signature

Printed Name

Received by:

Signature

Printed Name

Total # of Containers

Shipment Method:

Fedex to CAS

Sample Disposition:

Distribution:

- 1) PNNL
- 2) CAS
- 3) TAI

SAMPLE CHAIN OF CUSTODY FORM

Date: 3/10/2011

Page: 1 of 3

Project No.: 54220

Project: Non-dry Dock Stormwater SW05

SW = Stormwater

Battelle

Marine Sciences Laboratory
1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH	No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW05-0001	PSNS008	3/8/11 0829	SW							x	2	grab	SW05	
SW05-0002	PSNS032	3/8/11 0852	SW							x	2	grab	SW05	
SW05-0003	PSNS015	3/8/11 0934	SW							x	2	grab	SW05	
SW05-0004	PSNS096	3/9/11 1340	SW							x	2	grab	SW05	
SW05-0006	PSNS 008 FD	3/8/11 0855	SW							x	2	grab	SW05	
SW05-0040	PSNS096	3/10/11 0111	SW	x							1	comp	SW05	SW06
SW05-0011	PSNS096	3/10/11 0111	SW		x						1	comp	SW05	
SW05-0012	PSNS096	3/10/11 0111	SW			x					1	comp	SW05	
SW05-0013	PSNS096	3/10/11 0111	SW				x				1	comp	SW05	
SW05-0014	PSNS032	3/8/11 0904	SW	x							1	comp	SW05	
SW05-0015	PSNS032	3/8/11 0904	SW		x						1	comp	SW05	
SW05-0016	PSNS032	3/8/11 0904	SW			x					1	comp	SW05	
SW05-0017	PSNS032	3/8/11 0904	SW				x				1	comp	SW05	
SW05-0018	PSNS008	3/8/11 0855	SW	x							1	comp	SW05	

Relinquished by:	Received by:	Total # of Containers
<i>Brenda Lasorsa</i> 3/10/11 1400		Shipment Method:
Signature: <i>Brenda Lasorsa</i> Date: <i>Battelle</i> Time:	Signature:	Fedex to CAS
Printed Name: Printed Name: Company:	Printed Name:	Sample Disposition:
Relinquished by:	Received by:	Distribution:
Signature: Date: Time:	Signature:	1) PNNL
Printed Name: Company:	Printed Name:	2) CAS
		3) TAI

SAMPLE CHAIN OF CUSTODY FORM

Date: 3/10/2011

Page: 1 of 1

Project No.: 54220

Project: Non-dry Dock Stormwater SW05 and SW06

SW = Stormwater

Battelle

Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH							No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW06-0030	PSNS096	03/09/11 1340	SW					x									1	comp	SW06	3174*51
SW06-0031	PSNS096	03/09/11 1340	SW						x								1	comp	SW06	3174*52
SW05-0032	PSNS032	03/08/11 0904	SW					x									1	comp	SW05	3174*53
SW05-0033	PSNS032	03/08/11 0904	SW						x								1	comp	SW05	3174*54
SW05-0034	PSNS008	03/08/11 0855	SW					x									1	comp	SW05	3174*55
SW05-0035	PSNS008	03/08/11 0855	SW						x								1	comp	SW05	3174*56
SW05-0036	PSNS015	03/08/11 1139	SW					x									1	comp	SW05	3174*57
SW05-0037	PSNS015	03/08/11 1139	SW						x								1	comp	SW05	3174*58
SW05-0038	PSNS008FD	03/08/11 0855	SW					x									1	comp	SW05	3174*59
SW05-0039	PSNS008FD	03/08/11 0855	SW						x								1	comp	SW05	3174*60
SW06-0015	PSNS032	03/10/11 0513	SW					x									1	comp	SW06	3174*61
SW06-0016	PSNS032	03/10/11 0513	SW						x								1	comp	SW06	3174*62

Relinquished by:

[Signature] 3/11/11
 Signature Date Time
reprinted from original signed 3/10/11
 Printed Name Company

Received by:

Signature
 Printed Name

Total # of Containers

Shipment Method:

Retained at Battelle

Sample Disposition:

Relinquished by:

Signature Date Time
 Printed Name Company

Received by:

Signature
 Printed Name

Distribution:

- 1) PNNL
- 2) CAS
- 3) TAI

SAMPLE CHAIN OF CUSTODY FORM

Date: 3/10/2011

Page: 1 of 1

Project No.: 54220

Project: Non-dry Dock Stormwater SW05

SW = Stormwater

Analyze parameters per QAP/FSP

Battelle

Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH					No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW05-0030	PSNS096		SW					x							1	comp	SW05	3174*51
SW05-0031	PSNS096		SW						x						1	comp	SW05	3174*52
SW05-0032	PSNS032		SW					x							1	comp	SW05	3174*53
SW05-0033	PSNS032		SW						x						1	comp	SW05	3174*54
SW05-0034	PSNS008		SW					x							1	comp	SW05	3174*55
SW05-0035	PSNS008		SW						x						1	comp	SW05	3174*56
SW05-0036	PSNS015		SW					x							1	comp	SW05	3174*57
SW05-0037	PSNS015		SW						x						1	comp	SW05	3174*58
SW05-0038	PSNS 008 FD		SW					x							1	comp	SW05	3174*59
SW05-0039	PSNS 008 FD		SW						x						1	comp	SW05	3174*60
SW06-0015	PSNS 032		SW					y							1	comp	SW06	3174-61
SW06-0016	PSNS 032		SW						x						1	comp	SW06	3174-62
Relinquished by:				Received by:										Total # of Containers				
Signature _____ Date _____ Time _____				Signature _____										Shipment Method:				
Printed Name _____ Company _____				Printed Name _____										Retained at Battelle				
Relinquished by:				Received by:										Sample Disposition:				
Signature _____ Date _____ Time _____				Signature _____										Distribution:				
Printed Name _____ Company _____				Printed Name _____										1) PNNL				
														2) CAS				
														3) TAI				

SAMPLE CHAIN OF CUSTODY FORM

Date: 3/11/2011

Page: 1 of 1

Project No.: 54220

Project: Non-dry Dock Stormwater SW05 and SW06

SW = Stormwater

Battelle

Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

[illegible]

SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 03/09/11

Batch: 8

Login Designee: JMB

Project: **Non Dry Dock SW05**



Marine Sciences Laboratory

1529 West Sequim Bay Road

Sequim, Washington 98382

PH: (360) 681-4565

Sponsor ID	Site Description	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SW05-0032	PSNS032	3174*53	water	K-4-6	metals	03/08/11 0904
SW05-0033	PSNS032	3174*54	water	K-4-6	metals	03/08/11 0904
SW05-0034	PSNS008	3174*55	water	K-4-6	metals	03/08/11 0855
SW05-0035	PSNS008	3174*56	water	K-4-6	metals	03/08/11 0855
SW05-0036	PSNS015	3174*57	water	K-4-6	metals	03/08/11 1139
SW05-0037	PSNS015	3174*58	water	K-4-6	metals	03/08/11 1139
SW05-0038	PSNS008FD	3174*59	water	K-4-6	metals	03/08/11 0855
SW05-0039	PSNS008FD	3174*60	water	K-4-6	metals	03/08/11 0855

SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 03/09/11

Batch: 9

Login Designee: JMB

Project: **Non Dry Dock SW06**



*Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382
PH: (360) 681-4565*

Sponsor ID	Site Description	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SW06-0030	PSNS096	3174*51	water	K-4-6	Metals	03/09/11 1340
SW06-0031	PSNS096	3174*52	water	K-4-6	Metals	03/09/11 1340
SW06-0015	PSNS032	3174*61	water	K-4-6	Metals	03/10/11 0513
SW06-0016	PSNS032	3174*62	water	K-4-6	Metals	03/10/11 0513

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 3174 Sample No(s): 53-6062 ^{7m3} _{3/11/11} Batch: 8
 Project Name: PON5 SW05 Project Manager: Brandenberger

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: water WP# _____

Yes ☐ No ☐ Navy-type Project (requires high-level sample tracking procedures)

☐ ☒ USDA Samples (see Compliance Agreement Checklist) PM Verification: _____

☒ ☐ Filter Samples: Amount: 500 ml Entire sample Half of sample

☐ ☒ Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Login Lab)

☒ ☐ Special instructions: split for TOC DOC TSS Hardness

Sample Preservation Instructions: metals = 0.2% HNO₃, others = 4°C

****See LIMS for archive/disposal information****

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes No N/A Indicate in Appropriate Box

☐ ☒ ☐ Custody seal present Seal intact? YES NO

☒ ☐ ☐ Cooler temperature (acceptable range: 4±2°C or solids:frozen)
(if multiple coolers, note temp. of each)

☐ ☐ ☒ Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)
Comment/Remedy: _____

☒ ☐ ☐ Were all chain of custody forms signed and dated?

☒ ☐ ☐ Were samples filtered at MSL? (500 ml for metals)

Sample condition(s): Acceptable Other (explain): _____

Container type: Teflon Poly Glass Cap. Vial Other: _____

Notes: _____

SW05-005 = 2.1°C
 006 = 1.8°C
 007 = 1.2°C
 008 = 0.2°C

Completed By: B. JasonDate/Time: 3/9/11 1710

SAMPLE PRESERVATION

☐ Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)

☐ Random pH checked for ~10% of samples (use dip paper) Sample IDs: _____

☐ Complete pH check required for project (use pH meter and record on pH Record form)

☒ Sample(s) were preserved at MSL

Type: ☒ 0.2% HNO₃ Notes: TME: OME Lot# 1209010

☐ 0.5% HCl (Hg samples) Notes: _____ Lot# _____

☒ Refrigerate/Freeze Notes: TOC DOC TSS Hardness TPA

☐ Other Notes: _____

Completed By: B. Jason KephthoeDate/Time: 3/9/11 1740Storage Shelf: K-4-6

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 3174

Sample No(s):

5152 51-62 ^{ms} 7/11/11

Batch: 9

Project Name:

PSN5 SWOS 5 SWDB

Project Manager:

Brandon Berger

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix:

WP#

Yes

No

☐☐

Navy-type Project (requires high-level sample tracking procedures)

☐☒

USDA Samples (see Compliance Agreement Checklist)

PM Verification:

☒☐

Filter Samples:

Amount:

500 ml

Entire sample

Half of sample

☐☒

Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Login Lab)

☒☐

Special instructions:

split for TOC DOC TSS Hardness

Sample Preservation Instructions:

metals = 0.2% HNO₃, others = 4°C

See LIMS for archive/disposal information

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes

No

N/A

Indicate in Appropriate Box

☐☒☐

Custody seal present

Seal intact?

YES

NO

☒☐☐

Cooler temperature (acceptable range: 4±2°C or solids:frozen)

(if multiple coolers, note temp. of each)

SWOS-010 = 2.6°C

SWDB = 2.1 °C

°C

☐☐☒

Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)

Comment/Remedy:

☒☐☐

Were all chain of custody forms signed and dated?

☒☐☐

Were samples filtered at MSL?

