

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

							Ul	N115: μg/L			
Sample ID -		Fraction			Collection						
Metals	Station Code	(Total/Diss)	Type Name	MSL Code	Date	Turbidity	Hg	As	Ag	Al	Cd
						Units					
				Instrument:		(NTU)	CVAF	ICP-MS	ICP-MS	ICP-MS	ICP-MS
Laboratory A	Achieved Detection	on Limits (Fres	hwater)				0.0001	0.03	0.002	0.3	0.004
Freshwater R	Reporting Limit (1	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
FOLIDMEN	NT BLANKS										
SW1005		TME	Grab	3174-1	10/15/10	NA	0.0001 U	0.03 U	0.002 U	0.3 U	0.004 U
	Tubing EB										
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

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

							1115. μg/L			
Sample ID -		Fraction	_						CVAF Batch	ICP-MS Batch
Metals	Station Code	(Total/Diss)	Type Name	MSL Code	Cr	Cu	Pb	Zn	ID	ID
				Instrument:	ICP-MS	ICP-MS	ICP-MS	ICP-MS		
Laboratory A	chieved Detection	on Limits (Fres	hwater)		0.08	0.007	0.002	0.05	1	
•	eporting Limit (iiwatei)		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
EQUIPMEN	T 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
5111004	1 51 15002.5	DIVIL	composite_equal_time	3174-10	0.507	0.0 170	0.302 0	0.332	11271011071	112310-0100
					1.00	0.208	0.0194	0.445		

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

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

		Fraction		T		
Sample ID - Metals	Station Code	(Total/Diss)	Sample Type	MSL Code	Hg	CVAF Batch ID
		(F . JF .	Instrument:	CVAF	1 - 1
Laboratory Achieved					0.0001	
Reporting Limit (MD	DL* 3.18)				0.0003	
METHOD RI ANK	2					
METHOD BLANKS MB-1	3	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
I ADODATODY CO	NITDOL CAMDLES	,				
LABORATORY CO Spiking Level	JN I KUL SAMPLES	<u> </u>			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
,			Per	cent Recovery, LCS 1	100%	
			Per	cent Recovery, LCS 2	102%	
Spiking Level					0.00496	
LCS (1)		TME	Freshwater	OPR 112709 run1	0.00456	112910HGA
LCS (2)		TME	Freshwater	OPR 112709 run2	0.00466	112910HGA
LCS Blank (1)		TME	Freshwater	Blank 112709	0.0001 U	112910HGA
(-)				cent Recovery, LCS 1	94%	
				cent Recovery, LCS 2	94%	
MATRIX SPIKE R	ESULTS					
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	
			F	Percent Recovery, MS	97%	
			Pe	rcent Recovery, MSD	95%	
				RPD	2.7%	
REPLICATE PREC						
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 REFE	RENCE MATERIA	<u>L</u>				
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%	

QC Results Hg Page 1 of 1

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

Sample ID -		Fraction	Sample										ICP-MS
Metals	Station Code	(Total/Diss)	Type	MSL Code	As	Ag	Al	Cd	Cr	Cu	Pb	Zn	Batch ID
				Instrument:	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	
Laboratory Ac	chieved Detecti	on Limits (Fre	shwater)		0.03	0.002	0.3	0.004	0.08	0.007	0.002	0.05	
Freshwater Re	eporting Limit ((MDL* 3.18)			0.1	0.006	1.0	0.01	0.3	0.02	0.006	0.2	
METHOD BI	LANKS	TME	г 1 .	D1 1101010	0.02.11	0.002.11	0.0.11	0.004.11	0.00 11	0.005.11	0.002.11	0.05 11	101010 6100
MB-1 MB-2		TME TME		Blank101810 TRM Blank 112910R1	0.03 U	0.002 U	0.3 U	0.004 U	0.08 U	0.007 U	0.002 U	0.05 U	101810-6100 112310-6100
MB-2 MB-3		TME		TRM Blank 112910R1	0.03 U 0.03 U	0.002 U 0.002 U	0.3 U 0.3 U	0.004 U 0.004 U	0.08 U 0.08 U	0.007 U 0.007 U	0.002 U 0.002 U	0.0802 J 0.05 U	112310-6100
MB-3		IME	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	112310-0100
LABORATO	RY CONTRO	L 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
			P	ercent Recovery, LCS	111%	101%	96%	113%	101%	101%	101%	129%	
										_			
Spiking Level		TD CE	.	TDM D1 1 112010D1	2	2	2	2	2	2	2	2	112210 (100
MB-2 LCS (2)		TME TME		TRM Blank 112910R1 TRM LCS 112910	0.03 U 1.98	0.002 U 1.93	0.3 U 2.26	0.004 U 1.96	0.08 U 1.99	0.007 U 1.98	0.002 U 2.02	0.0802 J 2.06	112310-6100 112310-6100
LCS (2)		IME		ercent Recovery, LCS	1.98 99%	1.93 97%	2.20 113%	98%	1.99 100%	1.98 99%	2.02 101%	2.06 99%	112310-6100
				creent Recovery, Les	<i>777</i> 0	27.70	11370	2070	10070	<i>))</i> / 0	101 / 0	<i>)</i>	
MATRIX SP	IKE RESULT	S											
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%	
			Pe	ercent Recovery, MSD	109%	92%	88%	99%	107%	97%	104%	117%	
DEDITION TO	- PDE CICION	,		RPD	1.9%	1.2%	7.7%	0.0%	1.9%	7.5%	0.0%	10.8%	
SW1006	E PRECISION 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	3174-2 3174-2r2	0.03 U	0.002 U 0.002 U	0.3 U	0.004 U	0.08 U	0.007 U	0.002 U 0.002 U	0.05 U	101810-6100
DOLL	Tubing Lb	TIVIL	Tiesiiwatei	Mean	0.03 U	0.002 U	0.3 U	0.004 U	0.08 U	0.007 U	0.002 U	0.05 U	101010-0100
				RPD	NA	NA	NA	NA	NA	NA	NA	NA	
					- 11-2	- 11-2	- 11-2	- 11-	- 1	- 1		- 11-	
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
				Mean	1.61	0.0327	160	0.404	8.80	31.5	6.14	116	
				RPD	3%	24%	17%	2%	1%	3%	3%	0%	

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

Sample ID -		Fraction	Sample										ICP-MS
Metals	Station Code	(Total/Diss)	Type	MSL Code	As	Ag	Al	Cd	Cr	Cu	Pb	Zn	Batch ID
				Instrument:	ICP-MS								
STANDARD	REFERENCE	MATERIAI	L, Seawater										
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%	

QC Results ICPMS Page 2 of 2

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 ≤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 inidicates 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 0.45 µm 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,
- 500 mL LDPE container with sulfuric acid preservative provided by CAS for the analysis of TOC,
- 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 $4.0\pm2^{\circ}$ 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

10/18/10 and 11/23/10

(As, Ag, Al, Cd, Cr, Cu, Pb, Zn)

OA/OC 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:

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:

- 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 ≤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. 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 ≤20%.

SAMPLE CUSTODY RECORD

(SOP#: MSL-A-001 & MSL-A-002) Date: 10/15/2010 ... Putting Technology To Work Project Name: ENWEST Non-drydock Stormwater Pacific Northwest Division Project Manager: Brandenberger **Test Parameters** Marine Sciences Laboratory Phone Number: 1529 West Sequim Bay Road No. of Containers Sequim, Washington 98382 Shipment Method: samples created at lab **Total Metals** Preservation: samples preserved with nitric at lab Collection Line Field Sample ID Date/Time Matrix Laboratory ID **Observations/Comments** 10/15/10 1323 SW1005 1 Unclean tubing blank freshwater х 3174-1 2 Micro cleaned tubing 10/15/10 1323 freshwater SW 100 G 3174-2 3 4 5 6 7 8 9 10 11 12 13 14 15 Relinquished By: MSL Received By: Company: Company: MSL J. Brandenberger 10/15/10 1500 C. Suslick 10/15/10 1500 Signature/Printed Name Date/Time Signature/Printe Date/Time Relinquished By: Company: Received By: Company: Signature/Printed Name Date/Time Signature/Printed Name Date/Time





SAMPLE LOGIN

Project Manager: Brandenberger Date Received: 10/15/2010

Batch: 1

Login Designee: CSuslick

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

Project: ENVVEST Drydock Stormwater

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

SOP#: MSL-A-001 Page 1 of 1

	SAMPLE CHAIN (OF CUSTODY FO	RM													Battelle Marine Scien	ann Labora	ntory	
	Page:	_ of														1529 West S		•	
	Project No.:	_01			ı											Laboratory:			
	Project:	Non-dry Dock SV	V 2010		1												Jill Branden		
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	Printed Name Company					Printed Name													





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

	(s): 3 - 10	Batch:	_2
Project Name: Non Dry Dock S	w	Project Manager:	JMB
TO BE COMPLETED BY PROJECT MANAGE	R (prior to arrival when p	ossible)	
Yes No Navy-type Project (requires	WP≠ high-level sample tracking p	·	•
USDA Samples (see Complian	ce Agreement Checklist)	PM Verification:	
Filter Samples: Amount:	Entire sample	Half of sam) (le
Freeze dry sample(s) - sample Special instructions:			
Sample Preservation Instructions:	0.290 HNO2	•	
	archive/disposal informati	on**	
TO BE COMPLETED UPON SAMPLE AR	RIVAL/LOG-IN		
Yes No N/A Indicate in Appropri			
Custody seal present	Seal intact?	YES NO	
Cooler temperature (c	acceptable range: 4±2°C or	solids:frozen)	4.2 °C
(if multiple coolers,	note temp. of each)		4, 6°C
	fied of any custody/login di	screpancies (cooler temp,	sponsor codes, etc)
Comment/Remedy:			
Were all chain of cust	tody forms signed and date	d?	
Were samples filtered	d at MSL?		
Sample condition(s):	e Other (explain	n):	
Container type: Teffen f	oly (ass) Cap Vial	Other:	
Notes:			
Completed By: 1 Mhm		Date/Time: 10/28/10)
SAMPLE PRESERVATION			
Sample(s) were preserved prior to an	rival at MSL (noted on CoC	/ Sample / per PM Instruc	tion)
Random pH checked for ~10% of sam		Sample IDs:	
Complete pH check required for proje		rd on pH Record form)	
Sample(s) were preserved at MSL		·	
Type: 0.2% HN03	Notes: Optimo	_	Lot# 1206096
0.5% HCl (Hg samples)	Notes:	-	Lot#
Refrigerate/Freeze	Notes:		
Other	Notes:	,	
Completed By: Ass A-		Date/Time: 10/28/10	
Completed By: /m/h Storage Shelf: / -	-1-C	nater times 158110	

SAMPLE CHAIN Date: 11/17/10 Page: 1 Project No.: Project:		An	alyz	e p	ara	me:	ters	per	· QA	\P/F	SP			Marine 1529 \ Labora Attenti	Scier Vest S atory:	Sequin Battel Jill Bra	n Bay le MS anden	Road	564					
Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	000	TSS	TME/DME	TPH	Turbidity					No. containers	Sam Type	(grab	Sto	rm#	Note	S			
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SW01-0021	PSWS 081.1	118/10 1750	54	├-	-		┝	₩	+	\vdash	╁	╁	╄	\vdash		Com	12	swo) [TME		31'	77	1 1
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SW01-0023	PSNS 082.5	11/18/10 1750	 -	\vdash	-	\vdash	┢	众	┿	-	╁	┝	├-	\vdash		<u> </u>		 		TME			Ł	۱ ر
SW01-00 24	PSNS 126	11/18/10 0849		╁╌	Н		┢	 		├	┿	┼─	╁╌							DME		11 '	46	Ĭ
SW01-0025	PSNS126	M/18/10 1750	 		Н		┢	Ϊ́χ		╌	╁	╁	╁	╁			1	 	<u> </u>	TME		Ц	Γ	1
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11/18/10/

SW- Stormwater Note: grab samples forwarded to CAS. composite samples spit and forwarded to CAS & pNNL. Jmg 11/18/10



Battelle
The Business of Innovation

SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 11/19/2020

Batch: 3

Login Designee: Suslick/Brandenberger

Marine Sciences Laboratory 1529 West Sequim Bay Road Sequim, Washington 98382

PH: (360) 681-4565

Project: Non-Dry Dock SW (Storm Water)

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: TMB
TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when pos	sible)
	H 234774
Yes No Navy-type Project (requires high-level sample tracking pro	and man)
USDA Samples (see Compliance Agreement Checklist)	PM Verification:
CODA Sumples (see compliance Agreement checklist)	rm 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;	to parameter bottles
Sample Preservation Instructions: filter / acidify	metals 0,2% HADR
Special instructions: Split composite in Sample Preservation Instructions: filter / acid; fyr **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 4 2 2/2 (0
Cooler temperature (acceptable range: 4±2°C or s	olids:frozen) #1/1.2 # 3/°C mul
(if multiple coolers, note temp. of each)	VES NO # 1/1.2 # 3/2.4 olids:frozen) # 1/2 # 3/2.4
Project Manager notified of any custody/login disc	
Comment/Remedy:	
Were all chain of custody forms signed and dated	
Were samples filtered at MSL?	
Sample condition(s):	•
Sumple condition(3).	
Container type: Teffen Poly Class Cop. Vial	Other:
Notes:	
Completed By: /m mu	Date/Time: 18/10 1750
SAMPLE PRESERVATION	
	County / non DM Tretwestion
Sample(s) were preserved prior to arrival at MSL (noted on CoC/	
Random pH checked for ~10% of samples (use dip paper)	Sample IDs:
Complete pH check required for project (use pH meter and record	d on pH Record form)
Sample(s) were preserved at MSL	
Type: 0.2% HNO3 Notes:	10tm Lot# 1602090
0.5% HCl (Hg samples) Notes:	Lot#
	,
Refrigerate/Freeze Notes:	
Other Notes:	
Completed By: In Am	Date/Time: 11/19/10
Stamman Challes (D)	

SAMPLE CHAIN Date: 11/19/10 Page: 1 Project No.: Project:		Battelle Marine Sciences Laboratory 1529 West Sequim Bay Road Laboratory: Battelle MSL Attention: Jill Brandenberger Analyze parameters per QAP/FSP Phone: (360) 681-4564											Road SL berger							
Sample Label	Station ID	Collection Date/Time	SW = Stormwater Matrix	Hardness	T0C	DOC	TSS	TME/DME	ТРН	Turbidity				No containers	vs	Sample pe (grab Comp)		orm#	Notes	
SW01-0001	PS096	11/17/10 2030	Sw						X						19	rab	Su	01	lowflow	
SW01-0002	PS081.	11/17/10 2053	-	ļ	<u> </u>	ļ		ļ	X			ļ		_	4			+-	6 106	
SW01-0003	PS 82.5 PS 126	11/17/10 2114			├	ļ			χ				-		 	-}		 	Sump collection	L
SW01-0004	PSNS 081.1	1117/10 2140	V(1) (1)	\		 			X				\vdash		0.6	mp			parent SWOI-000	15
<u>SWOI - 000 8</u> SWOI - 000 9	P3N > 031.1	11/18/10 05/2	1512 16	X	X										100	<u>mp</u>			Parent surt-De	در
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-0014					<u> </u>	X									1					
-0015						•	X													
-0014	PSNS 124	1/18/10 0849)	X														1		
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Relinquished by:					Re	ceiv	ed l	by:							1	tribution:			or and a second	
	Signature	Date	Time					Sign	atur	e					2)	PNNL CAS TAI				
	Printed Name Company							Printed Name												