500 ml for metals

Sample condition(s):

Acceptable

Other (explain):

Container type:

Teflon

Poly

Glass

Cap. Vial

Other:

Notes:

Completed By:

B. Lasan

Date/Time:

3/10/11

1150

SAMPLE PRESERVATION

☐

Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)

☐

Random pH checked for ~10% of samples (use dip paper)

Sample IDs:

☐

Complete pH check required for project (use pH meter and record on pH Record form)

☒

Sample(s) were preserved at MSL

Type:

☒0.2% HNO₃

Notes:

TMC's PMZ

Lot#

1209016

☐

0.5% HCl (Hg samples)

Notes:

Lot#

☒

Refrigerate/Freeze

Notes:

TOC DOC TSS Hardness TPH

☐

Other

Notes:

Completed By:

B. Lasan Kay Hgche

Date/Time:

3/10/11

1400

Storage Shelf:

K-4-b

Reprinted 1/4
K1102162

SAMPLE CHAIN OF CUSTODY FORM

Date: Reprinted 03/11/11 JMB

Page: 1 of 3

Project No.: 54220

Project: Non-dry Dock Stormwater SW05 and SW06

SW = Stormwater

Battelle

Marine Sciences Laboratory
1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH					No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW05-0001	PSNS008	03/08/11 0829	SW							x					2	grab	SW05	
SW05-0002	PSNS015	03/08/11 0934	SW							x					2	grab	SW05	
SW05-0003	PSNS032	03/08/11 0852	SW							x					2	grab	SW05	
SW05-0004	PSNS032DUP	03/08/11 0855	SW							x					2	grab	SW05	
Removed line 3/11/11 JMB																		
SW06-0040	PSNS096	03/10/11 0111	SW	x											1	comp	SW06	
SW06-0041	PSNS096	03/10/11 0111	SW		x										1	comp	SW06	
SW06-0042	PSNS096	03/10/11 0111	SW			x									1	comp	SW06	
SW06-0043	PSNS096	03/10/11 0111	SW				x								1	comp	SW06	
SW05-0014	PSNS032	03/10/11 0904	SW	x											1	comp	SW05	
SW05-0015	PSNS032	03/10/11 0904	SW		x										1	comp	SW05	
SW05-0016	PSNS032	03/10/11 0904	SW			x									1	comp	SW05	
SW05-0017	PSNS032	03/10/11 0904	SW				x								1	comp	SW05	
SW05-0018	PSNS008	03/10/11 0855	SW	x											1	comp	SW05	

Relinquished by:				Received by:				Total # of Containers	
<i>[Signature]</i> 3/11/11 (reprinted)								Shipment Method:	
Signature: <i>sent</i> 3/16/10 see original				Signature:				Fedex to CAS	
Printed Name: _____ Company: _____				Printed Name: _____				Sample Disposition:	
Relinquished by:				Received by:				Distribution:	
Signature: _____ Date: _____ Time: _____				Signature: _____				1) PNNL	
Printed Name: _____ Company: _____				Printed Name: _____				2) CAS	
								3) TAI	

Reprinted 2/4
K1102162

SAMPLE CHAIN OF CUSTODY FORM

Date: 3/10/2011

Page: 2 of 3

Project No.: 54220

Project: Non-dry Dock Stormwater SW05

SW = Stormwater

Battelle

Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH						No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW05-0019	PSNS008	3/8/11 0855	SW		x											1	comp	SW05	
SW05-0020	PSNS008	3/8/11 0855	SW			x										1	comp	SW05	
SW05-0021	PSNS008	3/8/11 0855	SW				x									1	comp	SW05	
SW05-0022	PSNS015	3/8/11 1139	SW	x												1	comp	SW05	
SW05-0023	PSNS015	3/8/11 1139	SW		x											1	comp	SW05	
SW05-0024	PSNS015	3/8/11 1139	SW			x										1	comp	SW05	
SW05-0025	PSNS015	3/8/11 1139	SW				x									1	comp	SW05	
SW05-0026	PSNS 008 FD	3/8/11 0855	SW	x												1	comp	SW05	field dup
SW05-0027	PSNS 008 FD	3/8/11 0855	SW		x											1	comp	SW05	field dup
SW05-0028	PSNS 008 FD	3/8/11 0855	SW			x										1	comp	SW05	field dup
SW05-0029	PSNS 008 FD	3/8/11 0855	SW				x									1	comp	SW05	field dup

Relinquished by:	Received by:	Total # of Containers
<i>Beth Lasorsa</i> 3/10/11 1400		Shipment Method:
Signature Date Time	Signature	Fedex to CAS
Brenda Lasorsa Battelle	Printed Name	Sample Disposition:
Printed Name Company		Distribution:
Relinquished by:	Received by:	1) PNNL
Signature Date Time	Signature	2) CAS
Printed Name Company	Printed Name	3) TAI

Reported 3/4
K1102162

SAMPLE CHAIN OF CUSTODY FORM

Date: 3/10/2011
Page: 3 of 3
Project No.: 54220
Project: Non-dry Dock Stormwater SW06

SW = Stormwater

Battelle

Marine Sciences Laboratory
1529 West Sequim Bay Road
Laboratory: Battelle MSL
Attention: Jill Brandenberger
Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH						No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW06-0011	PSNS032	3/10/11 0513	SW	x												1	comp	SW06	
SW06-0012	PSNS032	3/10/11 0513	SW		x											1	comp	SW06	
SW06-0013	PSNS032	3/10/11 0513	SW			x										1	comp	SW06	
SW06-0014	PSNS032	3/10/11 0513	SW				x									1	comp	SW06	
SW06-0001	PSNS032	3/8/11 1310	SW							x						2	grab	SW06	
		3/9/11																	
		1m/s																	
		3/11/11																	

Relinquished by:

Received by:

Total # of Containers

Shipment Method:

Fedex to CAS

Signature Date Time

Signature

Printed Name Company

Printed Name

Sample Disposition:

Relinquished by:

Received by:

Distribution:

1) PNNL

2) CAS

3) TAI

Signature Date Time

Signature

Printed Name Company

Printed Name

SAMPLE CHAIN OF CUSTODY FORM

Date: 3/11/2011

Page: 1 of 1

Project No.: 54220

Project: Non-dry Dock Stormwater SW05 and SW06

SW = Stormwater

Battelle

Marine Sciences Laboratory
1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

[illegible]

original 1/3
K1109162

SAMPLE CHAIN OF CUSTODY FORM

Date: 3/10/2011

Page: 1 of 3

Project No.: 54220

Project: Non-dry Dock Stormwater SW05

SW = Stormwater

Battelle

Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH						No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW05-0001	PSNS008	3/8/11 0829	SW							x						2	grab	SW05	
SW05-0002	PSNS032	3/8/11 0852	SW							x						2	grab	SW05	
SW05-0003	PSNS015	3/8/11 0934	SW							x						2	grab	SW05	
SW05-0004	PSNS096	3/9/11 1340	SW							x						2	grab	SW05	
SW05-0005	PSNS 008 FD	3/8/11 0855	SW							x						2	grab	SW05	
SW05-0040	PSNS096	3/10/11 0111	SW	x												1	comp	SW05	
SW05-0011	PSNS096	3/10/11 0111	SW		x											1	comp	SW05	
SW05-0012	PSNS096	3/10/11 0111	SW			x										1	comp	SW05	
SW05-0013	PSNS096	3/10/11 0111	SW				x									1	comp	SW05	
SW05-0014	PSNS032	3/8/11 0904	SW	x												1	comp	SW05	
SW05-0015	PSNS032	3/8/11 0904	SW		x											1	comp	SW05	
SW05-0016	PSNS032	3/8/11 0904	SW			x										1	comp	SW05	
SW05-0017	PSNS032	3/8/11 0904	SW				x									1	comp	SW05	
SW05-0018	PSNS008	3/8/11 0855	SW	x												1	comp	SW05	

Relinquished by: Brenda Lasorsa 3/10/11 1400
 Signature Date Time
Brenda Lasorsa Battelle
 Printed Name Company

Received by: Jill Brandenberger 3/11/11
 Signature
Jill Brandenberger
 Printed Name

Total # of Containers
 Shipment Method:
 Fedex to CAS
 Sample Disposition:

Relinquished by:
 Signature Date Time
 Printed Name Company

Received by:
 Signature
 Printed Name

Distribution:
 1) PNNL
 2) CAS
 3) TAI

original 213
K1102162

SAMPLE CHAIN OF CUSTODY FORM

Date: 3/10/2011

Page: 2 of 3

Project No.: 54220

Project: Non-dry Dock Stormwater SW05

SW = Stormwater

Battelle

Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH					No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW05-0019	PSNS008	3/8/11 0855	SW		x										1	comp	SW05	
SW05-0020	PSNS008	3/8/11 0855	SW			x									1	comp	SW05	
SW05-0021	PSNS008	3/8/11 0855	SW				x								1	comp	SW05	
SW05-0022	PSNS015	3/8/11 1139	SW	x											1	comp	SW05	
SW05-0023	PSNS015	3/8/11 1139	SW		x										1	comp	SW05	
SW05-0024	PSNS015	3/8/11 1139	SW			x									1	comp	SW05	
SW05-0025	PSNS015	3/8/11 1139	SW				x								1	comp	SW05	
SW05-0026	PSNS 008 FD	3/8/11 0855	SW	x											1	comp	SW05	field dup
SW05-0027	PSNS 008 FD	3/8/11 0855	SW		x										1	comp	SW05	field dup
SW05-0028	PSNS 008 FD	3/8/11 0855	SW			x									1	comp	SW05	field dup
SW05-0029	PSNS 008 FD	3/8/11 0855	SW				x								1	comp	SW05	field dup

Relinquished by:				Received by:				Total # of Containers			
<div> <div>Signature</div> <div>Date</div> <div>Time</div> </div>				<div> <div>Signature</div> <div>Date</div> <div>Time</div> </div>				<div> <div>Signature</div> <div>Date</div> <div>Time</div> </div>			
<div> <div>Printed Name</div> <div>Company</div> </div>				<div> <div>Printed Name</div> <div>Company</div> </div>				<div> <div>Printed Name</div> <div>Company</div> </div>			
Relinquished by:				Received by:				Sample Disposition:			
<div> <div>Signature</div> <div>Date</div> <div>Time</div> </div>				<div> <div>Signature</div> <div>Date</div> <div>Time</div> </div>				<div> <div>Signature</div> <div>Date</div> <div>Time</div> </div>			
<div> <div>Printed Name</div> <div>Company</div> </div>				<div> <div>Printed Name</div> <div>Company</div> </div>				<div> <div>Printed Name</div> <div>Company</div> </div>			

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC HH

Client / Project: Battelle Service Request K11 02162
Received: 3/11/11 Opened: 3/11/11 By: af Unloaded: 3/11/11 By: af

1. Samples were received via? Mail Fed Ex UPS DHL PDX Courier Hand Delivered
2. Samples were received in: (circle) Cooler Box Envelope Other NA
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID	NA	Tracking Number	NA	Filed
-0.5	4.8	302			7445 1955 9515		
1.3	3.6	291			7445 1955 9456		

7. Packing material used. Inserts Baggies Bubble Wrap Gel Packs Wet Ice Sleeves Other _____
8. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
9. Did all bottles arrive in good condition (unbroken)? Indicate in the table below. NA Y N
10. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
11. Did all sample labels and tags agree with custody papers? Indicate major discrepancies in the table on page 2. NA Y N
12. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? Indicate in the table below NA Y N
14. Were VOA vials received without headspace? Indicate in the table below. NA Y N
15. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time
SW05-0004	1-500 HCL			X						

Notes, Discrepancies, & Resolutions: Rec'd 2-500 ml HCL ampers for SW05-0009 9/9/10
not on COC. Did not rec bottles for SW05-0005
0855

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05
Sample Matrix: Water

Service Request No.: K1102162
Date Received: 3/11/11

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Thirty water samples were received for analysis at Columbia Analytical Services on 3/11/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

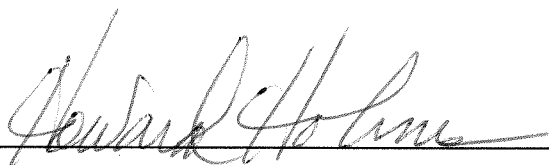
Diesel Range Organics by NWTPH-Dx

Relative Percent Difference Exceptions:

The Relative Percent Difference (RPD) criterion for the replicate analysis of Diesel Range Organics (DRO) and Residual Range Organics (RRO) in sample SW05-0001 was not applicable because the analyte concentration was not significantly greater than the Method Reporting Limit (MRL). Analytical values derived from measurements close to the detection limit are not subject to the same accuracy and precision criteria as results derived from measurements higher on the calibration range for the method.

No other anomalies associated with the analysis of these samples were observed.

Approved by



Date

3-30-11

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Collected: 3/ 8/11 - 3/10/11
Date Received: 3/11/11

Analysis Method: SM 2340 C

Units: mg/L
Basis: NA

Hardness, Total as CaCO3

Sample Name	Lab Code	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW06-0040	K1102162-006	30.2	2.0	0.8	1	NA	3/18/11 12:00	
SW05-0014	K1102162-010	10.9	2.0	0.8	1	NA	3/18/11 12:00	
SW05-0018	K1102162-014	9.7	2.0	0.8	1	NA	3/18/11 12:00	
SW05-0022	K1102162-018	52.1	2.0	0.8	1	NA	3/18/11 12:00	
SW05-0026	K1102162-022	8.8	2.0	0.8	1	NA	3/18/11 12:00	
SW06-0011	K1102162-026	10.1	2.0	0.8	1	NA	3/18/11 12:00	
Method Blank	K1102162-MB1	ND U	2.0	0.8	1	NA	3/18/11 12:00	
Method Blank	K1102162-MB2	ND U	2.0	0.8	1	NA	3/18/11 12:00	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Collected: 3/10/11
Date Received: 3/11/11
Date Analyzed: 3/18/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: SW06-0040
Lab Code: K1102162-006

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	SW06-0040DUP Duplicate Sample		RPD	RPD Limit
					K1102162-006DUP5 Result	Average		
Hardness, Total as CaCO3	SM 2340 C	2.0	0.8	30.2	30.7	30.5	2	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Analyzed: 3/18/11

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L**Basis:** NA

Lab Control Sample K1102162-LCS1					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Hardness, Total as CaCO3	SM 2340 C	46.2	43.4	106	90 - 116

Results flagged with an asterisk (*) indicate values outside control criteria.