	OF CUSTODY FO)RM														Battelle		
Date: 11/19/10																Marine Scier	ices Labora	tory
Page: 2	of2	- National Property Control of the C														1529 West S		
Project No.:																Laboratory:		
Project:	Non-dry Dock SV	V 2010													- 1	Attention: J		
		_	T	An	alyz	ер	arar	nete	ers	per	QA	P/F	SP.		_		Phone: (36	60) 681-4564
Sample Label	Station ID	Collection Date/Time	SW= Stoim www.cr	Hardness	TOC	DOC	TSS	TME/DME	ТРН	Turbidity	To the second se			- 1	\sim 1	Sample Type (grab vs. Comp)	Storm#	Notes
5001-0018	PSNS126	4/18/100849	Sw			X										Comp	SWOI	
SW01-0019	PSNS126		لر				X									١ ـ ـ ـ		,
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Relinquished by:					Red	ceiv	ed l				L	L			1	Total # of Co	ntainers	
1mmin	110	No To F	TEX			_		$\stackrel{>}{\leq}$.	CONTRACTOR DESIGNATION OF THE PERSON OF THE	-		(CAS		- 1	Shipment Me	thod:	
Im Brande	Signature Cholecur	Date PNN Company	Time			25	k	Sign	atur ne		^			0/10		0815		
	Printed Name	Company				Contract Application		Print			1	h	1	1	1	Sample Disp	osition:	
Relinquished by:					Red	eiv										Distribution:		
· •]	1) PNNL		
	Signature	Date	Time					Sign	atur	е						2) CAS		
		<u></u>													_ ;	3) TAI		
	Printed Name	Company		Printed Name														

Columbia Analytical Services, Inc. Cooler Receipt and Preservation Form

PC_	H2

Client / Project: <u>Ba He //e</u>	Service Request <i>K10/3/03</i>	
Received: ///20/10 Opened: (//20/10	By:	
1. Samples were received via? Mail Fed Ex UPS 2. Samples were received in: (circle) Cooler Box	DHL PDX Courier Hand Delivered Envelope Other	NA
3. Were <u>custody seals</u> on coolers? NA Y N	If yes, how many and where?	. 1421
If present, were custody seals intact? Y N	If present, were they signed and dated?	Y N
Cooler Temp Thermometer Cooler		
Temp °C Blank °C ID ID	NA Tracking Number	NA Filed
2.8 2.1 294		
7. Packing material used. Inserts Baggies Bubble Wrap	No. of the Control of	
8. Were custody papers properly filled out (ink, signed, etc.)?	NA	
9. Did all bottles arrive in good condition (unbroken)? <i>Indicate</i>		/ Aug
10. Were all sample labels complete (i.e analysis, preservation, e		
11. Did all sample labels and tags agree with custody papers? In	•	
12. Were appropriate bottles/containers and volumes received fo		
13. Were the pH-preserved bottles (see SMO GEN SOP) received a	* * * * * * * * * * * * * * * * * * *	
14. Were VOA vials received without headspace? <i>Indicate in th</i> 15. Was C12/Res negative?	e table below.	AYN AYN
13. Was CIZINGS negative:	(17)	2 1 N
Sample ID on Bottle Sample ID	on COC Identified by:	
Bottle Count Out of Head	1- Volume Reagent Lot	
Sample ID Bottle Type Temp space	e Broke pH Reagent added Number	Initials Time
Notes, Discrepancies, & Resolutions:		<u> </u>
Total, Diocrepaneres, & Mesonations.		
		· · · · · · · · · · · · · · · · · · ·

Client: Project:

Sample Matrix:

Battelle Marine Sciences Lab

Non-dry Dock SW 2010

Water

Service Request No.: Date Received:

K1013103 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 / 4

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 clution 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.

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

Unite: mg/

Units: mg/L Basis: NA

Analysis Method:

SM 2340 C

Hardness, Total as CaCO3

					Dilution	Date	Date	
Sample Name	Lab Code	Result Q	MRL	MDL	Factor	Extracted	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	

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

Batch QCDUP

Duplicate Sample

Analyte Name Hardness Total as CaCO3		Sample K1013073-001DUP3						
Analyte Name	Method	MRL	MDL	Result	Result	Average	RPD	Limit
Hardness, Total as CaCO3	SM 2340 C	2.0	0.8	14.3	14.3	14.3	</td <td>20</td>	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.

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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 **RPD** Sample RPD Limit Result Average MDL Result Analyte Name MRL Method 78.4 20 2 77.7 79.0 Hardness, Total as CaCO3 SM 2340 C 2.0 0.8

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

Client:

Battelle Marine Sciences Lab

Project: Sample Matrix:

Water

Non-dry Dock SW 2010

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

Lab Control Sample Summary General Chemistry Parameters

Units: mg/L Basis: NA

Lab Control Sample K1013103-LCS1

Analyte Name	Method	Result	Spike Amount %	6 Rec	% Rec Limits
Hardness, Total as CaCO3	SM 2340 C	48.7	46.3 1	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.

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

Units: mg/L Basis: NA

Analysis Method: SM 5310 C

Carbon, Dissolved Organic (DOC)

Sample Name	Lab Code	Result Q	MRL	MDL	Dilution Factor		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	l	NA	11/30/10 20:41	
Method Blank	K1013103-MB1	ND U	0.50	0.07	1	NA	11/30/10 20:41	

Form 1A

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QA/QC Report

Client:

Battelle Marine Sciences Lab Non-dry Dock SW 2010

Project: 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: Lab Code: SW01-0010 K1013103-007 Units: mg/L Basis: NA

SW01-0010DUP

Duplicate Sample

				Sample		te Sampic 3-007DUP		RPD
Analyte Name	Method	MRL	MDL	Result	Result	Average	RPD	Limit
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.

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Form 3B

SuperSet Reference: 10-0000162293 rev 00

QA/QC Report

Client:

Battelle Marine Sciences Lab Non-dry Dock SW 2010

Project: 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: Lab Code:

SW01-0010

K1013103-007

Units: mg/L Basis: NA

Analytical Method: SM 5310 C

SW01-0010MS Matrix Spike

K1013103-007MS

% Rec Spike Sample Limits Amount % Rec Result Result **Analyte Name** 85 - 108 32.4 25.0 96 Carbon, Dissolved Organic (DOC) 8.45

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

Client:

Battelle Marine Sciences Lab Non-dry Dock SW 2010

Project: 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

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

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

SuperSet Reference:

10-0000162293 rev 00

QA/QC Report

Client: Project: Battelle Marine Sciences Lab 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	KO1013251-05	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

QA/QC Report

Client: Project: Battelle Marine Sciences Lab

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 (
CCBI	227270	KQ1013251-07	11/30/10 20:41	0,50	ND (
CCB2	227270	KQ1013251-08	11/30/10 20:41	0.50	ND I

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 Collected: 11/18/10
Date Received: 11/20/10

Units: mg/L Basis: NA

Analysis Method:

SM 5310 C

Carbon, Total Organic

Sample Name	Lab Code	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
	K1013103-006	8.28	0.50	0.07	1	NA	11/30/10 20:41	
SW01-0009	K1013103-000	6.08	0.50	0.07	1	NA	11/30/10 20:41	
SW01-0013	K1013103-014	6.90	0.50	0.07	1	NA	11/30/10 20:41	
SW01-0017 Method Blank	K1013103-MB1	ND U	0.50	0.07	1	NA	11/30/10 20:41	

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: Lab Code: Batch QC

K1013133-001

Units: mg/L Basis: NA

Batch QCDUP

Duplicate Sample

				Sample		8-001DUP9		RPD
Analyte Name	Method	MRL	MDL	Result	Result	Average	RPD	Limit
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.

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

Batch QCDUP

Duplicate Sample

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

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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QA/QC Report

Client:

Battelle Marine Sciences Lab

Project: Sample Matrix: Non-dry Dock SW 2010 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 Amount % 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.

SuperSet Reference: 10-0000162293 rev 00

Form 3A

QA/QC Report

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

Sample Matrix:

Water

ingo mpor

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, 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.

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Form 3C

SuperSet Reference: 10-0000162293 rev 00

QA/QC Report

Client: Project: Battelle Marine Sciences Lab

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
CCM	227271	KQ1013253-07	11/30/10 20:41	25.0	26.4	106	90 - 110
CCVI	227271 227271	KQ1013253-07 KQ1013253-08	11/30/10 20:41	25.0	26.6	106	90 - 110
CCV2 CCV3	227271	KQ1013253-00	11/30/10 20:41	25.0	26.7	107	90 - 110
CCV3	227271	KQ1013253-10	11/30/10 20:41	25.0	26.3	105	90 - 110

SuperSet Reference: 10-0

10-0000162293 rev 00

Form 7

QA/QC Report

Client: Project: Battelle Marine Sciences Lab

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

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

Units: mg/L Basis: NA

Analysis Method:

SM 2540 D

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	l	NA	11/22/10 10:30	
SW01-0011 SW01-0015	K1013103-003	14.0	5.0	5.0	ì	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	

QA/QC Report

Client: Project: Battelle Marine Sciences Lab 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: Lab Code:

Batch QC

K1013038-003

Units: mg/L Basis: NA

Batch QCDUP

				Sample		te Sample 8-003DUP2		RPD
Analyte Name	Method	MRL	MDL	Result	Result	Average	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.

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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: Lab Code: Batch QC K1013089-004 Units: mg/L Basis: NA

Batch QCDUP

				Sample		te Sample 9-004DUP4		RPD
Analyte Name	Method	MRL	MDL	Result	Result	Average	RPD	Limit
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.

QA/QC Report

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

Sample Matrix:

Analyte Name

Water

, a &=

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

Spike % Rec Result Amount % Rec Limits

Solids, Total Suspended (TSS)

SM 2540 D

Method

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.

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\\Inflow2\Starlims\LimsReps\LabControlSample.rpt

Form 3C

SuperSet Reference:

10-0000162293 rev 00

QA/QC Report

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

Sample Matrix:

Analyte Name

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

% Rec Spike Limits Amount % Rec Result

Solids, Total Suspended (TSS)

SM 2540 D

Method

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.

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Form 3C

SuperSet Reference:

10-0000162293 rev 00

QA/QC Report

Client:

Battelle Marine Sciences Lab

Project: Sample Matrix:

Water

Non-dry Dock SW 2010

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

Units: mg/L Basis: NA

Lab Control Sample Summary **General Chemistry Parameters**

> Lab Control Sample K1013103-LCS3

		1410	Spike	••	% Rec		
Analyte Name	Method	Result	Amount 9	% 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.

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Form 3C

SuperSet Reference:

10-0000162293 rev 00

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

K1013103

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

		Date	Date
Sample Name	Lab Code	Collected	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:

Date:__

Name:

Title:

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

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	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 n-Triacontane	107 97	50-150 50-150	12/04/10 12/04/10	Acceptable Acceptable	

Comments:

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Merged

Form 1A - Organic

Page 1 of

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

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	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
-Terphenyl	87	50-150	12/04/10	Acceptable
n-Triacontane	80	50-150	12/04/10	Acceptable

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

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	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

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

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	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 Outside Control Limits
n-Triacontane	16	50-150	12/04/10	

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

Units: ug/L Basis: NA

Extraction Method:

EPA 3510C

Analysis Method:

NWTPH-Dx

Level: Low

				Dilution	Date	Date	Extraction	
Analyte Name	Result Q	MRL	MDL	Factor	Extracted	Analyzed	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	

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: Analysis Method:

EPA 3510C

NWTPH-Dx

Units: PERCENT

Level: Low

Sample Name	Lab Code	Sur1	<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-Terphenyl50-150 Sur2 = n-Triacontane50-150

Results flagged with an asterisk (*) indicate values outside control criteria. Results flagged with a pound (#) indicate the control criteria is not applicable.

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Form 2A - Organic

Page 1 of

QA/QC Report

Client: Project: Battelle Marine Sciences Lab 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

Lab Control Sample

KWG1013078-1

Duplicate Lab Control Sample

KWG1013078-2

Duplicate Lab Control Spike Lab Control Spike %Rec **RPD** Limits **RPD** Limit %Rec **Analyte Name** Result Expected Result Expected %Rec Diesel Range Organics (DRO) 1600 1800 1600 100 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.

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Form 3C - Organic

Page 1 of 1

QA/QC Report

Client: Project: Battelle Marine Sciences Lab 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:

			Date	Time
Sample Name	Lab Code	File ID	Analyzed	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

QA/QC Report

Client: Project: Battelle Marine Sciences Lab 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

File ID: J:\GC21\DATA\120310F\1203F018.D

Lab Code:

KWG1013078-1

Instrument ID: GC21

Extraction Method:

EPA 3510C

Level: Low

Analysis Method: NWTPH-Dx

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

QA/QC Results

Client: Project:

Н

Battelle Marine Sciences Lab

Non-dry Dock SW 2010

Service Request: K1013103

Calibration Date: 11/02/2010

Initial Calibration Summary Diesel and Residual Range Organics

Calibration ID:

CAL10004

J:\GC21\DATA\110110F\1101F130.D

Column: ZB-1 15m

Instrument ID:

GC21

Level ID	File ID	Level ID	File ID
A	J:\GC21\DATA\110110F\1101F108.D	I	J:\GC21\DATA\110110F\1101F132.D
В	J:\GC21\DATA\110110F\1101F110.D	J	J;\GC21\DATA\110110F\1101F134.D
C	J:\GC21\DATA\110110F\1101F112.D	K	J:\GC21\DATA\110110F\1101F136.D
D	J:\GC21\DATA\110110F\1101F114.D	L	J:\GC21\DATA\110110F\1101F138.D
E	J:\GC21\DATA\110110F\1101F116.D	M	J:\GC21\DATA\110110F\1101F140.D
F	J:\GC21\DATA\110110F\1101F118.D	N	J:\GC21\DATA\110110F\1101F142.D
G	J:\GC21\DATA\110110F\1101F128.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	1	200	1070	J	500	1090
	K	2000	988	L	5000	1030	M	20000	956	N	50000	989	!		
Residual Range Organics (RRO)				В	50	717	C	200	608	D	500	607	Е	2000	593
	F	5000	665							1			1		
o-Terphenyl			***************************************				-			<u> </u>	· · · · · · · · · · · · · · · · · · ·				
				G	1.0	1360	H	2.5	1320	I	10	1450	J	25	1370
	K	100	1330	L	250	1280	-			1					
n-Triacontane				:			!			:			:		
				G	1.0	1270	Н	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.

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QA/QC Results

Client: Project:

Battelle Marine Sciences Lab

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-I 15m

			Calibratio	n Evaluat	ion	
Analyte Name	Compound Type	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.

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Form 6A - Organic

Page 2 of 2

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: **Analysis Method:**

External Standard

NWTPH-Dx

Calibration ID: CAL10004

Units: ppm

File ID:

J:\GC21\DATA\110110F\1101F124.D

J:\GC21\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

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Form 6B - Organic

Page 1 of 1

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QA/QC Results

Client: **Project:** Battelle Marine Sciences Lab

Non-dry Dock SW 2010

Service Request: K1013103

Date Analyzed: 12/03/2010

Continuing Calibration Verification Summary Diesel and Residual Range Organics

Calibration Type: Analysis Method:

External Standard

NWTPH-Dx

Calibration Date: 11/02/2010 Calibration ID: CAL10004

Analysis Lot: KWG1013305

Units: ppm

File ID:

J:\GC21\DATA\120310F\1203F010.D

J:\GC21\DATA\120310F\1203F012.D

Column ID: ZB-1 15m

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.

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Form 7 - Organic

Page 1 of

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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

Sample Name	Lab Code	<u>Sur1</u>		Sur2	
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.

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Form 2A - Organic 85

Page 1 of 1

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

Lab Control Sample

KWG1013078-1

Duplicate Lab Control Sample

KWG1013078-2

	Lab Control Spike			Duplicate Lab Control Spike			%Rec		RPD
Analyte Name	Result	Expected	%Rec	Result	Expected	%Rec	Limits	RPD	Limit
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.

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Form 3C - Organic

Page 1 of

QA/QC Report

Client: Project: Battelle Marine Sciences Lab 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:

			Date	Time
Sample Name	Lab Code	File ID	Analyzed	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

SuperSet Reference:

QA/QC Report

Client: Project: Battelle Marine Sciences Lab 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

File ID: J:\GC21\DATA\120310F\1203F018.D

Lab Code:

KWG1013078-1

Instrument ID: GC21

Extraction Method: Analysis Method:

EPA 3510C NWTPH-Dx

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

CHEMISTRY ANALYSIS DATA PACKAGE CONTENTS

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

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Summary and QC Report, Batch K1013816	

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

Camala ID		Dan ation			C=11==4:				πιτο. με/Ε		
Sample ID -	[Fraction			Collection						~ -
Metals	Station Code	(Total/Diss)	Type Name	MSL Code	Date	Turbidity	Hg	As	Ag	Al	Cd
						Units					
				Instrument:		(NTU)	CVAF	ICP-MS	ICP-MS	ICP-MS	ICP-MS
Laboratory A	chieved Detecti	on Limits (Fre	eshwater)				0.0001	0.03	0.002	0.3	0.004
Freshwater R	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

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

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Sample ID -		Fraction							CVAF Batch	ICP-MS
Metals	Station Code	(Total/Diss)	Type Name	MSL Code	Cr	Cu	Pb	Zn	ID	Batch ID
				Instrument:	ICP-MS	ICP-MS	ICP-MS	ICP-MS		
Laboratory A	chieved Detecti	on Limits (Fre	shwater)		0.08	0.007	0.002	0.05	7	
Freshwater R	eporting Limit (MDL* 3.18)	,		0.3	0.02	0.006	0.2		
		Í							•	
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
CITIOS										
SW03	DCMC106	TIME	C	2174 25	1.22	7.64	2.00	40.0	12211011614	122010 (100
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

	T V	Collection	Analysis	Analysis		T T •4	D 1/		Reporting
Station Code	Type Name	Date	Date	Method	Component	Units	Result	Limit	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 = 0	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 = 0	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		NWTPH-Dx	Residual Range Organics (RRO)	ug/L	ND ND	19	250

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

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	m	Collection	Analysis	Analysis		T T •4	D 14		Reporting
Station Code	Type Name	Date	Date	Method	Component	Units	Result	Limit	Limit
SW03	Comments of the second stimes	12/12/2010	12/16/2010	SM 2240 G	H 1 T 1 C CC2	/T	12.6	0.0	2.0
PSNS126	Composite_equal_time	12/12/2010	12/16/2010		Hardness, Total as CaCO3	mg/L	12.6 =	0.8	2.0
PSNS126DUP	Composite_equal_time	12/12/2010	12/16/2010		Hardness, Total as CaCO3	mg/L	14.7 =	0.8	2.0
PSNS096	Composite_equal_time	12/12/2010	12/16/2010		Hardness, Total as CaCO3	mg/L	21.0 =	0.8	2.0
PSNS082.5	Composite_equal_time	12/12/2010	12/16/2010		Hardness, Total as CaCO3	mg/L	11.8 =	0.8	2.0
PSNS081.1	Composite_equal_time	12/12/2010	12/16/2010		Hardness, Total as CaCO3	mg/L	12.1 =	0.8	2.0
PSNS126	Composite_equal_time	12/12/2010	12/15/2010		Solids, Total Suspended (TSS)	mg/L	9.5 =	5.0	5.0
PSNS126DUP	Composite_equal_time	12/12/2010	12/15/2010		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		NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	72 = J	12	270
PSNS082.5	Grab	12/12/2010		NWTPH-Dx	Residual Range Organics (RRO)	ug/L	170 =, J	21	540
PSNS081.1	Grab	12/12/2010		NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	79 =, J	11	250
PSNS081.1	Grab	12/12/2010		NWTPH-Dx	Residual Range Organics (RRO)	ug/L	180 = J	19	500
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Non-Dry Dock Stormwater ENVVEST 2010_SW02 and SW03 Metals in Water UNITS: µg/L

Sample ID -		Fraction											ICP-MS
Metals	Station Code	(Total/Diss)	Sample Type	MSL Code	As	Ag	Al	Cd	Cr	Cu	Pb	Zn	Batch ID
				Instrument:	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	
Laboratory A	chieved Detection	on Limits (Fre	eshwater)		0.03	0.002	0.3	0.004	0.08	0.007	0.002	0.05	
Freshwater R	eporting Limit (1	MDL* 3.18)			0.1	0.006	1.0	0.01	0.3	0.02	0.006	0.2	
METHOD B	BLANKS	TME	Englisher	TDMD11-121110	0.02.11	0.002.11	0.2.11	0.004.11	0.00 11	0.007.11	0.002.11	0.05 II	121110 (100
MB-1 MB-2		TME		TRMBlank121110 TRMBlank122010	0.03 U 0.03 U	0.002 U 0.002 U	0.3 U 0.3 U	0.004 U 0.004 U	0.08 U 0.08 U	0.007 U 0.007 U	0.002 U 0.002 U	0.05 U 0.0574 J	121110-6100 122010-6100
MID-Z		TIVIL	Fieshwater	TRIVIDIAIIK122010	0.03 0	0.002 0	0.5 0	0.004 0	0.08 0	0.007 0	0.002 0	0.0374 J	122010-0100
LABORATO	ORY CONTRO	L SAMPLES	}										
Spiking Leve			-		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
			Perce	nt Recovery, LCS	102%	98%	98%	100%	111%	101%	102%	100%	
Spiking Leve	.1				1.0	1.0	2.0	1.0	1.0	1.0	1.0	1.0	
MB-2	1	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
LCS (2)		TIVIL		nt Recovery, LCS	95%	94%	113%	98%	99%	99%	102%	102%	122010-0100
MATERIA CE		7											
MATRIX SE SW02-0010	PIKE RESULTS PSNS096	<u>S</u> 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	3174-18 3174-18MS	1.33	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	10.5	15.2	14.6	10.9	62.6	121110-6100
WISD1	15145070	DML	composite_equal_time	Spiking Level	10	10	10	10.0	10.5	10	10.8	10	121110-0100
			Perc	ent Recovery, MS	109%	93%	100%	100%	100%	98%	106%	98%	
				nt 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
			1 -	Spiking Level	2.0	2.0	50	2.0	2.0	2.0	2.0	50	
			Perc	ent Recovery, MS	100%	92%	100%	96%	93%	99%	105%	99%	
			Percei	nt 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%	
	E PRECISION	m		2151.10	0.024	0.000	0.1.0	0.020		24.0	4.50	440	121110 5500
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%	

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

Sample ID -		Fraction											ICP-MS
Metals	Station Code	(Total/Diss)	Sample Type	MSL Code	As	Ag	Al	Cd	Cr	Cu	Pb	Zn	Batch ID
				Instrument:	ICP-MS								
REPLICATE	PRECISION	(cont)											
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
				Mean	1.78	0.0285	91.4	0.143	1.29	7.70	3.90	48.7	
				RPD	2.8%	13.7%	0.8%	5.6%	4.7%	1.6%	0.0%	0.6%	
STANDARD	REFERENCI	E MATERIAI	L, Seawater										
SRM 1640 (1)	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	1)	TME	Freshwater	TRM1640122010	7.8	7.50	56.7	4.0	39.0	87.4	12.3	58.1	122010-6100
				Certified Value PD	8.08 3.9%	8.08 7.2%	53.0 7.0%	3.99 0.1%	40.5 3.8%	85.8 1.9%	12.1 1.6%	55.6 4.4%	

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	Hg	CVAF Batch ID
T 1	D			Instrument:	CVAF	
Laboratory Achieved Reporting Limit (MD					0.0001 0.0003	
METHOD BLANKS	S					
MB-1	ř	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 CO	ONTROL SAMPLES	<u>S</u>				
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 ont Recovery, LCS 1	0.000107 J 96%	122110HGA
				nt Recovery, LCS 2	98%	
MATRIX SPIKE R	ESULTS					
SW02-0010	PSNS096	DME	Composite_equal_time	3174-18	0.00146	122110HGA
MS1	PSNS096	DME	Composite_equal_time		0.0163	122110HGA
MSD1	PSNS096	DME	Composite_equal_time	3174-18MSD	0.0162	122110HGA
				Spiking Level, MS	0.0149	
				Spiking Level, MSD	0.0148	
				rcent Recovery, MS	100%	
			Perc	ent Recovery, MSD	100%	
				RPD	0.2%	
SW03-0013	PSNS126DUP	TME	Composite_equal_time		0.00339	122110HGA
MS1	PSNS126DUP	TME	Composite_equal_time		0.0415	122110HGA
MSD1	PSNS126DUP	TME	Composite_equal_time	3174-27MSD	0.0422	122110HGA
				Spiking Level, MS	0.0370	
				Spiking Level, MSD rcent Recovery, MS	0.0383 103%	
				ent Recovery, MSD	101%	
				RPD	1.8%	
REPLICATE PREC	CISION					
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%	
	RENCE MATERIA	_				
SRM 1641 (1)		TME	Freshwater	1641d 121710	1696	122110HGA
				Certified Value	1590	
	ODE CASA CO			range	±18	
	SRM 1641 (1)			PD	7%	

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

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 ≤20% PD
- * Precision result outside OC 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 inidicates 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),
- 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),
- 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),
- 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 $4.0\pm2^{\circ}$ 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

All samples were analyzed within the established holding times of 90 days for Hg and **HOLDING TIMES:**

six months for all other metals.

DETECTION LIMITS: 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:

U Analyte not detected at or above the MDL, MDL reported

Analyte detected above the MDL, but less than the RL

Spiked sample recovery outside QC criterion of 70-130%

Accuracy result outside QC criterion of ≤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

Exceeds data quality objective but meets contingency criterion

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

Laboratory precision was expressed as the relative percent difference (RPD) between laboratory duplicates. The RPD values for the laboratory duplicates were within the PRECISION:

OC acceptance criterion of $\pm 30\%$ for all metals detected above the RL.

STANDARD REFERENCE MATERIAL

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. **ACCURACY:**

Standard reference materials (SRM) were prepared and analyzed with each analytical

The freshwater SRMs were 1641d for Hg and 1640 for all other metals. The

differences were within the QC acceptance criterion of ≤20%.

SAMPLE CHAIN OF CUSTODY FORM

Date: 11/30/10

Page: _ l _ _ of _ l

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

Froject.	F SNSNOII-dry Do	CK 077 2010			An	alyz	e pa	arar	nete	ers i	эег	QAI	² /FS	5	1	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			160) 681-4564
Sample Label Sພວບ2 - ຄວບ ເ Sພວບ2 - ດວວ Z	Station ID 096 82.5	Collection Date/Time ii to lio 0535	Matrix နယ် နယ်	Hardness				TME/DME	××TPH	Turbidity				- No. containers	Co	mple ype Grab vs. omp)	Sto	orm#	Notes
Sw02-0003	81.1	11/30/10 0750	ړس					\Box	X	\dashv	_	_		14	<u> </u>	1			
SW02-0004	126	11/20/10 D807	SW			.,	$\downarrow \downarrow$		겍	$ \downarrow $		_		44	_	4	2		
	PSNS 124	11.30.10 (2124)	SW	X	X	X	X	X		X				4:	Cor	np_	SW	75	
	PSNS DAL	11.30.10 (1927)	<u>sw</u>	X	X	Ϋ́	싨	X		य		-		+!-	1-1				
SW02-0007 SW02-0008	PSNS 082.5	11-30-10 (1834) 11-30-10 (1931)	SW SW	X	$\frac{X}{X}$	싃	쉬	X	-+	Ŋ	-+	\dashv	-	+	1				
Sw0005	PSNS 081.1	12-1-10 (1220)	DI		^			^	X				+	#	Gra		Sur	2	Grab gear EB
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Dave M.	Printed Name	Company	11116		Ĺ	<u>Šri</u>	<u>.</u>	,	2 ted N	ه ص		<u> </u>	·		San	nple [)ienne	sition:	
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70	Printed Name	Company							ted N] ′				

SAMPLE CHAIN	OF CUSTODY FO	RM													Battelle		
Date: 12/01/10															Marine Scie	nces Labora	itory
Page:	of		SW = Stor	mwa	ater										1529 West S	Sequim Bay	Road
Project No.:	54220														Laboratory:	Battelle MS	L
Project:	Non-dry Dock SV	V 2010 SW02													Attention:	Jill Branden	perger
			· · · · · · · · · · · · · · · · · ·	An	alyz	e p	ara	met	ers	per	QA	P/F	SP			Phone: (36	60) 681-4564
Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	TPH	Turbidity				Trybe (drab	Storm#	Lab Code
SW02-0009	PSNS096	11/30/10 1927	SW				_	х	L			<u> </u>			comp	SW02	3174*17
SW02-0010	PSNS096	11/30/10 1927	SW			<u> </u>			<u>x</u> _			<u>L</u>			comp	SW02_	3174*18
SW02-0011	PSNS082.5	11/30/10 1834	SW					х			<u> </u>				comp	SW02	3174*19
SW02-0012	PSNS082.5	11/30/10 1834	SW						Х	L				1	comp	SW02	3174*20
SW02-0013	PSNS081.1	11/30/10 1931	SW					х							comp	SW02	3174*21
SW02-0014	PSNS081.1	11/30/10 1931	SW						х						comp	SW02	3174*22
SW02-0015	PSNS126	11/30/10 2124	SW					Х							comp	SW02	3174*23
SW02-0016	PSNS126	11/30/10 2124	SW						Х						comp	SW02	3174*24
					,			<u> </u>			<u> </u>						

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Relinquished by:					Re	ceiv	/ed	by:					7		Total # of Co		
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Relinquished by:					Re	ceiv	/ed								Distribution:		. "" .
									_						_1) PNNL		
	Signature	Date	Time					Sig	natui	re					2) CAS		
															3) TAI		
	Printed Name	Company						Prin	nted	Nam	ie						

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SAMPLE CHAIN	OF CUSTODY FO	RM													Battelle		
Date: 12/01/10															Marine Scier	nces Labora	tory
Page:	of <u> </u>		SW = Store	mwa	ater										1529 West S	equim Bay	Road
Project No.:	54220														Laboratory:		
Project:	Non-dry Dock SW	√2010 SW02													Attention:	Jill Brandent	
				An	alyz	e p	arar	nete	ers	per	QA	P/F	SP			Phone: (36	60) 681-4564
Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	НД	Turbidity			No containers	i i voe turao	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					grab	SW02	
SW02-0003	PSNS081.1	11/30/10 0750	SW							X				1	grab	SW02	
SW02-0004	PSNS126	11/30/10 0807	SW							Х				_ 1	grab	SW02	
SW0005	EB	12/01/10 1220	SW							Х				1	grab	SW02	
SW02-0017	PSNS096	11/30/10 0535	SW	х										1	comp	SW02	
SW02-0018	PSNS096	11/30/10 0535	SW		X									1	comp	SW02	
SW02-0019	PSNS096	11/30/10 0535	SW			Х								71	comp	SW02	
SW02-0020	PSNS096	11/30/10 0535	SW				Х							1	comp	SW02	
SW02-0021	PSNS082.5	11/30/10 0730	SW	х										1	comp	SW02	
SW02-0022	PSNS082.5	11/30/10 0730	SW		х									1	comp	SW02	
SW02-0023	PSNS082.5	11/30/10 0730	SW			Х								1	comp	SW02	
SW02-0024	PSNS082.5	11/30/10 0730	SW				Х							1	comp	SW02	
SW02-0025	PSNS081.1	11/30/10 0750	SW	х										_ 1	comp	SW02	
Relinquished by:	/ 51	1			Re	ceiv	ed I	oy:							Total # of Co	ntainers	
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Im Brand	Signature	PNN L	Time					Sign	natur	e 					shippe	d to C	45
	Printed Name	Company						Prin	ted N	Nam	е				Sample Disp	osition:	
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															_1) PNNL		
	Signature	Date	Time					Sign	natur	е					2) CAS		
	Printed Name	Company						Drin	tod N	Jam.				-	_ 3) TAI		