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Analyzed: 3/18/11

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L
Basis: NA

Analyte Name	Method	Lab Control Sample K1102162-LCS2			
		Result	Spike Amount	% Rec	% Rec Limits
Hardness, Total as CaCO3	SM 2340 C	46.6	43.4	107	90 - 116

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Collected: 3/ 8/11 - 3/10/11
Date Received: 3/11/11

Analysis Method: SM 2540 D

Units: mg/L
Basis: NA

Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW06-0043	K1102162-009	25.5		5.0	5.0	1	NA	3/14/11 07:30	
SW05-0017	K1102162-013	10.0		5.0	5.0	1	NA	3/14/11 07:30	
SW05-0021	K1102162-017	25.0		5.0	5.0	1	NA	3/14/11 07:30	
SW05-0025	K1102162-021	19.5		5.0	5.0	1	NA	3/14/11 07:30	
SW05-0029	K1102162-025	25.0		5.0	5.0	1	NA	3/14/11 07:30	
SW06-0014	K1102162-029	31.5		5.0	5.0	1	NA	3/14/11 07:30	
Method Blank	K1102162-MB1	ND	U	5.0	5.0	1	NA	3/14/11 07:30	
Method Blank	K1102162-MB2	ND	U	5.0	5.0	1	NA	3/14/11 07:30	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Collected: NA
Date Received: NA
Date Analyzed: 3/14/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: K1102139-001

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	Batch QCDUP Duplicate Sample K1102139-001DUP1		RPD	RPD Limit
					Result	Average		
Solids, Total Suspended (TSS)	SM 2540 D	5.0	5.0	6.5	5.5	6.00	17 *	10

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Collected: NA
Date Received: NA
Date Analyzed: 3/14/11

**Replicate Sample Summary
 General Chemistry Parameters**

Sample Name: Batch QC
Lab Code: K1102153-003

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	Batch QCDUP Duplicate Sample K1102153-003DUP3		RPD	RPD Limit
					Result	Average		
Solids, Total Suspended (TSS)	SM 2540 D	5.0	5.0	10.5	10.0	10.3	5	10

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Collected: NA
Date Received: NA
Date Analyzed: 3/14/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: K1102154-001

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	Batch QCDUP Duplicate Sample K1102154-001DUP4		RPD	RPD Limit
					Result	Average		
Solids, Total Suspended (TSS)	SM 2540 D	5.0	5.0	ND U	ND U	NC	NC	10

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Analyzed: 3/14/11

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L

Basis: NA

Lab Control Sample K1102162-LCS1					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Solids, Total Suspended (TSS)	SM 2540 D	320	320	100	80 - 115

Results flagged with an asterisk (*) indicate values outside control criteria.

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Analyzed: 3/14/11

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L**Basis:** NA

Analyte Name	Method	Lab Control Sample K1102162-LCS2			
		Result	Spike Amount	% Rec	% Rec Limits
Solids, Total Suspended (TSS)	SM 2540 D	324	320	101	80 - 115

Results flagged with an asterisk (*) indicate values outside control criteria.

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COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Collected: 3/ 8/11 - 3/10/11
Date Received: 3/11/11

Analysis Method: SM 5310 C

Units: mg/L
Basis: NA

Carbon, Dissolved Organic (DOC)

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW06-0042	K1102162-008	1.31		0.50	0.07	1	NA	3/15/11 13:18	
SW05-0016	K1102162-012	3.00		0.50	0.07	1	NA	3/15/11 13:18	
SW05-0020	K1102162-016	3.14		0.50	0.07	1	NA	3/15/11 13:18	
SW05-0024	K1102162-020	2.85		0.50	0.07	1	NA	3/15/11 13:18	
SW05-0028	K1102162-024	3.59		0.50	0.07	1	NA	3/15/11 13:18	
SW06-0013	K1102162-028	1.63		0.50	0.07	1	NA	3/15/11 13:18	
Method Blank	K1102162-MB1	ND	U	0.50	0.07	1	NA	3/15/11 13:18	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Collected: 3/10/11
Date Received: 3/11/11
Date Analyzed: 3/15/11

**Replicate Sample Summary
 General Chemistry Parameters**

Sample Name: SW06-0042
Lab Code: K1102162-008

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	SW06-0042DUP Duplicate Sample K1102162-008DUP6		RPD	RPD Limit
					Result	Average		
Carbon, Dissolved Organic (DOC)	SM 5310 C	0.50	0.07	1.31	1.45	1.38	10	33

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Collected: 3/10/11
Date Received: 3/11/11
Date Analyzed: 3/15/11

Matrix Spike Summary
General Chemistry Parameters

Sample Name: SW06-0042
Lab Code: K1102162-008

Units: mg/L
Basis: NA

Analytical Method: SM 5310 C

SW06-0042MS
Matrix Spike
K1102162-008MS

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Dissolved Organic (DOC)	1.31	26.5	25.0	101	83 - 117

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Analyzed: 3/15/11

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L**Basis:** NA

Analyte Name	Method	Lab Control Sample K1102162-LCS1			
		Result	Spike Amount	% Rec	% Rec Limits
Carbon, Dissolved Organic (DOC)	SM 5310 C	26.4	26.0	101	83 - 117

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220

Service Request: K1102162

Continuing Calibration Verification (CCV) Summary
Carbon, Dissolved Organic (DOC)

Analytical Method: SM 5310 C**Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	239093	KQ1102279-03	3/15/11 13:18	25.0	23.0	92	90 - 110
CCV2	239093	KQ1102279-04	3/15/11 13:18	25.0	24.0	96	90 - 110
CCV3	239093	KQ1102279-05	3/15/11 13:18	25.0	24.0	96	90 - 110
CCV4	239093	KQ1102279-06	3/15/11 13:18	25.0	23.4	93	90 - 110

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220

Service Request: K1102162

Continuing Calibration Blank (CCB) Summary
Carbon, Dissolved Organic (DOC)

Analytical Method: SM 5310 C**Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	Result Q
CCB1	239093	KQ1102279-07	3/15/11 13:18	0.50	ND U
CCB2	239093	KQ1102279-08	3/15/11 13:18	0.50	ND U
CCB3	239093	KQ1102279-09	3/15/11 13:18	0.50	ND U
CCB4	239093	KQ1102279-10	3/15/11 13:18	0.50	ND U

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Collected: 3/ 8/11 - 3/10/11
Date Received: 3/11/11

Analysis Method: SM 5310 C

Units: mg/L
Basis: NA

Carbon, Total Organic

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW06-0041	K1102162-007	1.17		0.50	0.07	1	NA	3/15/11 13:18	
SW05-0015	K1102162-011	2.17		0.50	0.07	1	NA	3/15/11 13:18	
SW05-0019	K1102162-015	2.92		0.50	0.07	1	NA	3/15/11 13:18	
SW05-0023	K1102162-019	3.43		0.50	0.07	1	NA	3/15/11 13:18	
SW05-0027	K1102162-023	2.80		0.50	0.07	1	NA	3/15/11 13:18	
SW06-0012	K1102162-027	1.40		0.50	0.07	1	NA	3/15/11 13:18	
Method Blank	K1102162-MB1	ND	U	0.50	0.07	1	NA	3/15/11 13:18	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Collected: NA
Date Received: NA
Date Analyzed: 3/3/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: KQ1102281-18

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	Batch QCDUP Duplicate Sample KQ1102281-18DUP10		RPD	RPD Limit
					Result	Average		
Carbon, Total Organic	SM 5310 C	0.50	0.07	2.14	2.19	2.17	2	33

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Collected: NA
Date Received: NA
Date Analyzed: 3/15/11

Matrix Spike Summary
General Chemistry Parameters

Sample Name: Batch QC
Lab Code: KQ1102281-18

Units: mg/L
Basis: NA

Analytical Method: SM 5310 C

Batch QCMS
Matrix Spike
KQ1102281-18MS2

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	2.14	26.8	25.0	99	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Analyzed: 3/15/11

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L

Basis: NA

Lab Control Sample K1102162-LCS1					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	SM 5310 C	26.4	26.0	101	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220

Service Request: K1102162

Continuing Calibration Verification (CCV) Summary
Carbon, Total Organic

Analytical Method: SM 5310 C

Units: mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	239095	KQ1102281-03	3/15/11 13:18	25.0	24.0	96	90 - 110
CCV2	239095	KQ1102281-04	3/15/11 13:18	25.0	23.4	93	90 - 110
CCV3	239095	KQ1102281-05	3/15/11 13:18	25.0	23.6	95	90 - 110
CCV4	239095	KQ1102281-06	3/15/11 13:18	25.0	23.8	95	90 - 110

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220

Service Request: K1102162

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analytical Method: SM 5310 C**Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MRL	Result Q
CCB1	239095	KQ1102281-07	3/15/11 13:18	0.50	ND U
CCB2	239095	KQ1102281-08	3/15/11 13:18	0.50	ND U
CCB3	239095	KQ1102281-09	3/15/11 13:18	0.50	ND U
CCB4	239095	KQ1102281-10	3/15/11 13:18	0.50	ND U

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Collected: 03/08/2011
Date Received: 03/11/2011

Diesel and Residual Range Organics

Sample Name: SW05-0001
Lab Code: K1102162-001
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	240	J	270	12	1	03/17/11	03/22/11	KWG1102468	
Residual Range Organics (RRO)	830	O	540	21	1	03/17/11	03/22/11	KWG1102468	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	97	50-150	03/22/11	Acceptable
n-Triacontane	104	50-150	03/22/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Collected: 03/08/2011
Date Received: 03/11/2011

Diesel and Residual Range Organics

Sample Name: SW05-0002
Lab Code: K1102162-002
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	170	J	260	12	1	03/17/11	03/22/11	KWG1102468	
Residual Range Organics (RRO)	540	O	520	20	1	03/17/11	03/22/11	KWG1102468	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	98	50-150	03/22/11	Acceptable
n-Triacontane	102	50-150	03/22/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Collected: 03/08/2011
Date Received: 03/11/2011

Diesel and Residual Range Organics

Sample Name: SW05-0003
Lab Code: K1102162-003
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	170	J	260	12	1	03/17/11	03/22/11	KWG1102468	
Residual Range Organics (RRO)	420	J	520	20	1	03/17/11	03/22/11	KWG1102468	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	95	50-150	03/22/11	Acceptable
n-Triacontane	98	50-150	03/22/11	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Collected: 03/09/2011
Date Received: 03/11/2011

Diesel and Residual Range Organics

Sample Name: SW05-0004
Lab Code: K1102162-004
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	170	J	270	12	1	03/17/11	03/22/11	KWG1102468	
Residual Range Organics (RRO)	440	J	530	20	1	03/17/11	03/22/11	KWG1102468	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	88	50-150	03/22/11	Acceptable
n-Triacontane	92	50-150	03/22/11	Acceptable

Comments:

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Collected: 03/09/2011
Date Received: 03/11/2011

Diesel and Residual Range Organics

Sample Name: SW06-0001
Lab Code: K1102162-030
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	210	J	250	11	1	03/17/11	03/22/11	KWG1102468	
Residual Range Organics (RRO)	530	O	500	19	1	03/17/11	03/22/11	KWG1102468	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	92	50-150	03/22/11	Acceptable
n-Triacontane	94	50-150	03/22/11	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Collected: 03/09/2011
Date Received: 03/11/2011

Diesel and Residual Range Organics

Sample Name: SW06-0009
Lab Code: K1102162-031
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	110	J	270	12	1	03/17/11	03/22/11	KWG1102468	
Residual Range Organics (RRO)	280	J	530	20	1	03/17/11	03/22/11	KWG1102468	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	94	50-150	03/22/11	Acceptable
n-Triacontane	95	50-150	03/22/11	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Collected: NA
Date Received: NA

Diesel and Residual Range Organics

Sample Name: Method Blank
Lab Code: KWG1102468-3
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low

Analyte Name	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO)	ND	U	250	11	1	03/17/11	03/22/11	KWG1102468	
Residual Range Organics (RRO)	39	J	500	19	1	03/17/11	03/22/11	KWG1102468	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
o-Terphenyl	92	50-150	03/22/11	Acceptable
n-Triacontane	96	50-150	03/22/11	Acceptable