SAMPLE CHAIN	OF CUSTODY FO)RM														Battelle		
Date: 12/01/10																Marine Scien	ces Labora	tory
Page: 2	_ of 2		SW = Stori	nwa	ater											1529 West S	equim Bay	Road
Project No.:	54220															Laboratory:		
Project:	Non-dry Dock SV	V 2010 SW02														Attention: J		
				An	alyz	ер	arar	nete	ers	per	QA	P/F	SP				Phone: (36	60) 681-4564
Sample Läbel	Station ID	Collection Date/Time	Matrix	Hardness	тос	DOC	TSS	TME/DME	DME	ТРН	Turbidity				No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW02-0026	PSNS081.1	11/30/10 0750	SW		Х										1	comp	SW02	
SW02-0027	PSNS081.1	11/30/10 0750	SW			Х									1	comp	SW02	
SW02-0028	PSNS081.1	11/30/10 0750	SW				Х								1	comp	SW02	
SW02-0029	PSNS126	11/30/10 0807	SW	х										T	1	comp	SW02	
SW02-0030	PSNS126	11/30/10 0807	SW		х										1	comp	SW02	
SW02-0031	PSNS126	11/30/10 0807	SW			х									1	comp	SW02	
SW02-0032	PSNS126	11/30/10 0807	SW				Х								1	comp	SW02	
														\top				
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	Signature	Date PNNL	Time					Sign	atur	е						Shipped		45
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Relinquished by:					Re	ceiv	ed l	by:				-				Distribution: 1) PNNL		
	Signature	Date	Time					Sigr	natur	е						2) CAS 3) TAI		
	Printed Name	Company						Prin	ted l	Vam			-			5) IAI		



Battelle The Business of Innovation

SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 12/1/2010

Batch: 4

Login Designee: Brandenberger

Marine Sciences Laboratory 1529 West Sequim Bay Road Sequim, Washington 98382

PH: (360) 681-4565

Project: Non-Dry Dock SW (Storm Water)

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	1-4-C	DISSOLVED Metals	11/30/10
SW02-0011	PSNS082.5	3174-19	WAT	1-4-C	TOTAL Metals	11/30/10
SW02-0012	PSNS082.5	3174-20	TAW	1-4-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

Central File #: 3174 Sample No(s): 17-29 Batch:
Project Name: Non Dry doc 1(5W SWO2 Project Manager: JMK)
TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)
Matrix: Worth 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±2°C or solids:frozen) # = 4.8, #2 = 3.8 °C #5 (if multiple coolers, note temp. of each) # 3 = 4.1, #4 = 4.8 °C
(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):
Container type: Tellin Pells Cip. Vied Other:
Notes:
Completed By: /mpm Date/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 MSL
Type:
0.5% HCl (Hg samples) Notes: Lot#
Refrigerate/Freeze Notes:
Other Notes:
Completed By: 12/1/10 1630
Storage Shelf: I-4-C

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

1013444

	OF CUSTODY FO	ORM														Battelle	-	
Date: 12/01/10	- mita															Marine Scien		
Page:	_ of		SW = Stor	mwa	ater											1529 West S		
Project No.:	54220															Laboratory:		
Project:	Non-dry Dock SV	V 2010 SW02		١.												Attention: J	lill Brandent	
		7	T	An	alyz	e pa	arar	nete	ers	per	$\frac{QA}{}$	P/F	SP,				Phone: (36	60) 681-4564
Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	ТРН	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							Х					1	grab	SW02	
SW02-0004	PSNS126	11/30/10 0807	SW		<u> </u>					Х					1	grab	SW02	
SW0005	EB	12/01/10 1220	SW	<u></u>						Χ					1	grab	SW02	
SW02-0017	PSNS096	11/30/10 0535	SW	X											1	comp	SW02	
SW02-0018	PSNS096	11/30/10 0535	SW		Х										1	comp	SW02	
SW02-0019	PSNS096	11/30/10 0535	SW			х								T	1	comp	SW02	
SW02-0020	PSNS096	11/30/10 0535	SW				Χ								1	comp	SW02	
SW02-0021	PSNS082.5	11/30/10 0730	SW	Х											1	comp	SW02	
SW02-0022	PSNS082.5	11/30/10 0730	SW		Х										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				Х								1	comp	SW02	***
SW02-0025	PSNS081.1	11/30/10 0750	SW	Х						7				,	1	comp	SW02	
Relinquished by:	in 1				Re	ceiv	ed l	οÿ:	1	7	·	1	10	Im		Total # of Co	ntainers	
Smon	\sim \sim \sim \sim \sim \sim \sim \sim \sim \sim	rlio Fee	dex			,	S	2/				10	13	110		Shipment Me	thod:	· · · · · · · · · · · · · · · · · · ·
Im Brand	Signature Date Time John Brandenberger PNNL							Sign	atur	<u>ل</u> ــــ	5		19:	30			d to C	45
	Printed Name	Company			-			Print	ted N	 Vame	e					Sample Dispo	osition:	
Relinquished by:			Red	ceiv										Distribution: 1) PNNL	50111011.			
	Time					Sign	atur	e						2) CAS 3) TAI				
	Printed Name Company								ed N	Vame	е							

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	OF CUSTODY FO	DRM .														Battelle		
Date: 12/01/10	_															Marine Scien	ices Labora	tory
Page: 2	_ of		SW = Storr	าพล	ater											1529 West S	equim Bay	Road
Project No.:	54220															Laboratory:	Battelle MS	L
Project:	Non-dry Dock SV	V 2010 SW02														Attention: J	lill Brandent	perger
				An	alyz	ера	arar	nete	ers	per	QA	P/F	SP				Phone: (36	60) 681-4564
Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	тос	DOC	TSS	TME/DME	DME	ТРН	Turbidity			- 1	No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW02-0026	PSNS081.1	11/30/10 0750	sw		Χ		•			<u> </u>	-		$\neg \uparrow$		1	comp	SW02	<u> Lub Gode</u>
SW02-0027	PSNS081.1	11/30/10 0750	SW			x									1	comp	SW02	
SW02-0028	PSNS081.1	11/30/10 0750	SW				Х						$\neg \uparrow$		1	comp	SW02	
SW02-0029	PSNS126	11/30/10 0807	SW	Х									$\neg \uparrow$		1	comp	SW02	
SW02-0030	PSNS126	11/30/10 0807	SW		Х							\Box			1	comp	SW02	
SW02-0031	PSNS126	11/30/10 0807	SW			Х									1	comp	SW02	
SW02-0032	PSNS126	11/30/10 0807	SW				Х								1	comp	SW02	
											-		1					

															\exists			
									1									
Relinguished by:	12.1	1 ,			Red	eiv	ed t	οy:/			1,	, /,	ĸ			Total # of Cor	ntainers	
/mmu		10 Fa	dex		_/	_5	M	4		18	2/3	3 1 1	0			Shipment Me	thod:	
Jm Brand	Signature len berger	Date PNNL	Time		5	Ho	701	Sign	atur	Š		0	93	0		Shipped	d to CI	45
	Printed Name	Company				,,,,,,		Print	ted N	Vame	3				-	Sample Dispo	osition:	
Relinquished by:	7.117		Red	eiv	ed b	oy:	,							Distribution: 1) PNNL				
	Signature	Date	Time					Sign	ature	е						2) CAS 3) TAI		
	Printed Name	Company						Print	ted N	lame	-					-,		

Columbia Analytical Services, Inc. Cooler Receipt and Preservation Form

Client / Project: Battell	<u>e</u> , ,		Service Request	K10 13444	
Received: 12/3/10	Opened: 12 3 /	6	By: 50	-	
 Samples were received via? Samples were received in: (circl Were <u>custody seals</u> on coolers? 	Mail Fed Ex (e) Cooler NA Y		elope Other	ier Hand Delivered	
If present, were custody seals in		N	If present, were they		Y N
Cooler Temp Temp °C Blank °C	Thermometer ID	Cooler/COC ID N		Tracking Number チモーション	NA Filed
7. Packing material used **Insert.* 8. Were custody papers properly fi 9. Did all bottles arrive in good con 10. Were all sample labels complete 11. Did all sample labels and tags a 12. Were appropriate bottles/contain 13. Were the pH-preserved bottles (14. Were VOA vials received without 15. Was C12/Res negative? **Sample ID on Bottle**	lled out (ink, signed, et andition (unbroken)? In the (i.e analysis, preservangree with custody paperners and volumes receivant (see SMO GEN SOP) recout headspace? Indicate	tc.)? Indicate in the tation, etc.)? Indicate in the tation, etc.)? Indicate in the test in the test in the test in the test in the approximation.	najor discrepancies in ts indicated? propriate pH? Indicat	the table on page 2.	NA Y N NA Y N NA Y N NA Y N NA Y N NA Y N NA Y N NA Y N
Sample ID		if Head- o space Broke	pH Reagent	Volume Reagent Lot added Number	Initials Time
Notes, Discrepancies, & Resoluti	ions:				

Date: 12 - 12 - Page:	_ of											•			Marine Sc 1529 Wes	iences it Sequ	im B	ay Roa			
Project No.: Project:	N4523A10MP000 PSNSNon-dry Do				An	alyz	ze p	ara	net	ers	per	QA	9/FS	SP.		Laborator Attention:		rand	enberg		
Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	000	TSS	TME/DME	ТРН	Turbidity					No. containers	Sample Type (Grab vs. Comp)	Stori			Notes	
SW03-0006	PSNS126	12-12-10 (1245)	Strm Wtr	Х	X	X	X	_	ш	X						Comp	Swo	3		C 1\ C	
5w03-0007	PSNS126DUP	12-12-10 (1245)	 	χ λ	X X	X	X			X			-	-+	_		-		υυρ(fid) of	126
5603-0009	PSN5082.5	12-12-10 (1251)	 	Î	X	x	x	×	_	X		\vdash	\dashv	\dashv	$\dot{\sqcap}$						
SW03-0010	PSNS 881.1	12-12-10 (1304)	Struwtr	Ιx	×		X			X			一	十							
														丁							
		<u> </u>	<u></u>	L_	_	L	_			\sqcup			_	_						···-	
<u> </u>		ļ	ļ	<u> </u>		<u> </u>	<u> </u>							_	_						
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Relinquished by:	77 1717	 	<u> </u>	L	Re	ceiv	L /ed	hv:				لـــا			-	Total # of	Contai	ners			
rtoiiriquioriou by:	IL It of the	V12-12-10	2300				16			7						Shipment			·		
Dave Met	Signature	Date /or/TEC	Time	;		in	Bri	ano		150		1/		12/10	.	•					
	Printed Name	Company							ted I	Name	<u>e</u>		Ž.	X	4	Sample D		ion:			
Relinquished by:		.	Re	ceiv	/ed	by:								Distribution 1) PNNL				,			
	Signature Date Time							Sigi	natur	e						2) CAS 3) TAI					
	Printed Name Company									Name	е					•					

SAMPLE CHAIN Date: Page: Project No.: Project:	ofof N4523A10MP00 PSNSNon-dry D	 034 Ame					An	alyz	е р	arar	mek	ers	oer C	IAP/F	SP.		Mari 1529 Labo	Wes	ience st Sec y: Ba Jill	luim B ittelle M Brand	oratory ay Roa MSL enberg 60) 681	er			í.
Sample Label	Station ID	Dat	llection te/Time	Matrix		Hardness	тос	DOC	TSS	TME/DME	ТРН	Turbidity	-			No. containers	Ty (G v Co	nple pe rab s. mp)		orm#		Notes	3		
5W03-801 HI	PSNS 126	14/2	10 1430	300							X	Ш		 	igspace	2	90	<u> </u>	سر	03	16.				
-00(HZ	85N3126	- 126	1430	50		-	H		\vdash		X			-	\vdash	2	<u> </u>	 			209	7	# il		/ / 6
- 602H1	PSNSO PSNSO		1450	50			Н				X			+	\vdash	<u>z</u>		├			107	F 2	<u> 20111</u>	<u>-</u> 4	uis/abol emislab
-002#2 -003#1	PSNSORI.1	76	1540	50			-				₩			+	+-1	2		 				7 2		74	CMYJ(410
-003#Z			1540	34			\vdash				Ç		-	╅	╂═┨					\vdash		72		\dashv	
- 08441	PSNS082,5	+	1607			_					5		\dashv	+	╁╌┨	2		1				72			
-004#2	PSNS08215	1	1607								H			+		_						of Z		\neg	
一002年1	1	DUP	1614								1					2		1				72		W	rup
-00542	1	QUP.	164	1							ナ						_					o f Z			
		 											_	-	-										
Polinguished Av	L	ــــــــــــــــــــــــــــــــــــــ		<u> </u>			Re		od.						<u>l</u>	_	Tota	l # of	Cont	ainers	<u> </u>				
Relinguished by:	17	1112	2016 1	730				111	bu /	by.	2	ر وست							Meth		·			\dashv	
QVT	Signature	Date	SCPAC	Time	•		1			Sign	natur	re		12/12	lic		0p	mone	Wicti	ou.				Ì	
KK JUVIN	Star						/كـ	11/5							10	-	Com	ala D	ionon	ition					
Relinguished by:	Printed Name	Co	mpany				Re	oo iy			ited (Nam	<u> </u>	- 13	<u>, </u>			ibutio	ispos	ition:				\dashv	
rtelli iquistieu by:							1,56	CEIV	eu	υy.								PNNL						l	
	Signature	Date		Time						Sigr	natur	re	<u></u>				2) C 3) T	AS	•						
	Printed Name	Co	mpany							Prin	ited !	Nam	e				J	AI							

SAMPLE CHAIN	OF CUSTODY FO	RM														Battelle		
Date: 12/12/10																Marine Scien	ices Labora	tory
Page:	_ of _ 2		SW = Stor	mwa	ater								•			1529 West S		
Project No.:	54220			1												Laboratory:	Battelle MS	L
Project:	Non-dry Dock SW	2010 SW03		1												Attention: J	lill Brandeni	
				An	alyz	ер	arar	met	ers	per	QA	P/F	SP				Phone: (36	60) 681-4564
		Collection		Hardness	TOC	DOC	TSS	TME/DME	DME	ТРН	Turbidity			- 1	o. containers	Sample Type (grab		
Sample Label	Station ID	Date/Time	Matrix	上	E	٥	Ë	E	0		E	↓	1		<u>8</u>	vs. Comp)	Storm#	Lab Code
SW03-001	PSNS126	12/12/10 1430	SW	1					<u> </u>	X	 	 			2	grab	SW03	
SW03-002	PSNS096	12/12/10 1450	SW	↓					<u> </u>	<u> X</u> _	↓_	↓_	1		2	grab	SW03	
SW03-003	PSNS081.1	12/12/10 1540	SW	<u> </u>					_	X_	-	┞			2	grab	SW03	
SW03-004	PSNS082.5	12/12/10 1607	SW							X_	↓	↓	1-1		2	grab	SW03	
SW03-005	PSNS082.5DUP	12/12/10 1614	sw	ļ						X	<u> </u>	<u> </u>	$\perp \downarrow$		2	grab	SW03	Field DUP
SW03-0021	PSNS126	12/12/10 1245	SW	X		_			_	$oldsymbol{oldsymbol{oldsymbol{eta}}}$	_	<u> </u>	1		1	comp	SW03	
SW03-0022	PSNS126	12/12/10 1245	SW	┸	x		L		_	L	L	L			1	comp	SW03	L
SW03-0023	PSNS126	12/12/10 1245	SW			Х						$oldsymbol{ol}}}}}}}}}}}}}}$			1.	comp	SW03	<u> </u>
SW03-0024	PSNS126	12/12/10 1245	SW	L			Х					L			1	comp	SW03	<u> </u>
SW03-0025	PSNS126DUP	12/12/10 1245	SW	х								\mathbb{L}			1	comp	SW03	Field DUP
SW03-0026	PSNS126DUP	12/12/10 1245	SW		Х										1	comp	SW03	Field DUP
SW03-0027	PSNS126DUP	12/12/10 1245	SW			Х									1	comp	SW03	Field DUP
SW03-0028	PSNS126DUP	12/12/10 1245	SW				Х					-			1	comp	SW03	Field DUP
SW03-0029	PSNS096	12/12/10 1245	SW	х											1	comp	SW03	
Relinquished by:		1 1	,		Re	ceiv	ed	by:								Total # of Co	ntainers	
In m	u 10	-113/10 1	200													Shipment Me	thod:	
Im Brune					Sigr	natur	re					1	FeDE	X				
	Jrn Brandenbright park									Nam	e				1	Sample Disp	osition:	
Relinquished by: Signature Date Time							ed	by:				"				Distribution: 1) PNNL	<u> </u>	-
					Sigr	natur	e						2) CAS 3) TAI					
	Printed Name Company								ted I	Nam	е					=1		

SAMPLE CHAIN	OF CUSTODY FO													Battelle			
Date: 12/12/10	_														Marine Scie	nces Labora	itory
Page:	of	_	SW = Store	nwa	ater											Sequim Bay	
Project No.:	54220			1											Laboratory:	Battelle MS	L
Project:	Non-dry Dock SV	/ 2010 SW03		ĺ											Attention:	Jill Brandenl	
				An	alyz	ер	arar	net	ers	per	QA	P/F	SP			Phone: (36	60) 681-4564
		Collection		Hardness	ပ္)C	S	TME/DME	NE .	н	Furbidity			containers	i i voe tarab		
Sample Label	Station ID	Date/Time	Matrix	뿔	700	DOC	TSS	≥	DME	<u>T</u>	12			2	vs. Comp)	Storm#	Lab Code
SW03-0030	PSNS096	12/12/10 1245	SW		х									1	comp	SW03	
SW03-0031	PSNS096	12/12/10 1245	SW			Х									comp	SW03	
SW03-0032	PSNS096	12/12/10 1245	SW				Х								comp	SW03	
SW03-0033	PSNS082.5	12/12/10 1245	SW	х										1	comp	SW03	
SW03-0034	PSNS082.5	12/12/10 1245	SW		х				П					1	comp	SW03	
SW03-0035	PSNS082.5	12/12/10 1245	SW			Х									comp	SW03	
SW03-0036	PSNS082.5	12/12/10 1245	SW				х							7	comp	SW03	
SW03-0037	PSNS081.1	12/12/10 1245	SW	х										7	comp	SW03	
SW03-0038	PSNS081.1	12/12/10 1245	SW		х									1	comp	SW03	
SW03-0039	PSNS081.1	12/12/10 1245	SW			Х								7	comp	SW03	
SW03-0040	PSNS081.1	12/12/10 1245	SW				Х							1	comp	SW03	
														\Box			
Relinquished by:	12	/13/10 17	200		Re	ceiv	ed	by:							Total # of Co		
Smanle	Time					Sigr	natur	е						lex			
						Prin	ted N	Nam	e				Sample Disp	osition:			
Relinquished by:		-	Re	ceiv	ed	by:							Distribution: 1) PNNL				
	Time					Sigr	atur	е					2) CAS 3) TAI				
						Prin	ted N	Nam	e .				7'				

SAMPLE CHAIN	OF CUSTODY FO													Battelle			
Date: 12/12/10															Marine Scien	ices Labora	tory
Page:	_ of	_	SW = Stori	mwa	ater										1529 West S	equim Bay	Road
Project No.:	54220			1											Laboratory:		
Project:	Non-dry Dock SW	2010 SW03													Attention: J	ill Brandent	
		·	_	An	alyz	e p	arar	net	ers	per	QA	P/F	SP			Phone: (36	60) 681-4564
				Hardness				TME/DME-			Turbidity			containers	Sample		
		Collection		Ē	ပ္က	200	S	Æ	DME	ĮΞ	ē			1 -	Type (grab		
Sample Label	Station ID	Date/Time	Matrix	보	P	ă	TSS	É	á	上	<u> 2</u>			8	vs. Comp)	Storm#	Lab Code
SW03-0011	PSNS126	12/12/10 1245	SW					Х						1	comp	SW03	3174*25
SW03-0012	PSNS126	12/12/10 1245	SW						х					1	comp	SW03	3174*26
SW03-0013	PSNS126DUP	12/12/10 1245	SW					х						1	comp	SW03	3174*27
SW03-0014	PSNS126DUP	12/12/10 1245	SW						х					1	comp	SW03	3174*28
SW03-0015	PSNS096	12/12/10 1245	SW					Х						1	comp	SW03	3174*29
SW03-0016	PSNS096	12/12/10 1245	SW						Х					1	comp	SW03	3174*30
SW03-0017	PSNS082.5	12/12/10 1245	SW					х						1	comp	SW03	3174*31
SW03-0018	PSNS082.5	12/12/10 1245	SW	1					х				П	1	comp	SW03	3174*32
SW03-0019	PSNS081.1	12/12/10 1245	SW					Х						1	comp	SW03	3174*33
SW03-0020	PSNS081.1	12/12/10 1245	SW						х					1	comp	SW03	3174*34
				1-													
			-	\vdash						_			\vdash				<u> </u>
											-						
Relinguished by:		1.1	~ 60	•	Re	eçi\	ed	by.	-	_					Total # of Co	ntainers	
Amme	er 12	112/10 2	<u>350</u>		_/	UA.	9	EA	11	de	d i	<u>cet</u>	_		Shipment Me	thod:	
JMBra	Signature,	Date PANL	Time			m	5	Sigr	natur	е			-				
						Prin	ted I	Nam	е е				Sample Disp	osition:			
Relinquished by:						ceiv							•		Distribution:	······································	<u> </u>
															1) PNNL		
	Signature Date Time							Sigr	natur	e					2) CAS 3) TAI		
	Printed Name Company								ted I	Nam	 е) 1/\(\begin{align*} \begin{align*}		





SAMPLE LOGIN

Project Manager: Brandenberger Date Received: 12/12/2010

Batch: 5

Login Designee: McGahan/Brandenberger

Marine Sciences Laboratory 1529 West Sequim Bay Road Sequim, Washington 98382

PH: (360) 681-4565

Project: Non-Dry Dock SW (Storm Water)

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
	SW03-0011 SW03-0012 SW03-0013 SW03-0014 SW03-0015 SW03-0016 SW03-0017 SW03-0018 SW03-0019	SW03-0011 PSNS126 SW03-0012 PSNS126 SW03-0013 PSNS126DUP SW03-0014 PSNS126DUP SW03-0015 PSNS096 SW03-0016 PSNS096 SW03-0017 PSNS082.5 SW03-0018 PSNS082.5 SW03-0019 PSNS081.1	SW03-0011 PSNS126 3174-25 SW03-0012 PSNS126 3174-26 SW03-0013 PSNS126DUP 3174-27 SW03-0014 PSNS126DUP 3174-28 SW03-0015 PSNS096 3174-29 SW03-0016 PSNS096 3174-30 SW03-0017 PSNS082.5 3174-31 SW03-0018 PSNS082.5 3174-32 SW03-0019 PSNS081.1 3174-33	SW03-0011 PSNS126 3174-25 sea water SW03-0012 PSNS126 3174-26 sea water SW03-0013 PSNS126DUP 3174-27 sea water SW03-0014 PSNS126DUP 3174-28 sea water SW03-0015 PSNS096 3174-29 sea water SW03-0016 PSNS096 3174-30 sea water SW03-0017 PSNS082.5 3174-31 sea water SW03-0018 PSNS082.5 3174-32 sea water SW03-0019 PSNS081.1 3174-33 sea water	SW03-0011 PSNS126 3174-25 sea water Prep Lab SW03-0012 PSNS126 3174-26 sea water Prep Lab SW03-0013 PSNS126DUP 3174-27 sea water Prep Lab SW03-0014 PSNS126DUP 3174-28 sea water Prep Lab SW03-0015 PSNS096 3174-29 sea water Prep Lab SW03-0016 PSNS096 3174-30 sea water Prep Lab SW03-0017 PSNS082.5 3174-31 sea water Prep Lab SW03-0018 PSNS082.5 3174-32 sea water Prep Lab SW03-0019 PSNS081.1 3174-33 sea water Prep Lab	SW03-0011 PSNS126 3174-25 sea water Prep Lab TME SW03-0012 PSNS126 3174-26 sea water Prep Lab DME SW03-0013 PSNS126DUP 3174-27 sea water Prep Lab TME SW03-0014 PSNS126DUP 3174-28 sea water Prep Lab DME SW03-0015 PSNS096 3174-29 sea water Prep Lab TME SW03-0016 PSNS096 3174-30 sea water Prep Lab DME SW03-0017 PSNS082.5 3174-31 sea water Prep Lab TME SW03-0018 PSNS082.5 3174-32 sea water Prep Lab DME SW03-0019 PSNS081.1 3174-33 sea water Prep Lab TME

LOG-IN CHECKLIST		Reference SOP# MS	5L-A-001
Central File #: 317 4 Sar	mple No(s): 25-34	Batch:	
Project Name: Non Dry Doc	K SW - SW03	Project Manager: TMB	
TO BE COMPLETED BY PROJECT M	ANAGER (prior to arrival when	n possible)	
Matrix: wealt	W	/P#	
Yes No			
	equires high-level sample tracking		
USDA Samples (see C	Compliance Agreement Checklist)) PM Verification:	
			· · ·
 	mount: Entire samp		•
	- samples will be weighed and pla	aced in ultralow temp freezer (Login Lab)	
Special instructions:	Split		
Sample Preservation Instructions			
See LI	IMS for archive/disposal informa	ation	
TO BE COMPLETED UPON SAM	PLE ARRIVAL/LOG-IN		
Yes No N/A Indicate in A	Appropriate Box		
Custody seal p	present Seal intact	? YES NO	14
Cooler temper	rature (acceptable range: 4±2°C	or solids:frozen)	5/ °c
(if multiple o	coolers, note temp. of each)	42/41 44/20	*c
	· · · · · · · · · · · · · · · · · · ·	discrepancies (cooler temp, sponsor codes, etc	c)
Comment/F	r of custody forms signed and da	in all a	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
	•	meu,	
were samples	filtered at MSL?		
Sample condition(s):	deeptable Other (exp	ikain):	
Container type:	eften Paly Glass Cap. Vial	Other:	
Notes:			
Completed By: Marke		Date/Time: 12/12/10 243	0
SAMPLE PRESERVATION			
Sample(s) were preserved pri	or to arrival at MSL (noted on Co	oC / Sample / per PM Instruction)	
Random pH checked for ~10%	of samples (use dip paper)	Sample IDs:	
Complete pH check required f	for project (use pH meter and re	ecord on pH Record form)	
Sample(s) were preserved at	MSL		
Type: 0.2% HN03	Notes: Optima	HW07 Lot# 12060	270
0.5% HCl (Hg samples	s) Notes:	Lot#	
Refrigerate/Freeze	Notes:		
Other .	Notes:		
Completed By: Immu		Date/Time: 12/13/10 0130).

Date: 12/12/10 Page:	of <u>2</u> of <u>54220</u>		SW = Stor	rmwa	ater										1	Battelle Marine Scient 1529 West S	ces Labora equim Bay	Road
Project:	Non-dry Dock SW	2010 SW03		1								D (F	0.5			Laboratory: Attention: J	ill Brandent	perger
			T	An	alyz I	ze pa 1	arar	nete	ers	per	QA T	.P/F	SP T	T			Phone: (36	60) 681-4564
Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	HdL	Turbidity	· · · · · · · · · · · · · · · · · · ·	Andreas and the second		No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW03-001	PSNS126	12/12/10 1430	SW			H			hl	x	. r		\vdash	-	2	grab	SW03	Lub Code
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	1	 					х					2	grab	SW03	Field DUP
SW03-0021	PSNS126	12/12/10 1245	SW	x	İ										1	comp	SW03	
SW03-0022	PSNS126	12/12/10 1245	SW	1	Х										1	comp	SW03	
SW03-0023	PSNS126	12/12/10 1245	SW			х					·				1.	comp	SW03	
SW03-0024	PSNS126	12/12/10 1245	SW				х			-					1	comp	SW03	
SW03-0025	PSNS126DUP	12/12/10 1245	SW	х											1	comp	SW03	Field DUP
SW03-0026	PSNS126DUP	12/12/10 1245	SW		Х										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	1			Х								1	comp	SW03	Field DUP
SW03-0029	PSNS096	12/12/10 1245	SW	X								1			1	comp	SW03	
Relinquished by:	144				Re	ceiv	ed t	oy:	المعتمد مر	<u> </u>	.//	7	<u>i</u>	7		Total # of Co	ntainers	
In mon	12 12	-113/10 1	200					_		1	<u>(</u> 1			uill)	Shipment Me	thod:	
In som		Date ////	Time		ζ,	57	10	Sigr	atur	e W	7		10/1	~(000		FeDE	2	
	Printed Name	Company				-/	i	Prin	ted I	Nam	e					Sample Dispo	osition:	
Relinquished by:		<u> </u>			Re	ceiv					···				_	Distribution:		
						.,		,								1) PNNL		
AMARTINITY	Signature	Date	Time		***************************************		******	Sign	atur	·е					\neg	2) CAS		
								_								3) TAI		

Printed Name

Company

Printed Name

K1013814

SAMPLE CHAIN	OF CUSTODY FO)RM													Battelle		
Date: 12/12/10	~														Marine Scie	nces Labora	tory
Page: 3	_ of		SW = Stor	mwa	ater										1529 West 9	, -	
Project No.:	54220														Laboratory:		
Project:	Non-dry Dock SV	V 2010 SW03		1.											Attention:	Jill Brandeni	
	· · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·	T	An	alyz T	e pa	arai	met	ers	per	QA	P/F	SP			Phone: (36	60) 681-4564
Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	T0C	DOC	TSS	TME/DME	DME	T	Turbidity			No containere	I voe (drab	Storm#	Lab Code
SW03-0030	PSNS096	12/12/10 1245	SW		Х				<u> </u>		<u> </u>				comp	SW03	
SW03-0031	PSNS096	12/12/10 1245	SW		L	Х	<u> </u>				<u> </u>	<u> </u>			comp	SW03	
SW03-0032	PSNS096	12/12/10 1245	SW	<u> </u>			X				<u> </u>				comp	SW03	
SW03-0033	PSNS082.5	12/12/10 1245	SW	X											comp	SW03	
SW03-0034	PSNS082.5	12/12/10 1245	SW		X					<u> </u>					comp	SW03	
SW03-0035	PSNS082.5	12/12/10 1245	SW			Х									comp	SW03	
SW03-0036	PSNS082.5	12/12/10 1245	SW				Х								comp	SW03	
SW03-0037	PSNS081.1	12/12/10 1245	SW	X										1	comp	SW03	
SW03-0038	PSNS081.1	12/12/10 1245	SW		Х									1	comp	SW03	
SW03-0039	PSNS081.1	12/12/10 1245	SW			Х								1	comp	SW03	
SW03-0040	PSNS081.1	12/12/10 1245	SW				Х							1	comp	SW03	
							ļ	ļ			├—		-				
				-											- 		
Relinquished by:	75		A		Re	ceiv	ed.	by:		 `)	//	<u> </u>	/	7	Total # of Co	ntainers	
1mBru	-Commence	/13/10 13 Date PWWL	८०७						,	P (/	17	/14	10	Shipment Me		
Relinquished by:	Time		(<	7.H	600	Sign	natur ///	e / 5	J		100		Fed		*		
				,,		Prin	ted i	Vam	e				Sample Disp	osition:			
Relinquished by:			Re	ceiv	ed .	by:			***************************************	************			Distribution: 1) PNNL				
	Signature	Time					Sigr	natur	e					2) CAS 3) TAI			
	Printed Name	Company						Prin	ted l	Nam	e					Account.	