Comments: _____

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162

Surrogate Recovery Summary
Diesel and Residual Range Organics

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
SW05-0001	K1102162-001	97	104
SW05-0002	K1102162-002	98	102
SW05-0003	K1102162-003	95	98
SW05-0004	K1102162-004	88	92
SW06-0001	K1102162-030	92	94
SW06-0009	K1102162-031	94	95
SW05-0001DUP	KWG1102468-1	73	79
Method Blank	KWG1102468-3	92	96
Lab Control Sample	KWG1102468-2	102	102

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl	50-150
Sur2 = n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Extracted: 03/17/2011
Date Analyzed: 03/22/2011

Duplicate Sample Summary
Diesel and Residual Range Organics

Sample Name: SW05-0001
Lab Code: K1102162-001
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1102468

Analyte Name	MRL	MDL	Sample Result	SW05-0001DUP KWG1102468-1 Duplicate Sample		Relative Percent Difference	RPD Limit
				Result	Average		
Diesel Range Organics (DRO)	270	12	240	190	220	23 #	30
Residual Range Organics (RRO)	530	20	830	640	740	26 #	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Extracted: 03/17/2011
Date Analyzed: 03/22/2011

Lab Control Spike Summary
Diesel and Residual Range Organics

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1102468

Analyte Name	Lab Control Sample KWG1102468-2 Lab Control Spike			%Rec Limits
	Result	Expected	%Rec	
Diesel Range Organics (DRO)	3340	3200	104	46-140
Residual Range Organics (RRO)	1600	1600	100	45-159

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Extracted: 03/17/2011
Date Analyzed: 03/22/2011
Time Analyzed: 00:51

Method Blank Summary
Diesel and Residual Range Organics

Sample Name:	Method Blank	File ID:	J:\GC21\DATA\032111F\0321F118.D
Lab Code:	KWG1102468-3	Instrument ID:	GC21
Extraction Method:	EPA 3510C	Level:	Low
Analysis Method:	NWTPH-Dx	Extraction Lot:	KWG1102468

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1102468-2	J:\GC21\DATA\032111F\0321F116.D	03/22/11	00:28
SW05-0002	K1102162-002	J:\GC21\DATA\032111F\0321F120.D	03/22/11	01:13
SW05-0003	K1102162-003	J:\GC21\DATA\032111F\0321F122.D	03/22/11	01:35
SW05-0004	K1102162-004	J:\GC21\DATA\032111F\0321F124.D	03/22/11	01:58
SW06-0009	K1102162-031	J:\GC21\DATA\032111F\0321F126.D	03/22/11	02:20
SW05-0001	K1102162-001	J:\GC21\DATA\032111F\0321F130.D	03/22/11	03:05
SW05-0001DUP	KWG1102468-1	J:\GC21\DATA\032111F\0321F132.D	03/22/11	03:27
SW06-0001	K1102162-030	J:\GC21\DATA\032111F\0321F134.D	03/22/11	03:49

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Extracted: 03/17/2011
Date Analyzed: 03/22/2011
Time Analyzed: 00:28

Lab Control Sample Summary
Diesel and Residual Range Organics

Sample Name: Lab Control Sample
Lab Code: KWG1102468-2
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

File ID: J:\GC21\DATA\032111F\0321F116.D
Instrument ID: GC21
Level: Low
Extraction Lot: KWG1102468

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1102468-3	J:\GC21\DATA\032111F\0321F118.D	03/22/11	00:51
SW05-0002	K1102162-002	J:\GC21\DATA\032111F\0321F120.D	03/22/11	01:13
SW05-0003	K1102162-003	J:\GC21\DATA\032111F\0321F122.D	03/22/11	01:35
SW05-0004	K1102162-004	J:\GC21\DATA\032111F\0321F124.D	03/22/11	01:58
SW06-0009	K1102162-031	J:\GC21\DATA\032111F\0321F126.D	03/22/11	02:20
SW05-0001	K1102162-001	J:\GC21\DATA\032111F\0321F130.D	03/22/11	03:05
SW05-0001DUP	KWG1102468-1	J:\GC21\DATA\032111F\0321F132.D	03/22/11	03:27
SW06-0001	K1102162-030	J:\GC21\DATA\032111F\0321F134.D	03/22/11	03:49

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220

Service Request: K1102162
Calibration Date: 03/14/2011

**Initial Calibration Summary
 Diesel and Residual Range Organics**

Calibration ID: CAL10358
Instrument ID: GC21

Column: ZB-1

Level ID	File ID
A	J:\GC21\DATA\031311F\0313F110.D
B	J:\GC21\DATA\031311F\0313F112.D
C	J:\GC21\DATA\031311F\0313F114.D
D	J:\GC21\DATA\031311F\0313F116.D
E	J:\GC21\DATA\031311F\0313F118.D
F	J:\GC21\DATA\031311F\0313F120.D
G	J:\GC21\DATA\031311F\0313F132.D
H	J:\GC21\DATA\031311F\0313F134.D

Level ID	File ID
I	J:\GC21\DATA\031311F\0313F136.D
J	J:\GC21\DATA\031311F\0313F138.D
K	J:\GC21\DATA\031311F\0313F140.D
L	J:\GC21\DATA\031311F\0313F142.D
M	J:\GC21\DATA\031311F\0313F144.D
N	J:\GC21\DATA\031311F\0313F146.D

Analyte Name	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF	Level ID	Amt	RF
Diesel Range Organics (DRO)				G	20	914	H	50	923	I	200	981	J	500	971
	K	2000	936	L	5000	999	M	20000	902	N	50000	923			
Residual Range Organics (RRO)				B	50	695	C	200	587	D	500	618	E	2000	559
	F	5000	594												
o-Terphenyl				G	1.0	1260	H	2.5	1240	I	10	1310	J	25	1250
	K	100	1230	L	250	1260									
n-Triacontane				G	1.0	1130	H	2.5	1090	I	10	1120	J	25	1060
	K	100	1080	L	250	1080									

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220

Service Request: K1102162
Calibration Date: 03/14/2011

Initial Calibration Summary
Diesel and Residual Range Organics

Calibration ID: CAL10358
Instrument ID: GC21

Column: ZB-1

Analyte Name	Compound Type	Calibration Evaluation				
		Fit Type	Eval.	Eval. Result	Q	Control Criteria
Diesel Range Organics (DRO)	MS	AverageRF	% RSD	3.8		≤ 20
Residual Range Organics (RRO)	MS	AverageRF	% RSD	8.4		≤ 20
o-Terphenyl	SURR	AverageRF	% RSD	2.4		≤ 20
n-Triacontane	SURR	AverageRF	% RSD	2.4		≤ 20

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220

Service Request: K1102162
Calibration Date: 03/14/2011
Date Analyzed: 03/14/2011

Second Source Calibration Verification
Diesel and Residual Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration ID: CAL10358
Units: ppm

File ID: J:\GC21\DATA\031311F\0313F150.D
J:\GC21\DATA\031311F\0313F152.D

Column ID: ZB-1

Analyte Name	Expected	Result	Average RF	SSV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	944	961	2	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	1000	611	616	1	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

† SPCC Compound

‡ CCC Compound

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220

Service Request: K1102162
Date Analyzed: 03/21/2011

Continuing Calibration Verification Summary
Diesel and Residual Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 03/14/2011
Calibration ID: CAL10358
Analysis Lot: KWG1102641
Units: ppm
Column ID: ZB-1

File ID: J:\GC21\DATA\032111F\0321F110.D
J:\GC21\DATA\032111F\0321F112.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1100	944	1000	6	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	990	611	607	-1	NA	± 15 %	AverageRF
o-Terphenyl	50	50	1260	1250	0	NA	± 15 %	AverageRF
n-Triacontane	50	47	1090	1020	-7	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220

Service Request: K1102162
Date Analyzed: 03/22/2011

Continuing Calibration Verification Summary
Diesel and Residual Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 03/14/2011
Calibration ID: CAL10358
Analysis Lot: KWG1102641
Units: ppm
Column ID: ZB-1

File ID: J:\GC21\DATA\032111F\0321F148.D
J:\GC21\DATA\032111F\0321F150.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1100	944	1000	6	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	1000	611	608	0	NA	± 15 %	AverageRF
o-Terphenyl	50	50	1260	1260	0	NA	± 15 %	AverageRF
n-Triacontane	50	49	1090	1060	-3	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220

Service Request: K1102162

Analysis Run Log
Diesel and Residual Range Organics

Analysis Method: NWTPH-Dx

Analysis Lot: KWG1102641
Instrument ID: GC21
Column: ZB-1

File ID	Sample Name	Lab Code	Date Analysis Started	Start Time	Q	Date Analysis Finished	Finish Time
0321F110.D	Continuing Calibration Verification	KWG1102641-1	3/21/2011	23:20		3/21/2011	23:36
0321F112.D	Continuing Calibration Verification	KWG1102641-1	3/21/2011	23:43		3/21/2011	23:59
0321F114.D	Instrument Blank	KWG1102641-4	3/22/2011	00:06		3/22/2011	00:22
0321F116.D	Lab Control Sample	KWG1102468-2	3/22/2011	00:28		3/22/2011	00:44
0321F118.D	Method Blank	KWG1102468-3	3/22/2011	00:51		3/22/2011	01:07
0321F120.D	SW05-0002	K1102162-002	3/22/2011	01:13		3/22/2011	01:29
0321F122.D	SW05-0003	K1102162-003	3/22/2011	01:35		3/22/2011	01:51
0321F124.D	SW05-0004	K1102162-004	3/22/2011	01:58		3/22/2011	02:14
0321F126.D	SW06-0009	K1102162-031	3/22/2011	02:20		3/22/2011	02:36
0321F128.D	ZZZZZZ	ZZZZZZ	3/22/2011	02:43		3/22/2011	02:59
0321F130.D	SW05-0001	K1102162-001	3/22/2011	03:05		3/22/2011	03:21
0321F132.D	SW05-0001DUP	KWG1102468-1	3/22/2011	03:27		3/22/2011	03:43
0321F134.D	SW06-0001	K1102162-030	3/22/2011	03:49		3/22/2011	04:05
0321F136.D	ZZZZZZ	ZZZZZZ	3/22/2011	04:12		3/22/2011	04:28
0321F148.D	Continuing Calibration Verification	KWG1102641-2	3/22/2011	06:25		3/22/2011	06:41
0321F150.D	Continuing Calibration Verification	KWG1102641-2	3/22/2011	06:48		3/22/2011	07:04
0321F152.D	Instrument Blank	KWG1102641-5	3/22/2011	07:10		3/22/2011	07:26
0321F154.D	ZZZZZZ	ZZZZZZ	3/22/2011	07:32		3/22/2011	07:48
0321F156.D	ZZZZZZ	ZZZZZZ	3/22/2011	07:55		3/22/2011	08:11
0321F158.D	ZZZZZZ	ZZZZZZ	3/22/2011	08:17		3/22/2011	08:33
0321F160.D	ZZZZZZ	ZZZZZZ	3/22/2011	08:39		3/22/2011	08:55
0321F162.D	ZZZZZZ	ZZZZZZ	3/22/2011	09:01		3/22/2011	09:17
0321F164.D	ZZZZZZ	ZZZZZZ	3/22/2011	09:24		3/22/2011	09:40
0321F166.D	Continuing Calibration Verification	KWG1102641-3	3/22/2011	09:46		3/22/2011	10:02
0321F168.D	Continuing Calibration Verification	KWG1102641-3	3/22/2011	10:08		3/22/2011	10:24
0321F170.D	Instrument Blank	KWG1102641-6	3/22/2011	10:31		3/22/2011	10:47

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Extracted: 03/17/2011

Extraction Prep Log
Diesel and Residual Range Organics

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Extraction Lot: KWG1102468
Level: Low

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Volume	% Solids	Note
SW05-0001	K1102162-001	03/08/11	03/11/11	470mL	1mL	NA	
SW05-0002	K1102162-002	03/08/11	03/11/11	490mL	1mL	NA	
SW05-0003	K1102162-003	03/08/11	03/11/11	490mL	1mL	NA	
SW05-0004	K1102162-004	03/09/11	03/11/11	480mL	1mL	NA	
SW06-0001	K1102162-030	03/09/11	03/11/11	500mL	1mL	NA	
SW06-0009	K1102162-031	03/09/11	03/11/11	480mL	1mL	NA	
SW05-0001DUP	KWG1102468-1	03/08/11	03/11/11	480mL	1mL	NA	
Method Blank	KWG1102468-3	NA	NA	500mL	1mL	NA	
Lab Control Sample	KWG1102468-2	NA	NA	500mL	1mL	NA	

Results flagged with an asterisk (*) indicate the holding time was exceeded for the analysis