Columbia Analytical Services, Inc. Cooler Receipt and Preservation Form

PC HH

A = I.		4 6	Service Reques	/K10	78/6		
Received: 19/14/10 Ope	ned: 12년	10	ву:	<u> </u>	·		
1. Samples were received via? <i>Mail</i>	(Fed Ex.)	UPS DE		urier Hand	l Delivered		
2. Samples were received in: (circle)	The same of the sa		elope Other	1 0		NA	
3. Were <u>custody seals</u> on coolers? If present, were custody seals intact?	NA Y Y		yes, how many and		1-4-30		
	_	N	If present, were th	ey signed and	aated /	Y	N
Cooler Temp Therms Temp °C Blank °C II	apata da kabata atau atau atau atau atau atau atau	Cooler/COC ID N	A	Tracking I	Number	NA	Filed
-0,3 2.4 28	7		7442	1364 1	20		
29	6		1,		244	······································	
			· · · · · · · · · · · · · · · · · · ·		***************************************		
7. Packing material used. Inserts Ba	ggies Bubble	Wrap (Gel Pa	icks) Wet Ice Ste	eves Other			
8. Were custody papers properly filled or	ıt (ink, signed, e	tc.)?	CONTRACTOR CONTRACTOR	_	N.	A /Y	N
9. Did all bottles arrive in good condition	(unbroken)? I	ndicate in the t	able below.		Ŋ	$A \nearrow Y$	N
10. Were all sample labels complete (i.e a	nalysis, preserva	ation, etc.)?			N	$A \stackrel{\frown}{Y}$	N
11. Did all sample labels and tags agree v	ith custody pape	ers? Indicate n	iajor discrepancies	in the table on	page 2. N	A Y	N
12. Were appropriate bottles/containers at	nd volumes rece	ived for the tes	ts indicated?		N	A Y	N
13. Were the pH-preserved bottles (see SM	10 GEN SOP) rec	eived at the ap	propriate pH? Indic	ate in the table	below N	A Y	$N \setminus N$
14. Were VOA vials received without hea	dspace? Indica	te in the table l	velow.	•	N	A	N
15. Was C12/Res negative?					N	A) Y	N
Sample ID on Bottle	San	nple ID on COC		ld	entified by:		
Sun3-1014	Sw03	- 005	Pro	00058 8/1	Uminato		- 1
				E.		a comment	omerical .
			- Li				and the second s
		f Head-		Volume	Reagent Lot		
		f Head space Broke	pH Reagent	Volume added	Reagent Lot Number	Initials	Time
			pH Reagent				Time
			pH Reagent				Time
			pH Reagent				Time
			pH Reagent				Time
			pH Reagent				Time
Sample ID Bot			pH Reagent				Time
Sample ID Bot			pH Reagent				Time
Sample ID Bot			pH Reagent				Time
			pH Reagent				Time
Sample ID Bot			pH Reagent				Time

Client:Battelle Marine Sciences LabService Request No.:K1013444Project:Non-dry Dock SW 2010 SW02Date Received:12/3/10

Sample Matrix: Water

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 Hawa Holmo 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.

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

> Units: mg/L Basis: NA

Analysis Method:

SM 2340 C

Hardness, Total as CaCO3

C L N	T 1 C 1	D. 1. 0	MADY	MINI	Dilution		Date	Mata
Sample Name	Lab Code	Result Q	MRL	MDL	ractor	Extracted	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	

Form 1A

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

SW02-0017DUP

Duplicate Sample

				Sample	K1013444	4-006DUP1		RPD
Analyte Name	Method	MRL	MDL	Result	Result	Average	RPD	Limit
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

\\Inflow2\Starlims\LimsReps\DuplicateSummary.rpt

SuperSet Reference:

10-0000163660 rev 00

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

% Rec Spike Result Amount % Rec Limits

Hardness, Total as CaCO3

Analyte Name

Method

43.4

SM 2340 C

46.6

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.

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

Units: mg/L

Analysis Method: SM 2540 D

Basis: NA

Solids, Total Suspended (TSS)

					Dilution	Date	Date	
Sample Name	Lab Code	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Note
SW02-0020	K1013444-009	26.5	5.0	5.0	I	NA	12/6/10 08:00	THE STATE OF THE S
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	

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

Batch QCDUP

Duplicate Sample

				Sample	K1013418	8-013DUP6		RPD
Analyte Name	Method	MRL	MDL	Result	Result	Average	RPD	Limit
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.

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

Printed 12/21/10 13:53

Form 3B

SuperSet Reference:

10-0000163660 rev 00

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

Batch QCDUP

Duplicate Sample

				Sample	K1013445-002DUP10			RPD
Analyte Name	Method	MRL	MDL	Result	Result	Average	RPD	Limit
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.

Printed 12/21/10 13:53

Form 3B

 $\verb|\Inflow2\Starlims\LimsReps|| DuplicateSummary.rpt|$

SuperSet Reference:

10-0000163660 rev 00

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

Batch QCDUP

Duplicate Sample

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

Printed 12/21/10 13:53

\\Inflow2\Starlims\LimsReps\DuplicateSummary.rpt

Form 3B

SuperSet Reference:

10-0000163660 rev 00

QA/QC Report

Client:

Battelle Marine Sciences Lab

Project:

Non-dry Dock SW 2010 SW02/54220

Sample Matrix:

Solids, Total Suspended (TSS)

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

296

K1013444-LCS1

320

93

80 - 115

Analyte Name Method Result Amount % Rec Limits

SM 2540 D

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

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

Units: mg/L Basis: NA

Lab Control Sample Summary **General Chemistry Parameters**

> Lab Control Sample K1013444-LCS2

Analyte Name	Method	Result	Spike Amount %	% Rec	% Rec Limits	coopigawa waxay
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.

Printed 12/21/10 13:44

Form 3C

SuperSet Reference: 10-0000163660 rev 00

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 Collected: 11/30/10 **Date Received:** 12/3/10

Units: mg/L Basis: NA

Analysis Method:

SM 5310 C

Carbon, Dissolved Organic (DOC)

					Dilution	Date	Date	
Sample Name	Lab Code	Result Q	MRL	MDL	Factor	Extracted	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	

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

SW02-0019DUP

Duplicate Sample

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

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

SuperSet Reference:

10-0000163660 rev 00

\\Inflow2\Starlims\LimsReps\DuplicateSummary.rpt

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

% Rec Sample Spike Amount % Rec Limits Analyte Name Result Result 83 - 117Carbon, Dissolved Organic (DOC) 2.72 28.0 25.0 101

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.

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

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

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

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.

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

QA/QC Report

Client:

Battelle Marine Sciences Lab

Project:

Non-dry Dock SW 2010 SW02/54220

Method

SM 5310 C

Sample Matrix:

Analyte Name

Carbon, Dissolved Organic (DOC)

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

24.7

24.1

% Rec Spike Result Amount % Rec Limits

98

83 - 117

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

QA/QC Report

Client: Project:

Battelle Marine Sciences Lab

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		Date	True	Measured	Percent	Acceptance
	Lot	Lab Code	Analyzed	Value	Value	Recovery	Limits
CCVI	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

QA/QC Report

Client: Project:

Battelle Marine Sciences Lab

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
CCBI	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

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

Units: mg/L

Analysis Method: SM 5310 C Basis: NA

Carbon, Total Organic

					Dilution	Date	Date	
Sample Name	Lab Code	Result Q	MRL	MDL	Factor	Extracted	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	

Form 1A

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

Batch QCDUP

				Sample	K1013418-001DUP5			RPD
Analyte Name	Method	MRL	MDL	Result	Result	Average	RPD	Limit
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.

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Form 3B

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SuperSet Reference:

10-0000163660 rev 00

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 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.

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

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

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.

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

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 Sample Spike

% Rec Limits Result Amount % Rec **Analyte Name** Result 83 - 117 5.94 31.7 25.0 103 Carbon, Total Organic

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

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

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

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

Results flagged with an asterisk (*) indicate values outside control criteria. Results flagged with a pound (#) indicate the control criteria is not applicable.

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.

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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Form 3C

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SuperSet Reference:

10-0000163660 rev 00

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

Spike

% Rec **Analyte Name** Method Result Amount % Rec Limits SM 5310 C 83 - 117 Carbon, Total Organic 25.2 24.7 102

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 13:45

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Form 3C

SuperSet Reference:

10-0000163660 rev 00

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

Spike
Result Amount % Rec

% Rec Limits

Analyte Name
Carbon, Total Organic

Method 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.

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Form 3C

SuperSet Reference:

10-0000163660 rev 00

Page 60 of 105

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			Date	True	Measured	Percent	Acceptance
	Lot	Lab Code	Analyzed	Value	Value	Recovery	Limits
CCVI	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

Form 7

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		Date			
	Lot	Lab Code	Analyzed	MRL	Result Q	
CCBI	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	

Client: Project: Battelle Marine Sciences Lab

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
SW02-0001 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.

Title:

Cover Page - Organic

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) Residual Range Organics (RRO)	100 J 320 O	130 250	11 19	1 1	12/06/10 12/06/10		KWG1013527 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:

Printed: 12/17/2010 08:40:23

Merged

Form 1A - Organic

SuperSet Reference:

Page 1 of 1 RR123481 Page 64 of 105

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:

Printed: 12/17/2010 08:40:26

Merged

Form 1A - Organic

SuperSet Reference: RR123481

Page 65 of 105

1 of 1

Page

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:

Printed: 12/17/2010 08:40:29

Merged

Form 1A - Organic

SuperSet Reference:

Page 1 of 1

RR123481 Page 66 of 105

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:

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Merged

Form 1A - Organic

Page 1 of 1

SuperSet Reference:

RR123481 Page 67 of 105

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

Units: ug/L Basis: NA

Level: Low

Analysis Method:

NWTPH-Dx

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:

Printed: 12/17/2010 08:40:35

Merged

Form 1A - Organic

Page 1 of 1

SuperSet Reference: RR123481

Page 68 of 105

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 Ј	130	11	1	12/06/10	12/11/10	KWG1013527	
Residual Range Organics (RRO)	24 Ј	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:

Printed: 12/17/2010 08:40:38

Form 1A - Organic

Page

1 of 1

SuperSet Reference: RR123481 Page 69 of 105

QA/QC Report

Client:

Battelle Marine Sciences Lab

Project:

Non-dry Dock SW 2010 SW02/54220

Sample Matrix:

Water

Surrogate Recovery Summary Diesel and Residual Range Organics

Extraction Method:

EPA 3510C

Service Request: K1013444

Units: PERCENT

Level: Low

Analysis Method: NWTPH-Dx

Sample Name	Lab Code	<u>Sur1</u>	Sur2
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 (%)

Sur	1 =	o-Terphenyl	50-150
Sur	2 =	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.

Printed: 12/17/2010 08:40:41

Form 2A - Organic

RR123481

1 of 1

SuperSet Reference: Page 70 of 105

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

Lab Co

Lab Control Sample KWG1013527-1

Duplicate Lab Control Sample

KWG1013527-2

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

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: 12/17/2010 08:40:44

Form 3C - Organic

Page 1 of

SuperSet Reference:

RR123481 Page 71 of 105

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

File ID: J:\GC21\DATA\121010F\1210F074.D

Lab Code:

KWG1013527-3

Instrument ID: GC21

Extraction Method:

EPA 3510C

Level: Low

Analysis Method: NWTPH-Dx Extraction Lot: KWG1013527

This Method Blank applies to the following analyses:

			Date	Time
Sample Name	Lab Code	File ID	Analyzed	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

Printed: 12/17/2010 08:40:53 Form 4A - Organic Page 1 of 1 $u:\Stealth\Crystal.rpt\Form4mb.rpt$ SuperSet Reference:

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

RR123481 Page 72 of 105

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

File ID

File ID: J:\GC21\DATA\121010F\1210F070.D

Lab Code:

KWG1013527-1

Instrument ID: GC21

Extraction Method:

EPA 3510C

Level: Low

Analysis Method:

NWTPH-Dx

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

Printed: 12/17/2010 08:40:57 u:\Stealth\Crystal.rpt\Form4LCS.rpt

Form 4B - Organic

Page 1 of 1

Pon-Dry Dock Stormwater Events SW02 & SW03 Chemistry Date Package

SuperSet Reference: RR123481 Page 73 of 105

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.

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

Page 74 of 105

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.
- O 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.

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

Units: mg/L Basis: NA

Analysis Method:

SM 2340 C

Hardness, Total as CaCO3

					Dilution	Date	Date	
Sample Name	Lab Code	Result Q	MRL	MDL	Factor	Extracted	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	

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

SW03-0021DUP

Duplicate Sample

				Sample		6-006DUP1		RPD
Analyte Name	Method	MRL	MDL	Result	Result	Average	RPD	Limit
Hardness, Total as CaCO3	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.

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Form 3B

SuperSet Reference:

10-0000164483 rev 00

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

Spike

% Rec

Analyte Name

Method

Result

Amount % 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.

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Form 3C

SuperSet Reference:

10-0000164483 rev 00

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

Units: mg/L Basis: NA

Analysis Method:

SM 2540 D

Solids, Total Suspended (TSS)

					Dilution	Date	Date	
Sample Name	Lab Code	Result Q	MRL	MDL	Factor	Extracted	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	t	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	

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: Lab Code: SW03-0040

K1013816-025

Units: mg/L Basis: NA

SW03-0040DUP

Duplicate Sample

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

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

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

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

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

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

SuperSet Reference: 10-0000164483 rev 00

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

> Units: mg/L Basis: NA

Analysis Method:

SM 5310 C

Carbon, Dissolved Organic (DOC)

					Dilution	Date	Date	
Sample Name	Lab Code	Result Q	MRL	MDL	Factor	Extracted	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	

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: Lab Code: SW03-0023

K1013816-008

Units: mg/L Basis: NA

SW03-0023DUP

Duplicate Sample

RPD K1013816-008DUP3 Sample **RPD** Limit Average Method MRL **MDL** Result Result Analyte Name 33 0.07 1.92 1,90 1.91 1 Carbon, Dissolved Organic (DOC) SM 5310 C 0.50

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

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

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.

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

Spike

% Rec

Analyte Name

Carbon, Dissolved Organic (DOC)

SM 5310 C

Result

Limits Amount % Rec

Method

25.6 26.0

98

83 - 11.7

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 12/30/10 13:58

Form 3C

SuperSet Reference:

10-0000164483 rev 00

QA/QC Report

Client: Project: Battelle Marine Sciences Lab

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

QA/QC Report

Client: Project: Battelle Marine Sciences Lab

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	

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

Units: mg/L

Basis: NA

Analysis Method:

SM 5310 C

Carbon, Total Organic

					Dilution	Date	Date	
Sample Name	Lab Code	Result Q	MRL	MDL	Factor	Extracted	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	I	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	

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: Lab Code: SW03-0022 K1013816-007 Units: mg/L Basis: NA

SW03-0022DUP

Duplicate Sample

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

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

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

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: Lab Code: SW03-0022 K1013816-007 Units: mg/L Basis: NA

Analytical Method: SM 5310 C

SW03-0022MS

Matrix Spike K1013816-007MS1

Analyte Name

Sample Result Result Amount Recult Result Re

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

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

QA/QC Report

Lab Control Sample Summary General Chemistry Parameters

Client:

Battelle Marine Sciences Lab

Project:

Non-Dry Dock SW 2010 SW03/54220

Method

SM 5310 C

Sample Matrix:

Analyte Name

Carbon, Total Organic

Water

Service Request: K1013816

83 - 117

Date Analyzed: 12/23/10

Units: mg/L Basis: NA

Lab Control Sample

K1013816-LCS

26.0

25.6

Spike % Rec Result Amount % Rec Limits

98

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

QA/QC Report

Client: Project:

Battelle Marine Sciences Lab

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
CCVI	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

QA/QC Report

Client: Project: Battelle Marine Sciences Lab

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		Date			
	Lot	Lab Code	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	

Client: Project:

Battelle Marine Sciences Lab

Non-Dry Dock SW 2010 SW03/54220

Service Request:

K1013816

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

		Date	Date
Sample Name	Lab Code	Collected	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:

Date:

Name: 4

Title:

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

Method

Extraction Method: Analysis Method:

Units: ug/L Basis: NA

Level: Low

NWTPH-Dx

Analyte Name	Result Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Extraction Lot	Note
Diesel Range Organics (DRO) Residual Range Organics (RRO)	38 J 67 J	250 500	11 19	1	12/17/10 12/17/10	12/21/10 12/21/10	KWG1013972 KWG1013972	
Residual Range Organics (RRO)	0/3	300	19	1	12/1//10	12/21/10	IXWO1013972	

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note	
o-Terphenyl n-Triacontane	87 90	50-150 50-150	12/21/10 12/21/10	Acceptable Acceptable	
n-i nacomane	90	30-130	12/21/10	Acceptable	

Comments:

SuperSet Reference:

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

Units: ug/L Basis: NA

Extraction Method:

Method

Level: Low

Analysis Method:

NWTPH-Dx

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:

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

Units: ug/L Basis: NA

Extraction Method:

Method

Level: Low

Analysis Method:

NWTPH-Dx

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

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

Comments:

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

Units: ug/L Basis: NA

Extraction Method:

Method

Level: Low

Analysis Method:

NWTPH-Dx

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:

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: Analysis Method:

NWTPH-Dx

Method

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:

Printed: 12/29/2010 12:08:38

Form 1A - Organic

1 of 1

SuperSet Reference:

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

Units: ug/L Basis: NA

Extraction Method:

Method

Level: Low

Analysis Method:

NWTPH-Dx

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:

SuperSet Reference:

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

Sample Name	Lab Code	Sur1	Sur2
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.

Printed: 12/29/2010 12:08:45

Form 2A - Organic

1 of 1

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

Units: ug/L Basis: NA

Extraction Method:

Method

Level: Low

Analysis Method:

NWTPH-Dx

Extraction Lot: KWG1013972

SW03-001DUP KWG1013972-1 Relative Percent Sample **Duplicate Sample RPD** Limit Difference Result Result **Analyte Name MRL MDL** Average Diesel Range Organics (DRO) 250 38 38 38 0 # 11 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.

Printed: 12/29/2010 12:08:48

Form 3B - Organic

Page 1 of 1

SuperSet Reference: RR123921 Page 102 of 105

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

%Rec Limits %Rec Analyte Name Result Expected 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.

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

File ID: J:\GC21\DATA\122110F\1221F116.D

Lab Code:

KWG1013972-3

Instrument ID: GC21

Extraction Method: Method

Level: Low

Analysis Method:

NWTPH-Dx

Extraction Lot: KWG1013972

This Method Blank applies to the following analyses:

			Date	Time
Sample Name	Lab Code	File ID	Analyzed	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

SuperSet Reference:

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

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

Lab Code:

KWG1013972-2

Instrument ID: GC21

Extraction Method:

Method

Level: Low

Analysis Method:

NWTPH-Dx

Extraction Lot: KWG1013972

This Lab Control Sample applies to the following analyses:

			Date	Time
Sample Name	Lab Code	File ID	Analyzed	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

SuperSet Reference:

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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Non-Dry Dock Stormwater SW04 February 28-March 2, 2011 Chemical Analyses Equipment Blanks and STE#4

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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

								HID: Mg/L		
Sample ID -		Fraction			Collection					
Metals	Station Code	(Total/Diss)	Type Name	MSL Code	Date	Hg	As	Ag	Al	Cd
				Instrument:		CVAF	ICP-MS	ICP-MS	ICP-MS	ICP-MS
Laboratory Achi	eved Detection Li	mits (Freshwa	ter)			0.0001	0.03	0.002	0.3	0.004
Freshwater Repo	orting Limit (MDL	* 3.18)				0.0003	0.1	0.006	1.0	0.01
SW04										
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
Equipment Blan	nks									
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 Ј
SW0009	PSNS096	DME	Composite_equal_time	3174-42	02/01/11	0.000211 J	0.03 U	0.002 U	0.384 Ј	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

							11113. μg/L			
Sample ID -		Fraction							CVAF Batch	ICP-MS
Metals	Station Code	(Total/Diss)	Type Name	MSL Code	Cr	Cu	Pb	Zn	ID	Batch ID
				Instrument:	ICP-MS	ICP-MS	ICP-MS	ICP-MS		
Laboratory Achie	eved Detection Li	mits (Freshwa	ter)		0.08	0.007	0.002	0.05		
Freshwater Repor	rting 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 Blan	ı <u>ks</u>									
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

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

Sample ID -		Fraction											ICP-MS
Metals	Station Code	(Total/Diss)	Sample Type	MSL Code	As	Ag	Al	Cd	Cr	Cu	Pb	Zn	Batch ID
				Instrument:	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	
Laboratory A	chieved Detection	n Limits (Fre	eshwater)		0.03	0.002	0.3	0.004	0.08	0.007	0.002	0.05	
Freshwater R	eporting Limit (N	MDL* 3.18)			0.1	0.006	1.0	0.01	0.3	0.02	0.006	0.2	
METHOD B	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
LABORATO	ORY CONTROL	SAMPLES											
Spiking Leve	1				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
			Perce	ent Recovery, LCS	104%	102%	110%	102%	108%	106%	105%	107%	
MATRIX SP	PIKE 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	
				cent Recovery, MS	104%	85%	100%	101%	106%	97%	104%	101%	
			Perce	nt 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%	
REPLICATI	E 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	1.15	0.0350	580	0.195	3.28	9.13	7.24	77.5	
				RPD	1.7%	4.0%	2.9%	3.6%	4.9%	0.1%	1.2%	0.1%	
STANDARD	REFERENCE	MATERIAI	L, 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 PD	26.7 0.7%	7.62 7.3%	52.0 11.9%	22.8 2.6%	38.6 3.1%	85.2 4.0%	27.9 1.8%	53.2 5.3%	

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

		Fraction				
Sample ID - Metals	Station Code	(Total/Diss)	Sample Type	MSL Code	Hg	CVAF Batch ID
T. 1				Instrument:	CVAF	
Laboratory Achieved Reporting Limit (MD					0.0001 0.0003	
Reporting Emilit (WE	<i>J.</i> 10)				0.000	
METHOD BLANK	S					
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 CO	ONTROL SAMPLES	S				
Spiking Level		<u>5</u>			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
				ent Recovery, LCS 1	111%	
			Perce	ent Recovery, LCS 2	100%	
MATRIX SPIKE R	FCIII TC					
SW04-0028	PSNS032	DME	Composite_equal_time	3174-46	0.00310	031611HGA
MS1	PSNS032	DME	Composite_equal_time		0.0163	031611HGA
MSD1	PSNS032	DME	Composite_equal_time		0.0167	031611HGA
1,1021	151.5002	21/12	composite_equal_time	Spiking Level, MS	0.0146	00101111011
				Spiking Level, MSD	0.0149	
			Pe	ercent Recovery, MS	90%	
				cent Recovery, MSD	91%	
				RPD	1.1%	
SW04-0030	PSNS008	DME	Composite_equal_time	3174-48	0.00226	031611HGA
MS1	PSNS008	DME	Composite_equal_time		0.0173	031611HGA
MSD1	PSNS008	DME	Composite_equal_time		0.0175	031611HGA
				Spiking Level, MS	0.0148	
				Spiking Level, MSD	0.0147	
			Pe	ercent Recovery, MS	102%	
				cent Recovery, MSD	104%	
				RPD	1.9%	
REPLICATE PREC	CISION					
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 REFE	RENCE MATEDIA	Τ.				
SRM 1641 (1)	REITCE WATERIA	<u>L</u> TME	Freshwater	1641d 031511	1570	031611HGA
` '				Certified Value	1590	
				range	±18	
	SRM 1641 (1)	•		PD	1%	
	51 1041 (1)	•		1.0	1/0	

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 ≤20% PD
- * Precision result outside OC 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 inidicates 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 0.45 μ m 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.

03/07/11

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 $4.0\pm2^{\circ}$ 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)

OA/OC DATA OHALITY ORIECTIVES.

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-1-013*, *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-1-022*, *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 ug/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 ≤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 ≤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.



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SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 02/02/11

Batch: 6

Login Designee: McGahan

Marine Sciences Laboratory 1529 West Sequim Bay Road Sequim, Washington 98382

PH: (360) 681-4565

Project: Non-Dry Dock SW (Storm Water)

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



SOP#: MSL-A-001

Data Package, Non-Dry Dock Stormwater, STE#4

SAMPLE CHAIN Date: Page: Project No.: Project:	OF CUSTODY FO of(N4523A10MP000 PSNSNon-dry Do	 034 Amend.1	113	ES	0	21	011	arai	The second secon		oer	⊚ ••••••••••••••••••••••••••••••••••••				1529 Wes Laborator Attention:	iences Lab t Sequim B y: Battelle I Jill Brand Phone: (36	lay Road MSL lenberger	564		
Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC		TSS	/DME	ТРН	Turbidity					No. containers	Sample Type (Grab vs. Comp)	Storm#	ME Notes Cond	s / C	omp. ading	
Swood	PSNS OG 8	21/2011/1320	water	χ	¥	×	×	Х	χ	X				\Box	3	GRAH	Bi Pre-Sturm				
Sw0007	PSNS 00032		water	χ	¥	¥	Υ.	Х	У							GRAB	PRE-4		6		40
<u> </u>	PSNS 015	2/1/2011/2045	witer	+	*	γ.	٨	7	*	7		_	_		3	<u> </u>			37		4/
<u> </u>	PSIUS 096	2/1/2011/2320	when	7	*	7	*	*	*	٤	_	_			3	,		3174-3	18 13	(74.	
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LOG-IN CHECKLIST	Non-dry dock 3w 5	pamples (blanks)	rence SOP# MSL-A-001
Central File #: 3174	Sample No(s): 35-42	Batch:	6
Project Name: Non	-dm Doon SW	Project Manager:	Brandin burger
TO BE COMPLETED BY PR	OJECT MANAGER (prior to arrival when	n possible)	
	ziter v	NP# # 237 + +	
Yes No Now-type	Project (requires high-level sample trackin	na procedures)	
	uples (see Compliance Agreement Checklist	- · <u> </u>	
	pres (see compitance rigi comerni onecriis)	, The verification	
Filter Sam	ples: <i>Amount:</i> Entire sam	nple (Half of samp	ole)
	sample(s) - samples will be weighed and pl		
Special ins		acce in an clow to the fire conse	(3-32-2)
Sample Preservation In:	1 15/	()290 HND2	
orpre i see raitelt delle	**See LIMS for archive/disposal inform	<u> </u>	
TO BE COMPLETED UP	ON SAMPLE ARRIVAL/LOG-IN		
	dicate in Appropriate Box		
	tody seal present Seal intact	t? YES NO	
=====================================	,		#1-+2 °C#
	ler temperature (acceptable range: 4±2°C f multiple coolers, note temp. of each)	or solids:trozen)	#2-+3 °C
	ject Manager notified of any custody/login	n dicenononciae (cooler temp s	
	Comment/Remedy:	n discrepancies (cooler Temp, s	,
	re <u>all</u> chain of custody forms signed and d	oted? North Rech	eved
		- who	
	re samples filtered at MSL?	1.10	
Sample condition(s):	Acceptable Other (ex	plain):	
Container type:	Teflon Poly Glass Cap. Vial	Other:	
• •		V.11.C1	and the second s
Notes:	$\overline{}$		
Completed By:	S- CMah	Date/Time: 02/	11 1010
Completed by	701/100	Dates Time. 70077	7010
SAMPLE PRESERVATIO	<u>'N</u>		
Sample(s) were pre	served prior to arrival at MSL (noted on C	CoC / Sample / per PM Instruc	tion)
Random pH checke	d for ~10% of samples (use dip paper)	Sample IDs:	
	required for project (use pH meter and re	ecora on pri kecora Form)	allos
Sample(s) were pre	served at MSL		
Type: KC 0.2% HNO	3 Notes:		LOT#/206090 .
0.5% HCI (Hg samples) Notes:		Lot#
Refrigerat	e/Freeze Notes:		
Other 1	Notes:		
	cM/	04,	
Completed By:	Wah	Date/Time: 04/11	1016
Storage S	helf: J-2	-Bushed	1911



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SAMPLE LOGIN

Project Manager: JMB Date Received: 3/2/2011

Batch: 7

Login Designee: Brandenberger

Marine Sciences Laboratory 1529 West Sequim Bay Road Sequim, Washington 98382

PH: (360) 681-4565

Project: Non Drydock SW04

SW04-0025 PSNS096 3174*43 stormwater Prep Lab J-2-B Total Metals 03/01/11 2 SW04-0026 PSNS096 3174*44 stormwater Prep Lab J-2-B Dissolved Metals 03/01/11 2 SW04-0027 PSNS032 3174*45 stormwater Prep Lab J-2-B Total Metals 03/02/11 0 SW04-0028 PSNS032 3174*46 stormwater Prep Lab J-2-B Dissolved Metals 03/02/11 0 SW04-0029 PSNS008 3174*47 stormwater Prep Lab J-2-B Total Metals 03/02/11 1 SW04-0030 PSNS008 3174*48 stormwater Prep Lab J-2-B Dissolved Metals 03/02/11 1 SW04-0031 PSNS015 3174*49 stormwater Prep Lab J-2-B Total Metals 03/02/11 0		T	·	T 1	· · · · · · · · · · · · · · · · · · ·		T
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SW04-0029 PSNS008 3174*47 stormwater Prep Lab J-2-B Total Metals 03/02/11 1 SW04-0030 PSNS008 3174*48 stormwater Prep Lab J-2-B Dissolved Metals 03/02/11 1 SW04-0031 PSNS015 3174*49 stormwater Prep Lab J-2-B Total Metals 03/02/11 0	SW04-0027	PSNS032	3174*45	stormwater	Prep Lab J-2-B	Total Metals	03/02/11 0834
SW04-0030 PSNS008 3174*48 stormwater Prep Lab J-2-B Dissolved Metals 03/02/11 1 SW04-0031 PSNS015 3174*49 stormwater Prep Lab J-2-B Total Metals 03/02/11 0	SW04-0028	PSNS032	3174*46	stormwater	Prep Lab J-2-B	Dissolved Metals	03/02/11 0834
SW04-0031 PSNS015 3174*49 stormwater Prep Lab J-2-B Total Metals 03/02/11 0	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
SW04-0032 PSNS015 3174*50 stormwater Prep Lab J-2-B Dissolved Metals 03/02/11 0	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