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162

Surrogate Recovery Summary
Diesel and Residual Range Organics

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: PERCENT
Level: Low

<u>Sample Name</u>	<u>Lab Code</u>	<u>Sur1</u>	<u>Sur2</u>
SW05-0001	K1102162-001	97	104
SW05-0002	K1102162-002	98	102
SW05-0003	K1102162-003	95	98
SW05-0004	K1102162-004	88	92
SW06-0001	K1102162-030	92	94
SW06-0009	K1102162-031	94	95
SW05-0001DUP	KWG1102468-1	73	79
Method Blank	KWG1102468-3	92	96
Lab Control Sample	KWG1102468-2	102	102

Surrogate Recovery Control Limits (%)

Sur1 = o-Terphenyl	50-150
Sur2 = n-Triacontane	50-150

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Extracted: 03/17/2011
Date Analyzed: 03/22/2011

Duplicate Sample Summary
Diesel and Residual Range Organics

Sample Name: SW05-0001
Lab Code: K1102162-001
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1102468

Analyte Name	MRL	MDL	Sample Result	SW05-0001DUP KWG1102468-1 Duplicate Sample		Relative Percent Difference	RPD Limit
				Result	Average		
Diesel Range Organics (DRO)	270	12	240	190	220	23 #	30
Residual Range Organics (RRO)	530	20	830	640	740	26 #	30

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Extracted: 03/17/2011
Date Analyzed: 03/22/2011

Lab Control Spike Summary
Diesel and Residual Range Organics

Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

Units: ug/L
Basis: NA
Level: Low
Extraction Lot: KWG1102468

Lab Control Sample
KWG1102468-2
Lab Control Spike

Analyte Name	Result	Expected	%Rec	%Rec Limits
Diesel Range Organics (DRO)	3340	3200	104	46-140
Residual Range Organics (RRO)	1600	1600	100	45-159

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Extracted: 03/17/2011
Date Analyzed: 03/22/2011
Time Analyzed: 00:51

Method Blank Summary
Diesel and Residual Range Organics

Sample Name:	Method Blank	File ID:	J:\GC21\DATA\032111F\0321F118.D
Lab Code:	KWG1102468-3	Instrument ID:	GC21
Extraction Method:	EPA 3510C	Level:	Low
Analysis Method:	NWTPH-Dx	Extraction Lot:	KWG1102468

This Method Blank applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Lab Control Sample	KWG1102468-2	J:\GC21\DATA\032111F\0321F116.D	03/22/11	00:28
SW05-0002	K1102162-002	J:\GC21\DATA\032111F\0321F120.D	03/22/11	01:13
SW05-0003	K1102162-003	J:\GC21\DATA\032111F\0321F122.D	03/22/11	01:35
SW05-0004	K1102162-004	J:\GC21\DATA\032111F\0321F124.D	03/22/11	01:58
SW06-0009	K1102162-031	J:\GC21\DATA\032111F\0321F126.D	03/22/11	02:20
SW05-0001	K1102162-001	J:\GC21\DATA\032111F\0321F130.D	03/22/11	03:05
SW05-0001DUP	KWG1102468-1	J:\GC21\DATA\032111F\0321F132.D	03/22/11	03:27
SW06-0001	K1102162-030	J:\GC21\DATA\032111F\0321F134.D	03/22/11	03:49

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220
Sample Matrix: Water

Service Request: K1102162
Date Extracted: 03/17/2011
Date Analyzed: 03/22/2011
Time Analyzed: 00:28

Lab Control Sample Summary
Diesel and Residual Range Organics

Sample Name: Lab Control Sample
Lab Code: KWG1102468-2
Extraction Method: EPA 3510C
Analysis Method: NWTPH-Dx

File ID: J:\GC21\DATA\032111F\0321F116.D
Instrument ID: GC21
Level: Low
Extraction Lot: KWG1102468

This Lab Control Sample applies to the following analyses:

Sample Name	Lab Code	File ID	Date Analyzed	Time Analyzed
Method Blank	KWG1102468-3	J:\GC21\DATA\032111F\0321F118.D	03/22/11	00:51
SW05-0002	K1102162-002	J:\GC21\DATA\032111F\0321F120.D	03/22/11	01:13
SW05-0003	K1102162-003	J:\GC21\DATA\032111F\0321F122.D	03/22/11	01:35
SW05-0004	K1102162-004	J:\GC21\DATA\032111F\0321F124.D	03/22/11	01:58
SW06-0009	K1102162-031	J:\GC21\DATA\032111F\0321F126.D	03/22/11	02:20
SW05-0001	K1102162-001	J:\GC21\DATA\032111F\0321F130.D	03/22/11	03:05
SW05-0001DUP	KWG1102468-1	J:\GC21\DATA\032111F\0321F132.D	03/22/11	03:27
SW06-0001	K1102162-030	J:\GC21\DATA\032111F\0321F134.D	03/22/11	03:49

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Results

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05/54220

Service Request: K1102162
Date Analyzed: 03/21/2011

Continuing Calibration Verification Summary
Diesel and Residual Range Organics

Calibration Type: External Standard
Analysis Method: NWTPH-Dx

Calibration Date: 03/14/2011
Calibration ID: CAL10358
Analysis Lot: KWG1102641
Units: ppm
Column ID: ZB-1

File ID: J:\GC21\DATA\032111F\0321F110.D
J:\GC21\DATA\032111F\0321F112.D

Analyte Name	Expected	Result	Average RF	CCV RF	%D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1100	944	1000	6	NA	± 15 %	AverageRF
Residual Range Organics (RRO)	1000	990	611	607	-1	NA	± 15 %	AverageRF
o-Terphenyl	50	50	1260	1250	0	NA	± 15 %	AverageRF
n-Triacontane	50	47	1090	1020	-7	NA	± 15 %	AverageRF

Results flagged with an asterisk (*) indicate values outside control criteria.

Analytical Chemistry Data Package

**Project: Non-Dry Dock Stormwater
SW07 April 14, 2011
Chemical Analyses**

Battelle Project No. 54220
CF No. 3174



Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, WA 98382
PM: Jill Brandenberger
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Non-Dry Dock Stormwater
SW07 April 14, 2011
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Analytical raw data available upon request

BATTELLE MARINE SCIENCE LABORATORIES

1529 West Sequim Bay Road
Sequim, Washington 98382-9099
360/681-4564

Non-Dry Dock Stormwater

ENVVEST 2010_SW07

Metals in Water

UNITS: µg/L

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Type Name	MSL Code	Collection Date	Hg	As	Ag	Al	Cd
<i>Instrument:</i>						<i>CVAF</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>
Laboratory Achieved Detection Limits (Freshwater)						0.0001	0.03	0.002	0.3	0.004
Freshwater Reporting Limit (MDL* 3.18)						0.0003	0.1	0.006	1.0	0.01

SW07

SW07-0026	PSNS015	TME	Composite_equal_time	3174-63	04/14/11	0.107	1.31	0.0931	517	0.0810
SW07-0027	PSNS015	DME	Composite_equal_time	3174-64	04/14/11	0.00584	1.05	0.00283 J	24.3	0.0397
SW07-0028	PSNS096	TME	Composite_equal_time	3174-65	04/14/11	0.00921	2.23	0.0394	321	0.270
SW07-0029	PSNS096	DME	Composite_equal_time	3174-66	04/14/11	0.00227	1.77	0.002 U	20.4	0.139
SW07-0030	PSNS032	TME	Composite_equal_time	3174-67	04/14/11	0.0806	1.63	0.0246	666	0.256
SW07-0031	PSNS032	DME	Composite_equal_time	3174-68	04/14/11	0.00681	1.00	0.002 U	29.1	0.105
SW07-0032	PSNS008	TME	Composite_equal_time	3174-69	04/14/11	0.00870	6.13	0.002 U	486	0.300
SW07-0033	PSNS008	DME	Composite_equal_time	3174-70	04/14/11	0.00184	5.70	0.002 U	16.8	0.235
SW07-0034	PSNS008	TME	Composite_equal_time	3174-71	04/14/11	0.00759	8.06	0.002 U	416	0.297
SW07-0035	PSNS008	DME	Composite_equal_time	3174-72	04/14/11	0.00168	7.90	0.002 U	16.5	0.233

BATTELLE MARINE SCIENCE LABORATORIES

1529 West Sequim Bay Road
Sequim, Washington 98382-9099
360/681-4564

Non-Dry Dock Stormwater

ENVVEST 2010_SW07

Metals in Water

UNITS: µg/L

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Type Name	MSL Code	Cr	Cu	Pb	Zn	CVAF Batch ID	ICP-MS Batch ID
					<i>Instrument:</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	
Laboratory Achieved Detection Limits (Freshwater)					0.08	0.007	0.002	0.05		
Freshwater Reporting Limit (MDL* 3.18)					0.3	0.02	0.006	0.2		

SW07

SW07-0026	PSNS015	TME	Composite_equal_time	3174-63	2.22 B	11.8	12.5	76.4	042511HGA	042911-6100
SW07-0027	PSNS015	DME	Composite_equal_time	3174-64	1.36 B	5.30	1.81	47.3	042511HGA	042911-6100
SW07-0028	PSNS096	TME	Composite_equal_time	3174-65	3.20 B	24.6	8.56	96.1	042511HGA	042911-6100
SW07-0029	PSNS096	DME	Composite_equal_time	3174-66	1.10 B	7.65	0.308	56.7	042511HGA	042911-6100
SW07-0030	PSNS032	TME	Composite_equal_time	3174-67	3.50 B	12.1	11.3	118	042511HGA	042911-6100
SW07-0031	PSNS032	DME	Composite_equal_time	3174-68	1.09 B	3.23	0.293	33.9	042511HGA	042911-6100
SW07-0032	PSNS008	TME	Composite_equal_time	3174-69	3.84	13.0	3.95	136	042511HGA	042911-6100
SW07-0033	PSNS008	DME	Composite_equal_time	3174-70	2.46 B	5.13	0.139	108	042511HGA	042911-6100
SW07-0034	PSNS008	TME	Composite_equal_time	3174-71	3.79	12.1	3.42	120	042511HGA	042911-6100
SW07-0035	PSNS008	DME	Composite_equal_time	3174-72	2.62 B	5.14	0.127	98.0	042511HGA	042911-6100

BATTELLE MARINE SCIENCE LABORATORIES

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**Non-Dry Dock Stormwater
ENVVEST 2010_SW07**

Station Code	Type Name	Collection	Analysis		Component	Units	Result	Detection Limit	Reporting Limit
		Date	Date	Analysis Method					
PSNS015	Composite_equal_time	04/14/2011	04/21/2011	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	3.01 =	0.07	0.50
PSNS096	Composite_equal_time	04/14/2011	04/21/2011	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	2.57 =	0.07	0.50
PSNS032	Composite_equal_time	04/14/2011	04/21/2011	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	2.33 =	0.07	0.50
PSNS008	Composite_equal_time	04/14/2011	04/21/2011	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	2.45 =	0.07	0.50
PSNS008DUP	Composite_equal_time	04/14/2011	04/21/2011	SM 5310 C	Carbon, Dissolved Organic (DOC)	mg/L	1.7 =	0.2	1.0
PSNS015	Composite_equal_time	04/14/2011	04/21/2011	SM 5310 C	Carbon, Total Organic	mg/L	3.02 =	0.07	0.50
PSNS096	Composite_equal_time	04/14/2011	04/21/2011	SM 5310 C	Carbon, Total Organic	mg/L	2.23 =	0.07	0.50
PSNS032	Composite_equal_time	04/14/2011	04/21/2011	SM 5310 C	Carbon, Total Organic	mg/L	1.75 =	0.07	0.50
PSNS008	Composite_equal_time	04/14/2011	04/21/2011	SM 5310 C	Carbon, Total Organic	mg/L	1.8 =	0.2	1.0
PSNS008DUP	Composite_equal_time	04/14/2011	04/21/2011	SM 5310 C	Carbon, Total Organic	mg/L	2.1 =	0.2	1.0
PSNS015	Composite_equal_time	04/14/2011	05/05/2011	SM 2340 C	Hardness, Total as CaCO3	mg/L	77.3 =	0.8	2.0
PSNS096	Composite_equal_time	04/14/2011	05/05/2011	SM 2340 C	Hardness, Total as CaCO3	mg/L	75.2 =	0.8	2.0
PSNS032	Composite_equal_time	04/14/2011	05/05/2011	SM 2340 C	Hardness, Total as CaCO3	mg/L	39.5 =	0.8	2.0
PSNS008	Composite_equal_time	04/14/2011	05/05/2011	SM 2340 C	Hardness, Total as CaCO3	mg/L	494 =	0.8	2.0
PSNS008DUP	Composite_equal_time	04/14/2011	05/05/2011	SM 2340 C	Hardness, Total as CaCO3	mg/L	735 =	0.8	2.0
PSNS015	Composite_equal_time	04/14/2011	04/19/2011	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	26.5 =	5.0	5.0
PSNS096	Composite_equal_time	04/14/2011	04/19/2011	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	18.0 =	5.0	5.0
PSNS032	Composite_equal_time	04/14/2011	04/19/2011	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	29.0 =	5.0	5.0
PSNS008	Composite_equal_time	04/14/2011	04/19/2011	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	17.5 =	5.0	5.0
PSNS008DUP	Composite_equal_time	04/14/2011	04/19/2011	SM 2540 D	Solids, Total Suspended (TSS)	mg/L	15.0 =	5.0	5.0

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Sample Type	MSL Code	As	Ag	Al	Cd	Cr	Cu	Pb	Zn	ICP-MS Batch ID
<i>Instrument:</i>					<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	<i>ICP-MS</i>	
Laboratory Achieved Detection Limits (Freshwater)					0.03	0.002	0.3	0.004	0.08	0.007	0.002	0.05	
Freshwater Reporting Limit (MDL* 3.18)					0.1	0.006	1.0	0.01	0.3	0.02	0.006	0.2	

METHOD BLANKS

MB-1		TME	Freshwater	TRM Blank	0.03 U	0.002 U	0.3 U	0.004 U	0.359	0.007 U	0.002 U	0.0971 J	042911-6100
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LABORATORY CONTROL SAMPLES

Spiking Level					2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
MB-1		TME	Freshwater	TRM Blank	0.03 U	0.002 U	0.3 U	0.004 U	0.359	0.007 U	0.002 U	0.0971 J	042911-6100
LCS (1)		TME	Freshwater	TRM LCS	2.07	1.99	2.10	2.03	2.46	2.02	1.97	2.16	042911-6100
Percent Recovery, LCS					104%	100%	105%	102%	105%	101%	99%	103%	

MATRIX SPIKE RESULTS

SW07-0031	PSNS032	DME	Composite_equal_time	3174-68	1.00	0.002 U	29.1	0.105	1.09 B	3.23	0.293	33.9	042911-6100
MS		DME	Composite_equal_time	3174-68MS	3.14	1.83	87.0	2.15	3.34	5.15	2.32	84.3	042911-6100
MSD		DME	Composite_equal_time	3174-68MSD	3.15	1.84	86.2	2.13	3.16	5.13	2.31	83.9	042911-6100
Spiking Level					2	2	50	2	2	2	2	50	
Percent Recovery, MS					107%	92%	116%	102%	113%	96%	101%	101%	
Percent Recovery, MSD					108%	92%	114%	101%	104%	95%	101%	100%	
RPD					0.9%	0.0%	1.7%	1.0%	8.3%	1.0%	0.0%	1.0%	

REPLICATE PRECISION

SW07-0030	PSNS032	TME	Composite_equal_time	3174-67	1.63	0.0246	666	0.256	3.50 B	12.1	11.3	118	042911-6100
DUP	PSNS032	TME	Composite_equal_time	3174-67r2	1.63	0.0262	658	0.253	3.39 B	12.1	11.0	116	042911-6100
Mean					<i>1.63</i>	<i>0.0254</i>	<i>662</i>	<i>0.255</i>	<i>3.45 B</i>	<i>12.1</i>	<i>11.2</i>	<i>117</i>	
RPD					0.0%	6.3%	1.2%	1.2%	3.2%	0.0%	2.7%	1.7%	

STANDARD REFERENCE MATERIAL, Seawater

SRM 1640 (1)		TME	Freshwater	TRM 1640	27.1	6.95	51.4	23.1	44.3	87.3	27.2	58.3	042911-6100
Certified Value					26.7	7.62	52.0	22.8	38.6	85.2	27.9	53.2	
PD					1.5%	8.8%	1.2%	1.3%	15%	2.5%	2.5%	9.6%	

BATTELLE MARINE SCIENCE LABORATORIES
 1529 West Sequim Bay Road
 Sequim, Washington 98382-9099
 360/681-4564

Non-Dry Dock Stormwater
ENVVEST 2010_SW07
Metals in Water
UNITS: µg/L

Sample ID - Metals	Station Code	Fraction (Total/Diss)	Sample Type	MSL Code	Hg	CVAF Batch ID
<i>Instrument:</i>					<i>CVAF</i>	
Laboratory Achieved Detection Limits					0.0001	
Reporting Limit (MDL* 3.18)					0.0003	
<u>METHOD BLANKS</u>						
MB-1		TME	Freshwater	MB1_042211	0.0001 U	042511HGA
MB-2		TME	Freshwater	MB2_042211	0.0001 U	042511HGA
MB-3		TME	Freshwater	MB3_042211	0.0001 U	042511HGA
<u>LABORATORY CONTROL SAMPLES</u>						
Spiking Level					0.00496	
LCS (1)		TME	Freshwater	OPR 042211 run1	0.00501	042511HGA
LCS (2)		TME	Freshwater	OPR 042211 run2	0.00497	042511HGA
LCS Blank (1)		TME	Freshwater	Blank042211	0.0001 U	042511HGA
Percent Recovery, LCS 1					101%	
Percent Recovery, LCS 2					100%	
SW07-0031	PSNS032	DME	Composite_equal_time	3174-68	0.00681	042511HGA
MS1	PSNS032	DME	Composite_equal_time	3174-68MS	0.0218	042511HGA
MSD1	PSNS032	DME	Composite_equal_time	3174-68MSD	0.0221	042511HGA
Spiking Level, MS					0.0151	
Spiking Level, MSD					0.0149	
Percent Recovery, MS					99%	
Percent Recovery, MSD					103%	
RPD					4.0%	
<u>REPLICATE PRECISION</u>						
SW07-0027	PSNS015	DME	Composite_equal_time	3174-64	0.00584	042511HGA
DUP	PSNS015	DME	Composite_equal_time	3174-64r2	0.00581	042511HGA
Mean					0.00583	
RPD					1%	
<u>STANDARD REFERENCE MATERIAL</u>						
SRM 1641 (1)		TME	Freshwater	1641d 042211	1557	042511HGA
Certified Value					1590	
range					±18	
PD					2%	
SRM 1641 (1)						

BATTELLE MARINE SCIENCE LABORATORIES
1529 West Sequim Bay Road
Sequim, Washington 98382-9099
360/681-4564

**Non-Dry Dock Stormwater
ENVVEST 2010_SW07
Metals in Water**

DATA QUALIFIERS:

- c Exceeds DQO but meets contingency criteria of either:
 - 1 SRM certified <10x MDL
 - 2 Insufficient spiking level relative to native sample concentrations
 - 3 Sample concentration <10x MDL
- U Analyte not detected at or above the MDL, MDL reported
- J Analyte detected above the MDL, but less than the RL
- N Spiked sample recovery outside QC criterion of 70-130%
- & Accuracy result outside QC criterion of $\leq 20\%$ PD
- * Precision result outside QC criterion of $< 30\%$
- NS Sample not spiked for this analyte
- B Analyte detected in the method blank > RL
 - and sample concentration < 10 times detected blank value
- b Data are blank corrected using the batch specific procedural blank
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- ND Not detected

Notes:

- Composite_equal_time Equal portion composite of time integrated sample (ISCO samples)
- NC Not Certified
 - Not analyzed
 - NA Not applicable/available
 - TME Total Metals Fraction
 - DME Dissolved Metals Fraction
 - 2 Sample specific MDLs and RLs reported

QA/QC NARRATIVE

PROJECT:	Non-Dry Dock Stormwater Sampling for SW07
PARAMETER:	Total and Dissolved Metals – Al, Ag, As, Cd, Cr, Cu, Pb, Zn, Hg
LABORATORY:	Battelle Marine Sciences Laboratory (MSL), Sequim, Washington
MATRIX:	Stormwater (as a freshwater matrix)
SAMPLE CUSTODY AND PROCESSING:	<p>Samples were collected from stormwater outfalls located within the Confined Industrial Area (CIA) and Naval Base Kitsap (NBK) at the Puget Sound Naval Shipyard and Intermediate Maintenance Facility (PSNS & IMF) by TEC, MSL, and the U.S. Navy. The samples reported in this delivery group include stormwater samples collected from those stations during STE#7 or SW07. The storm event identified as SW07 began on April 13, 2011 with the composites ending 24 hours later.</p> <p>Samples were collected and analyzed in accordance with the Quality Assurance Project Plan (Taylor Associates, Inc. and PNNL 2011). Two types of samples were to be collected during the storm. The first was a time proportionate composite sample collected using an ISCO sampler at each of the four outfall locations. The second was a grab sample collected during the storm event in amber glass jars provided by Columbia Analytical Services (CAS) for total petroleum hydrocarbons (TPH). The grab samples for TPH were not collected due to field logistics. The individual time interval composites collected in the 24 wedge bottles inside the ISCO sampler were carried back to the stormwater lab at PSNS & IMF and composited into a single event mean composite (EMC) in a pre-cleaned glass jar. All samples were hand delivered within 24 hours of collection to MSL.</p> <p>Upon receipt at MSL, the condition of all the samples were verified as acceptable and tracked back to the field chain of custody (COC). In the clean laboratory at MSL, each glass composite sample jar was shaken vigorously (prior and between aliquot removal) and aliquots were poured into the following types of containers:</p> <ol style="list-style-type: none">1. 500 mL Teflon bottle for total metals (TME),2. 500 mL 0.45µm polyvinylidene fluoride (PVDF) filter unit, vacuum filtered in a class 100 clean bench and then poured into a 500 mL Teflon bottle for dissolved metals,3. 250 mL low-density polyethylene (LDPE) bottle provided by CAS that included a nitric acid preservative for samples to be analyzed for hardness (HRD),4. 500 mL LDPE container with sulfuric acid preservative provided by CAS for the analysis of total organic carbon (TOC),5. 60 mL syringe and ashed glass fiber filter (GFF) in a cleaned filter holder. An aliquot of the sample was filtered into a 250 mL LDPE container with sulfuric acid preservative provided by CAS for the analysis of dissolved organic carbon (DOC),6. 500 mL or 1L LDPE bottle provided by CAS for the analysis of total suspended solids (TSS), and turbidity was measured in the field. <p>The total metal fractions and dissolved metal fractions were each acidified inside a Class 100 clean bench to a pH of < 2.0 with double distilled nitric acid. The samples were then assigned a Battelle Central File (CF) identification number (3174) and were entered into Battelle's sample tracking system.</p> <p>The composite aliquots for TOC, DOC, hardness, and TSS were all forwarded to CAS for analysis. The quality control narrative for these parameters was provided separately.</p>

QA/QC NARRATIVE

The following lists information on sample receipt and processing activities:

Sample Receipt Dates:	04/15/11
Cooler temp. on arrival	All coolers were at 4.0±2°C
Collection dates	04/14/11
CVAF analysis dates (Hg)	04/25/11
TRM Prep/Freshwater Analysis by ICP-MS (As, Ag, Al, Cd, Cr, Cu, Pb, Zn)	04/29/11

QA/QC DATA QUALITY OBJECTIVES:

Analyte	Analytical Method for Seawater	MS Range of Recovery	SRM Percent Difference	Replicate Precision	Method Detection Limits (µg/L)	Reporting Limits (µg/L)
Aluminum	ICP-MS	70-130%	≤20%	≤30%	0.3	1.0
Arsenic	ICP-MS	70-130%	≤20%	≤30%	0.03	0.1
Cadmium	ICP-MS	70-130%	≤20%	≤30%	0.004	0.01
Chromium	ICP-MS	70-130%	≤20%	≤30%	0.08	0.3
Copper	ICP-MS	70-130%	≤20%	≤30%	0.007	0.02
Lead	ICP-MS	70-130%	≤20%	≤30%	0.002	0.006
Silver	ICP-MS	70-130%	≤20%	≤30%	0.002	0.006
Zinc	ICP-MS	70-130%	≤20%	≤30%	0.05	0.2
Mercury	CVAF	70-130%	≤20%	≤30%	0.0001	0.0003

METHODS:

Samples were analyzed for nine metals: aluminum (Al), arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), lead (Pb), silver (Ag), zinc (Zn), and mercury (Hg). Samples were submitted for analyses following two methods. All samples were analyzed for Hg by Cold Vapor Atomic Fluorescence (CVAF) in accordance with Battelle SOP *MSL-I-013, Total Mercury in Aqueous Samples by CVAF*, following EPA Method 1631 revision E.

All samples were analyzed for other metals by Inductively Coupled Plasma-Mass Spectrometry (ICP-MS) in accordance with Battelle SOP *MSL-I-022, Determination of Elements in Aqueous and Digestate Samples by ICP/MS*. The base methods for this procedure are EPA Method 1638 and EPA Method 1640. All samples were digested following the total metal recoverable (TRM) method established in EPA Method 1640 prior to analysis by ICP-MS. In summary, this preparation brings the pH of the sample to 2% and heats the capped samples for 2.5 hours in a 85°C oven to solubilize particulates. Both the filtered and unfiltered fractions were prepared using this method to destroy any colloidal particles remaining in the filtered (aka. Dissolved) fraction. All results were reported in units of µg/L. Data are not blank corrected.

HOLDING TIMES:

All samples were analyzed within the established holding times of 90 days for Hg and six months for all other metals.

DETECTION LIMITS:

Laboratory method detection limits (MDLs) for TRM freshwater were reported from the MDL study (annually verified) as determined by seven replicates of deionized

QA/QC NARRATIVE

water spiked at appropriate concentrations and prepared using the TRM method. Reporting limits are determined as 3.18 times the laboratory achieved MDL. The data are evaluated and flagged as follows:

- U Analyte not detected at or above the MDL, MDL reported
- J Analyte detected above the MDL, but less than the RL
- N Spiked sample recovery outside QC criterion of 70-130%
- & Accuracy result outside QC criterion of $\leq 20\%$ PD
- * Precision result outside QC criterion of $< 30\%$
- B Analyte detected in the method blank $>$ RL and sample concentration $<$ 10 times detected blank value
- c Exceeds data quality objective but meets contingency criterion
- b Result is reagent blank corrected using the batch specific blank (BMRB)

METHOD BLANKS:

A minimum of one method blank was prepared and analyzed by each instrument with each analytical batch. The method blanks were all less than the RL except for Cr. The data were flagged if the concentration was less than 10 times the detected method blank. The data are not considered significantly biased by the detected Cr.

LABORATORY CONTROL SAMPLES:

A minimum of one LCS (OPR or blank spike) was prepared and analyzed with each analytical batch of 20 or fewer samples. Percent recoveries for LCS samples were within the QC acceptance criterion of 70% to 130% for all metals. They also met a secondary criterion of $\pm 15\%$ recovery for metals of concern (excludes Al, which is a proxy metal).

MATRIX SPIKE ACCURACY:

A minimum of one set of duplicate matrix spikes (MS/MSD) was prepared and analyzed with each analytical batch of 20 or fewer samples. Percent recoveries for matrix spikes were within the QC limits of 70% to 130% for all metals.

REPLICATE PRECISION:

Laboratory precision was expressed as the relative percent difference (RPD) between laboratory duplicates. The RPD values for the laboratory duplicates were within the QC acceptance criterion of $\pm 30\%$ for all metals detected above the RL.

STANDARD REFERENCE MATERIAL ACCURACY:

Standard reference materials (SRM) were prepared and analyzed with each analytical batch at a minimum frequency of 1 per 20 or fewer samples. Analytical accuracy was expressed as the percent difference (PD) between the measured and the certified value. The freshwater SRMs were 1641d for Hg and 1640 for all other metals. The differences were within the QC acceptance criterion of $\leq 20\%$.

REFERENCE:

Taylor Associates, Inc. – Division of TEC, Inc. and Pacific Northwest National Laboratory (2011). Non-Dry Dock Stormwater Monitoring Conducted at Puget Sound Naval Shipyard Bremerton, WA, Project ENVVEST Study Area. Document prepared for the United States Navy Puget Sound Naval Shipyard.

Date: 4.15.2011

Page: 1 of 1

Project No.: N4523A10MP00034 Amend.1

Project: PSNSNon-dry Dock SW 2010

Marine Sciences Laboratory
1529 West Sequim Bay Road
Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

① No lab. turbidity analysis required

② This is the duplicate of PSN 3008

③ Cond. values for these samples $> 2000 \mu\text{S/cm}$. Process accordingly

SAMPLE CHAIN OF CUSTODY FORM

Date: 4/15/2011

Page: 1 of 1

Project No.: 54220

Project: Non-dry Dock Stormwater SW07

SW = Stormwater

Battelle

Marine Sciences Laboratory

1529 West Sequim Bay Road

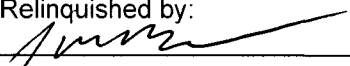

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH						No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW07-0026	PSNS015	04/14/11 1924	SW					x								1	comp	SW07	3174*63
SW07-0027	PSNS015	04/14/11 1924	SW						x							1	comp	SW07	3174*64
SW07-0028	PSNS096	04/14/11 2122	SW					x								1	comp	SW07	3174*65
SW07-0029	PSNS096	04/14/11 2122	SW						x							1	comp	SW07	3174*66
SW07-0030	PSNS032	04/14/11 1736	SW					x								1	comp	SW07	3174*67
SW07-0031	PSNS032	04/14/11 1736	SW						x							1	comp	SW07	3174*68
SW07-0032	PSNS008	04/14/11 1821	SW					x								1	comp	SW07	3174*69
SW07-0033	PSNS008	04/14/11 1821	SW						x							1	comp	SW07	3174*70
SW07-0034	PSNS008	04/14/11 1821	SW					x								1	comp	SW07DUP	3174*71
SW07-0035	PSNS008	04/14/11 1821	SW						x							1	comp	SW07DUP	3174*72

Relinquished by:			Received by:			Total # of Containers		
						4/15/11		
Signature			Signature			1745		
Date			Date			Shipment Method:		
Time			Time			Retained at Battelle		
Printed Name			Printed Name			Sample Disposition:		
Company			Company			Distribution:		
Relinquished by:			Received by:			1) PNNL		
Signature			Signature			2) CAS		
Date			Date			3) TAI		
Time			Time					
Printed Name			Printed Name					
Company			Company					

SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 04/15/11

Batch: 10

Login Designee: JMB/McGahan

Project: **Non-Dry Dock Stormwater SW07**



Marine Sciences Laboratory

1529 West Sequim Bay Road

Sequim, Washington 98382

PH: (360) 681-4565

Sponsor ID	Site Description	Battelle Code	Matrix	Storage Location	Requested Parameters	Storm #	Collection Date
SW07-0026	PSNS015	3174-63	water	Prep Lab K-4-C	TME	SW07	4/14/11 1924
SW07-0027	PSNS015	3174-64	water	Prep Lab K-4-C	DME	SW07	4/14/11 1924
SW07-0028	PSNS096	3174-65	water	Prep Lab K-4-C	TME	SW07	4/14/11 2122
SW07-0029	PSNS096	3174-66	water	Prep Lab K-4-C	DME	SW07	4/14/11 2122
SW07-0030	PSNS032	3174-67	water	Prep Lab K-4-C	TME	SW07	4/14/11 1736
SW07-0031	PSNS032	3174-68	water	Prep Lab K-4-C	DME	SW07	4/14/11 1736
SW07-0032	PSNS008	3174-69	water	Prep Lab K-4-C	TME	SW07	4/14/11 1821
SW07-0033	PSNS008	3174-70	water	Prep Lab K-4-C	DME	SW07	4/14/11 1821
SW07-0034	PSNS008	3174-71	water	Prep Lab K-4-C	TME	SW07 DUP	4/14/11 1821
SW07-0035	PSNS008	3174-72	water	Prep Lab K-4-C	DME	SW07 DUP	4/14/11 1821

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 3174 Sample No(s): 63-72 Batch: 10
Project Name: SWOT Non Dry Dock SLU Project Manager: Jm B

TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)

Matrix: Storm Water WP# _____

Yes No

☐ ☒ Navy-type Project (requires high-level sample tracking procedures)

☐ ☒ USDA Samples (see Compliance Agreement Checklist) PM Verification: _____

☒ ☐ Filter Samples: Amount: Entire sample Half of sample

☐ ☒ Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Login Lab)

☒ ☐ Special instructions: split for CAS

Sample Preservation Instructions: _____

See LIMS for archive/disposal information

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes No N/A Indicate in Appropriate Box

☐ ☐ ☒ Custody seal present Seal intact? YES NO

☒ ☐ ☐ Cooler temperature (acceptable range: $4 \pm 2^\circ\text{C}$ or solids:frozen) 5 cooler $\pm 4 \pm 2^\circ\text{C}$
(if multiple coolers, note temp. of each) _____ $^\circ\text{C}$

☐ ☐ ☒ Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)
Comment/Remedy: _____

☒ ☐ ☐ Were all chain of custody forms signed and dated?

☒ ☐ ☐ Were samples filtered at MSL?

Sample condition(s):

Acceptable Other (explain): _____

Container type:

Plastic Poly Glass Cap. Vial Other: _____

Notes: Coolers were hand delivered from the field; CAS splits taken at MSL

Completed By: Jm B Date/Time: 4/15/11 1737

SAMPLE PRESERVATION

☐ Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)

☐ Random pH checked for ~10% of samples (use dip paper) Sample IDs: _____

☐ Complete pH check required for project (use pH meter and record on pH Record form)

☒ Sample(s) were preserved at MSL

Type: ☒ 0.2% HNO₃ Notes: Optima HNO₃ Lot# 1210008

☐ 0.5% HCl (Hg samples) Notes: _____ Lot# _____

☐ Refrigerate/Freeze Notes: _____

☐ Other Notes: _____

Completed By: Jm B Date/Time: 4/15/11 1915

Storage Shelf:

K-4-C

K1103359

SAMPLE CHAIN OF CUSTODY FORM

Date: 4/15/2011

Page: 1 of 2

Project No.: 54220

Project: Non-dry Dock Stormwater SW07

SW = Stormwater

Battelle

Marine Sciences Laboratory

1529 West Sequim Bay Road

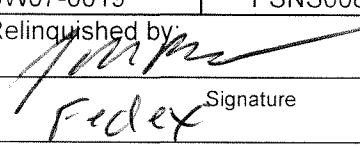
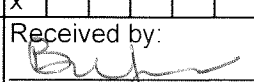
Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH					No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW07-0006	PSNS015	04/14/11 1924	SW	x											1	comp	SW07	
SW07-0007	PSNS015	04/14/11 1924	SW		x										1	comp	SW07	
SW07-0008	PSNS015	04/14/11 1924	SW			x									1	comp	SW07	
SW07-0009	PSNS015	04/14/11 1924	SW				x								1	comp	SW07	
SW07-0010	PSNS096	04/14/11 2122	SW	x											1	comp	SW07	
SW07-0011	PSNS096	04/14/11 2122	SW		x										1	comp	SW07	
SW07-0012	PSNS096	04/14/11 2122	SW			x									1	comp	SW07	
SW07-0013	PSNS096	04/14/11 2122	SW				x								1	comp	SW07	
SW07-0014	PSNS032	04/14/11 1736	SW	x											1	comp	SW07	
SW07-0015	PSNS032	04/14/11 1736	SW		x										1	comp	SW07	
SW07-0016	PSNS032	04/14/11 1736	SW			x									1	comp	SW07	
SW07-0017	PSNS032	04/14/11 1736	SW				x								1	comp	SW07	
SW07-0018	PSNS008	04/14/11 1821	SW	x											1	comp	SW07	
SW07-0019	PSNS008	04/14/11 1821	SW		x										1	comp	SW07	

Relinquished by:  4/18/11			Received by:  CAS			Total # of Containers		
Signature _____ Date _____ Time _____			Signature _____ 4-19-11			Shipment Method:		
Printed Name _____ Company _____			Printed Name Brad Robin 9:00			Fedex to CAS		
Relinquished by:			Received by:			Sample Disposition:		
Signature _____ Date _____ Time _____			Signature _____			Distribution:		
Printed Name _____ Company _____			Printed Name _____			1) PNNL		
						2) CAS		
						3) TAI		

K1103359

Battelle

Marine Sciences Laboratory

1529 West Sequim Bay Road

Laboratory: Battelle MSL

Attention: Jill Brandenberger

Phone: (360) 681-4564

Analyze parameters per QAP/FSP

[illegible]

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC H2

Client / Project: Ba+teille Service Request K11 03359

Received: 4-19-11 Opened: 4-19-11 By: BT Unloaded: 4-19-11 By: BT

1. Samples were received via? *Mail* ☒ *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) ☒ *Cooler* *Box* *Envelope* *Other* NA
3. Were custody seals on coolers? *NA* ☒ *Y* *N* If yes, how many and where? 1 front
 If present, were custody seals intact? ☒ *Y* *N* If present, were they signed and dated? ☒ *Y* *N*

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID	Tracking Number	NA	Filed
1.2	1.0	311	<input checked="" type="radio"/> NA	7969 9844 0200		

7. Packing material used. *Inserts* *Baggies* ☒ *Bubble Wrap* *Gel Packs* *Wet Ice* *Sleeves* *Other*
8. Were custody papers properly filled out (ink, signed, etc.)? *NA* ☒ *Y* *N*
9. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* *NA* ☒ *Y* *N*
10. Were all sample labels complete (i.e analysis, preservation, etc.)? *NA* ☒ *Y* *N*
11. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* *NA* ☒ *Y* *N*
12. Were appropriate bottles/containers and volumes received for the tests indicated? *NA* ☒ *Y* *N*
13. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* *NA* ☒ *Y* *N*
14. Were VOA vials received without headspace? *Indicate in the table below.* ☒ *NA* *Y* *N*
15. Was C12/Res negative? ☒ *NA* *Y* *N*

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07
Sample Matrix: Water

Service Request No.: K1103359
Date Received: 4/19/11

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of Columbia Analytical Services, Inc. (CAS). This report contains analytical results for samples designated for Tier IV validation deliverables including summary forms and all of the associated raw data for each of the analyses. When appropriate to the method, method blank results have been reported with each analytical test.

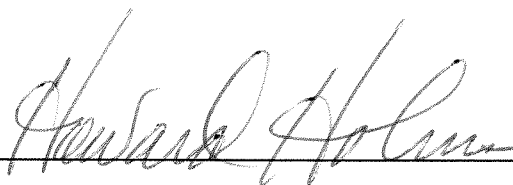
Sample Receipt

Twenty water samples were received for analysis at Columbia Analytical Services on 4/19/11. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

General Chemistry Parameters

No anomalies associated with the analysis of these samples were observed.

Approved by

 Date 5-6-11

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220
Sample Matrix: Water

Service Request: K1103359
Date Collected: 4/14/11
Date Received: 4/19/11

Analysis Method: SM 2340 C

Units: mg/L
Basis: NA

Hardness, Total as CaCO3

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW07-0006	K1103359-001	77.3		2.0	0.8	1	NA	5/5/11 08:30	
SW07-0010	K1103359-005	75.2		2.0	0.8	1	NA	5/5/11 08:30	
SW07-0014	K1103359-009	39.5		2.0	0.8	1	NA	5/5/11 08:30	
SW07-0018	K1103359-013	494		2.0	0.8	1	NA	5/5/11 08:30	
SW07-0022	K1103359-017	735		2.0	0.8	1	NA	5/5/11 08:30	
Method Blank	K1103359-MB1	ND	U	2.0	0.8	1	NA	5/5/11 08:30	
Method Blank	K1103359-MB2	ND	U	2.0	0.8	1	NA	5/5/11 08:30	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220
Sample Matrix: Water

Service Request: K1103359
Date Collected: 4/14/11
Date Received: 4/19/11
Date Analyzed: 5/ 5/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: SW07-0006
Lab Code: K1103359-001

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	SW07-0006DUP Duplicate Sample K1103359-001DUP3		RPD	RPD Limit
					Result	Average		
Hardness, Total as CaCO3	SM 2340 C	2.0	0.8	77.3	77.7	77.5	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220
Sample Matrix: Water

Service Request: K1103359
Date Analyzed: 5/ 5/11

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L**Basis:** NA

Lab Control Sample K1103359-LCS1					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Hardness, Total as CaCO ₃	SM 2340 C	46.6	43.4	107	90 - 116

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220
Sample Matrix: Water

Service Request: K1103359
Date Analyzed: 5/ 5/11

**Lab Control Sample Summary
 General Chemistry Parameters**

Units: mg/L

Basis: NA

Lab Control Sample K1103359-LCS2					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Hardness, Total as CaCO3	SM 2340 C	46.2	43.4	106	90 - 116

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220
Sample Matrix: Water

Service Request: K1103359
Date Collected: 4/14/11
Date Received: 4/19/11

Analysis Method: SM 2540 D

Units: mg/L
Basis: NA

Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW07-0009	K1103359-004	26.5		5.0	5.0	1	NA	4/19/11 11:00	
SW07-0013	K1103359-008	18.0		5.0	5.0	1	NA	4/19/11 11:00	
SW07-0017	K1103359-012	29.0		5.0	5.0	1	NA	4/19/11 11:00	
SW07-0021	K1103359-016	17.5		5.0	5.0	1	NA	4/19/11 11:00	
SW07-0025	K1103359-020	15.0		5.0	5.0	1	NA	4/19/11 11:00	
Method Blank	K1103359-MB1	ND	U	5.0	5.0	1	NA	4/19/11 11:00	
Method Blank	K1103359-MB2	ND	U	5.0	5.0	1	NA	4/19/11 11:00	
Method Blank	K1103359-MB3	ND	U	5.0	5.0	1	NA	4/19/11 11:00	
Method Blank	K1103359-MB4	ND	U	5.0	5.0	1	NA	4/19/11 11:00	
Method Blank	K1103359-MB5	ND	U	5.0	5.0	1	NA	4/19/11 11:00	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220
Sample Matrix: Water

Service Request: K1103359
Date Collected: 4/14/11
Date Received: 4/19/11
Date Analyzed: 4/19/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: SW07-0009
Lab Code: K1103359-004

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	SW07-0009DUP Duplicate Sample K1103359-004DUP5		RPD	RPD Limit
					Result	Average		
Solids, Total Suspended (TSS)	SM 2540 D	5.0	5.0	26.5	27.5	27.0	4	10

Results flagged with an asterisk (*) indicate values outside control criteria.

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220
Sample Matrix: Water

Service Request: K1103359
Date Analyzed: 4/19/11

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L**Basis:** NA

Lab Control Sample K1103359-LCS1					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Solids, Total Suspended (TSS)	SM 2540 D	396	433	91	80 - 115

Results flagged with an asterisk (*) indicate values outside control criteria.

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220
Sample Matrix: Water

Service Request: K1103359
Date Analyzed: 4/19/11

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L**Basis:** NA

Lab Control Sample K1103359-LCS2					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Solids, Total Suspended (TSS)	SM 2540 D	406	433	94	80 - 115

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220
Sample Matrix: Water

Service Request: K1103359
Date Analyzed: 4/19/11

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L**Basis:** NA

Lab Control Sample K1103359-LCS3					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Solids, Total Suspended (TSS)	SM 2540 D	408	433	94	80 - 115

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220
Sample Matrix: Water

Service Request: K1103359
Date Collected: 4/14/11
Date Received: 4/19/11

Analysis Method: SM 5310 C

Units: mg/L
Basis: NA

Carbon, Dissolved Organic (DOC)

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW07-0008	K1103359-003	3.01		0.50	0.07	1	NA	4/21/11 16:20	
SW07-0012	K1103359-007	2.57		0.50	0.07	1	NA	4/21/11 16:20	
SW07-0016	K1103359-011	2.33		0.50	0.07	1	NA	4/21/11 16:20	
SW07-0020	K1103359-015	2.45		0.50	0.07	1	NA	4/21/11 16:20	
SW07-0024	K1103359-019	1.7		1.0	0.2	2	NA	4/21/11 16:20	
Method Blank	K1103359-MB1	ND	U	0.50	0.07	1	NA	4/21/11 16:20	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220
Sample Matrix: Water

Service Request: K1103359
Date Collected: 4/14/11
Date Received: 4/19/11
Date Analyzed: 4/21/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: SW07-0008
Lab Code: K1103359-003

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	SW07-0008DUP Duplicate Sample K1103359-003DUP4		RPD	RPD Limit
					Result	Average		
Carbon, Dissolved Organic (DOC)	SM 5310 C	0.50	0.07	3.01	3.26	3.13	8	33

Results flagged with an asterisk (*) indicate values outside control criteria.

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220
Sample Matrix: Water

Service Request: K1103359
Date Collected: 4/14/11
Date Received: 4/19/11
Date Analyzed: 4/21/11

Matrix Spike Summary
General Chemistry Parameters

Sample Name: SW07-0008
Lab Code: K1103359-003

Units: mg/L
Basis: NA

Analytical Method: SM 5310 C

SW07-0008MS
Matrix Spike
K1103359-003MS1

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Dissolved Organic (DOC)	3.01	27.5	25.0	98	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220
Sample Matrix: Water

Service Request: K1103359
Date Analyzed: 4/21/11

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L**Basis:** NA

Lab Control Sample K1103359-LCS1					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Dissolved Organic (DOC)	SM 5310 C	25.3	26.0	97	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220

Service Request: K1103359

Continuing Calibration Verification (CCV) Summary
Carbon, Dissolved Organic (DOC)

Analytical Method: SM 5310 C**Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	243255	KQ1103646-03	4/21/11 16:20	25.0	24.0	96	90 - 110
CCV2	243255	KQ1103646-04	4/21/11 16:20	25.0	23.1	92	90 - 110

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220

Service Request: K1103359

Continuing Calibration Blank (CCB) Summary
Carbon, Dissolved Organic (DOC)

Analytical Method: SM 5310 C

Units: mg/L

	Analysis Lot	Lab Code	Date Analyzed	MDL	MRL	Result	Q
CCB1	243255	KQ1103646-05	4/21/11 16:20	0.07	0.50	ND	U
CCB2	243255	KQ1103646-06	4/21/11 16:20	0.07	0.50	ND	U

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220
Sample Matrix: Water

Service Request: K1103359
Date Collected: 4/14/11
Date Received: 4/19/11

Analysis Method: SM 5310 C

Units: mg/L
Basis: NA

Carbon, Total Organic

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SW07-0007	K1103359-002	3.02		0.50	0.07	1	NA	4/21/11 16:20	
SW07-0011	K1103359-006	2.23		0.50	0.07	1	NA	4/21/11 16:20	
SW07-0015	K1103359-010	1.75		0.50	0.07	1	NA	4/21/11 16:20	
SW07-0019	K1103359-014	1.8		1.0	0.2	2	NA	4/21/11 16:20	
SW07-0023	K1103359-018	2.1		1.0	0.2	2	NA	4/21/11 16:20	
Method Blank	K1103359-MB1	ND	U	0.50	0.07	1	NA	4/21/11 16:20	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220
Sample Matrix: Water

Service Request: K1103359
Date Collected: 4/14/11
Date Received: 4/19/11
Date Analyzed: 4/21/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: SW07-0015
Lab Code: K1103359-010

Units: mg/L
Basis: NA

Analyte Name	Method	MRL	MDL	Sample Result	SW07-0015DUP Duplicate Sample K1103359-010DUP6		RPD	RPD Limit
					Result	Average		
Carbon, Total Organic	SM 5310 C	0.50	0.07	1.75	1.75	1.75	<1	33

Results flagged with an asterisk (*) indicate values outside control criteria.

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220
Sample Matrix: Water

Service Request: K1103359
Date Collected: 4/14/11
Date Received: 4/19/11
Date Analyzed: 4/21/11

Matrix Spike Summary
General Chemistry Parameters

Sample Name: SW07-0015
Lab Code: K1103359-010

Units: mg/L
Basis: NA

Analytical Method: SM 5310 C

SW07-0015MS
Matrix Spike
K1103359-010MS2

Analyte Name	Sample Result	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	1.75	26.6	25.0	100	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220
Sample Matrix: Water

Service Request: K1103359
Date Analyzed: 4/21/11

Lab Control Sample Summary
General Chemistry Parameters

Units: mg/L**Basis:** NA

Lab Control Sample K1103359-LCS1					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic	SM 5310 C	25.3	26.0	97	83 - 117

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220

Service Request: K1103359

Continuing Calibration Verification (CCV) Summary
Carbon, Total Organic

Analytical Method: SM 5310 C**Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	243254	KQ1103645-03	4/21/11 16:20	25.0	24.0	96	90 - 110
CCV2	243254	KQ1103645-04	4/21/11 16:20	25.0	23.3	93	90 - 110
CCV3	243254	KQ1103645-05	4/21/11 16:20	25.0	24.2	97	90 - 110
CCV4	243254	KQ1103645-06	4/21/11 16:20	25.0	24.0	96	90 - 110

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW07/54220

Service Request: K1103359

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic

Analytical Method: SM 5310 C**Units:** mg/L

	Analysis Lot	Lab Code	Date Analyzed	MDL	MRL	Result	Q
CCB1	243254	KQ1103645-07	4/21/11 16:20	0.07	0.50	ND	U
CCB2	243254	KQ1103645-08	4/21/11 16:20	0.07	0.50	ND	U
CCB3	243254	KQ1103645-09	4/21/11 16:20	0.07	0.50	ND	U
CCB4	243254	KQ1103645-10	4/21/11 16:20	0.07	0.50	ND	U