SAMPLE CHAIN	OF COSTODY FO	KIVI														Dattene								
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Page: /	_ of	=														1529 Wes								
Project No.:	N4523A10MP000															Laborator								
Project:	PSNSNon-dry Do	ck SW 2010											V:	- Y - W		Attention:								
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Sw04-003	PSNS 015	2000							X						2					<u> </u>				
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SW04-006	PSNS 032	3-2-11 0834		×	\times	×	ж.	×	*	1	mr				1	1				Con	d=172	Turb	= 27	
Sw04-007	PSNS 008	1002		×	X	×	X	X	X	3	12	111			1						d= 107 =			
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Battelle SAMPLE CHAIN OF CUSTODY FORM Marine Sciences Laboratory Date: 3/3/2011 1529 West Sequim Bay Road Page: 1 of 2 SW = Stormwater Project No.: 54220 Laboratory: Battelle MSL Project: Non-dry Dock Stormwater SW04 Attention: Jill Brandenberger Phone: (360) 681-4564 Analyze parameters per QAP/FSP TME/DME containers Hardness DME T0C 200 TSS TPH Sample Collection Type (grab <u>8</u> vs. Comp) Sample Label Station ID Date/Time Matrix Storm# Lab Code SW04-0001 PSNS008 03/01/11 1950 2 SW x grab SW04 SW04-0002 PSNS032 03/01/11 1840 SW х 2 SW04 grab SW04-0003 SW PSNS015 03/01/11 2000 2 SW04 Х grab SW04-0004 PSNS096 03/01/11 2037 SW Х 2 SW04 grab SW SW0010 2 EB 03/01/11 2053 х arab SW04 SW04-0009 PSNS096 03/01/11 2340 SW 1 SW04 comp SW04-0010 PSNS096 03/01/11 2340 SW 1 SW04 comp SW04-0011 PSNS096 03/01/11 2340 SW SW04 comp SW04-0012 PSNS096 03/01/11 2340 SW 1 SW04 Х comp SW04-0013 PSNS032 03/02/11 0834 SW 1 SW04 comp SW04-0014 PSNS032 03/02/11 0834 SW 1 SW04 comp SW04-0015 PSNS032 03/02/11 0834 SW 1 SW04 comp SW04-0016 PSNS032 03/02/11 0834 SW 1 SW04 comp SW04-0017 **PSNS008** 03/02/11 1002 SW SW04 comp Total # of Containers Relinguished by: Received by: 3/3/11 1200 Shipment Method: Fedex to CAS Signature Date Time Signature Sample Disposition: Printed Name Company Printed Name Relinquished by: Received by: Distribution: 1) PNNL 2) CAS Signature Time Signature Date

Printed Name

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Company

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SAMPLE CHAIN	OF CUSTODY FO	ORM													Battelle		
Date	3/3/2011														Marine Scie	nces Labora	tory
Page:	: 2 of 2		SW = Stor	mwa	ater										1529 West 9	Sequim Bay	Road
Project No.:	54220			1											Laboratory:	Battelle MS	L
Project:	: Non-dry Dock St	tormwater SW04													Attention:	Jill Brandent	
				An	alyz	e p	araı	nete	ers	per	QΑ	P/F	SP		<u> </u>	Phone: (36	60) 681-4564
				Hardness	700	200	TSS	TME/DME	DME	ТРН				containers	Sample		
0	0, 1, 15	Collection						-						1	I I VDE (UI ab	1	
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SAMPLE CHAIN	OF CUSTODY FO	RM													Battelle		
Date	3/3/2011														Marine Scien	ices Labora	tory
Page	: 1 of 1		SW = Storr	nwa	ter										1529 West S	equim Bay	Road
Project No.				1											Laboratory:		
Project	: Non-dry Dock Sto	rmwater SW04													Attention: J	lill Brandeni	
				An	alyz	ер	ara	met	ers	per	QΑ	P/F	SP_			Phone: (36	80) 681-4564
				Hardness	TOC	DOC	TSS	TME/DME	ME	ТРН				containers			
				<u>ā</u>	-	l□	-	ΜĒ		-				15	Sample		
		Collection	1	+		l	1	-						- 1 -	Type (grab		
Sample Label	Station ID	Date/Time	Matrix											8	vs. Comp)	Storm#	Lab Code
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SW04-0026	PSNS096	03/01/11 2340	SW						х	fro	m S	W0	4-00	5 1	comp	SW04	3174*44
SW04-0027	PSNS032	03/02/11 0834	SW					Х		fro	m S	W0	4-006	3 1	comp	SW04	3174*45
SW04-0028	PSNS032	03/02/11 0834	SW					Γ	Х	fro	m S	W0	4-006	3 1	comp	SW04	3174*46
SW04-0029	PSNS008	03/02/11 1002	SW					Х					4-007		comp	SW04	3174*47
SW04-0030	PSNS008	03/02/11 1002	SW						Х	fro	m S	W0	4-007	1	comp	SW04	3174*48
SW04-0031	PSNS015	03/02/11 0931	SW					Х		fro	m S	W0	4-008	3 1	comp	SW04	3174*49
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	Signature	Date	Time					Sigi	natu	re					2) CAS 3) TAI		
	Printed Name	Company						Prin	nted	Nam	е				10). 171		

	. 7
Central File #: 3174 Sample No(s): 43 - 50 (PNN Project Name: Nan - Dry Doc K SW04	Project Manager: Jmps
TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when poss	sible)
Matrix: weter WP#_	
Yes No	10.5
Navy-type Project (requires high-level sample tracking pro	cedures)
USDA Samples (see Compliance Agreement Checklist)	PM Verification:
	Half of sample
Filter Samples: Amount: Entire sample	
Freeze dry sample(s) - samples will be weighed and placed i	
Special instructions: Split Compos	it for eas imsl
Sample Preservation Instructions: metals 0	.290 HNO2
Sample Preservation Instructions: **See LIMS for archive/disposal information*	**
TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN	#3 = 4.0
Yes No N/A Indicate in Appropriate Box	# 4 2 4. 6
Custody seal present Seal intact?	YES NO #5 2 4.2
Cooler temperature (acceptable range: 4±2°C or so	dids:frozen) #1=29°C
(if multiple coolers, note temp. of each)	#2 = 3.2 °C
Project Manager notified of any custody/login discr	repancies (cooler temp, sponsor codes, etc)
Comment/Remedy:	
Were <u>all</u> chain of custody forms signed and dated?	Bulan (1995) an markin shakar (1995)
Were samples filtered at MSL?	
Sample condition(s):	
Container type: Que Petr Cass Cap. Vial	Other:
Notes:	
	21 / 12-
Completed By: / M Suc	Date/Time: 3/2/11 1930
SAMPLE PRESERVATION - metals only	
Sample(s) were preserved prior to arrival at MSL (noted on CoC / S	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:	
Almo de	3/2/11 2500
Completed By: /////	Date/Time: 12/11 2600
Storage Shelf: 7-7-B	•

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Battelle

1) PNNL 2) CAS

3) TAI

SAMPLE CHAIN OF CUSTODY FORM

Date: 3/3/2011

Marine Sciences Laboratory Page: 1 of 2 SW = Stormwater

1529 West Sequim Bay Road Project No.: 54220 Laboratory: Battelle MSL Project: Non-dry Dock Stormwater SW04 Attention: Jill Brandenberger Analyze parameters per QAP/FSP Phone: (360) 681-4564 TME/DME containers Hardness TOC DOC DME ТРН TSS Sample Collection Type (grab Sample Label Station ID Date/Time Matrix vs. Comp) Storm# Lab Code SW04-0001 PSNS008 2 03/01/11 1950 SW lχ SW04 grab SW04-0002 PSNS032 SW 2 03/01/11 1840 Х SW04 grab SW04-0003 PSNS015 03/01/11 2000 SW Х 2 SW04 grab SW04-0004 PSNS096 SW 03/01/11 2037 2 X arab SW04 SW SW0010 ΕB 03/01/11 2053 2 lχ SW04 grab SW04-0009 PSNS096 03/01/11 2340 SW 1 Х SW04 comp SW SW04-0010 PSNS096 03/01/11 2340 1 Χ SW04 comp SW04-0011 PSNS096 03/01/11 2340 SW 1 Х SW04 comp SW04-0012 PSNS096 03/01/11 2340 SW 1 Х comp SW04 SW04-0013 03/02/11 0834 SW PSNS032 Χ 1 SW04 comp SW04-0014 PSNS032 03/02/11 0834 SW 1 Х SW04 comp SW04-0015 03/02/11 0834 SW PSNS032 lχ 1 SW04 comp PSNS032 SW04-0016 03/02/11 0834 SW Х 1 comp SW04 SW04-0017 PSNS008 03/02/11 1002 SW Х SW04 comp Relinguished by: Received by: Total # of Containers 3/3/11 1200 Shipment Method: Signature Date Time Fedex to CAS Signature Printed Name Company Printed Name Sample Disposition: Relinguished by: Received by: Distribution:

Signature

Printed Name

Signature

Printed Name

Date

Company

Time

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Battelle

SAMPLE CHAIN OF CUSTODY FORM

Date: Page:	SW = Stor	m)\\/	ater										Marine Scie 1529 West S		,		
Project No.:			300 - 3101		alÇi										Laboratory:		
	Non-dry Dock St	ormwater SW04														Jill Brandeni	
				An	alyz	e pa	araı	mete	ers	per	QΑ	P/F	SP				60) 681-4564
				†	Ι	Γ'					Γ	Π				T	
Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	HdT				No containor	IVDETUIAD	Storm#	Lab Code
SW04-0018	PSNS008	03/02/11 1002	SW		Х							<u> </u>				SW04	
SW04-0019	PSNS008	03/02/11 1002	SW			Х								7	comp	SW04	
SW04-0020	PSNS008	03/02/11 1002	SW	Τ			Х							7	comp	SW04	
SW04-0021	PSNS015	03/02/11 0931	SW	X										1	comp	SW04	
SW04-0022	PSNS015	03/02/11 0931	SW		Х									1	comp	SW04	
SW04-0023	PSNS015	03/02/11 0931	SW			Х								7	comp	SW04	
SW04-0024	PSNS015	03/02/11 0931	SW				Х							_	comp	SW04	
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	Signature	Date	Time					Sigr	natui	re					1) PNNL 2) CAS 3) TAI		

Printed Name

Printed Name

Company

Columbia Analytical Services, Inc. Cooler Receipt and Preservation Form Client / Project: 1º Service Request *K11* Opened: 3/ Received: Unloaded By: Samples were received via? Mail Fed Ex **UPS** PDXHand Delivered DHLCourier Other Samples were received in: (circle) Cooler Envelope Box NAWere <u>custody seals</u> on coolers? NA Y N If yes, how many and where? If present, were custody seals intact? Y N Y If present, were they signed and dated? N Cooler/COC Cooler Temp Thermometer NA Tracking Number NA Temp °C Blank C ID ID Filed 1044 Inserts Baggies Bubble Wrap Wet Ice Sleeves Packing material used. Gel Packs Other Were custody papers properly filled out (ink, signed, etc.)? NA Y N Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA N Were all sample labels complete (i.e analysis, preservation, etc.)? NA N Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA N Were appropriate bottles/containers and volumes received for the tests indicated? NA N Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below N NA Were VOA vials received without headspace? *Indicate in the table below*. N 15. Was C12/Res negative? N Sample ID on Bottle Sample ID on COC Out of Head-**Bottle Count** Volume Reagent Lot Sample ID **Bottle Type** Temp space Broke На Reagent added Number Initials Time Notes, Discrepancies, & Resolutions:

Client: Battelle Marine Sciences Lab Service Request No.:

Project: Non-dry Dock Stormwater SW04

Date Received:

Sample Matrix: Water

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 January Holling Town Date 3-30-

K1101848

3/4/11

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.

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

Units: mg/L Basis: NA

Analysis Method: SM 2340 C

Hardness, Total as CaCO3

					Dilution	Date	Date	
Sample Name	Lab Code	Result Q	MRL	MDL	Factor	Extracted	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	

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

SW04-009DUP

Duplicate Sample

Sample K1101848-006DUP1 **RPD** Analyte Name Result Method MRL MDL 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.

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Form 3B

SuperSet Reference: 11 page 27 of 200

QA/QC Report

Client:

Battelle Marine Sciences Lab

Project:

Non-Dry Dock Stormwater SW04/54220

Sample Matrix:

Water

Service Request: K1101848
Date Analyzed: 3/11/11

Date Analyze

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	
Hardness, Total as CaCO3	SM 2340 C	48.3	43.4	111	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.

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Form 3C

SuperSet Reference: 11p0000171302 rex 00 Page 28 of 72

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

Units: mg/L Basis: NA

Analysis Method:

SM 5310 C

Carbon, Dissolved Organic (DOC)

Sample Name	Lab Code	Result Q	MRL	MDL	Dilution Factor		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	

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

SW04-011DUP

Duplicate Sample

				Sample	K1101848	R-008DUP3		RPD
Analyte Name	Method	MRL	MDL	Result	Result	Average	RPD	Limit
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.

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Form 3B

SuperSet Reference: 11page130 of 7200

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

Sample Spike % Rec Analyte Name Result Result Amount % 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.

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Form 3A

SuperSet Reference:

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

% Rec Spike Amount % Rec

Analyte Name

Method

Result

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

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Form 3C

SuperSet Reference:

11 P200 32 0 17200

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

Units: mg/L Basis: NA

Lab Control Sample Summary **General Chemistry Parameters**

> 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.

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Form 3C

SuperSet Reference:

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QA/QC Report

Client: Project:

Battelle Marine Sciences Lab

Non-Dry Dock Stormwater SW04/54220

Service Request: K1101848

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	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

QA/QC Report

Client: Project:

Battelle Marine Sciences Lab

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		Date			
	Lot	Lab Code	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	

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

Units: mg/L Basis: NA

Analysis Method:

SM 5310 C

Carbon, Total Organic

					Dilution	Date	Date	
Sample Name	Lab Code	Result Q	MRL	MDL	Factor	Extracted	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	

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

 $\textbf{Units:} \ mg/L$

Basis: NA

SW04-010DUP

Duplicate Sample

				Sample	•	-007DUP2		RPD
Analyte Name	Method	MRL	MDL	Result	Result	Average	RPD	Limit
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.

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Form 3B

SuperSet Reference: 11-0000171302-rev

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.

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

% Rec Spike Result Amount % Rec Limits

Analyte Name Method 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.

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 1	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.

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.

SuperSet Reference:

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.

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Form 3C

SuperSet Reference: 11 page 42 of 7200

QA/QC Report

Client: Project:

Battelle Marine Sciences Lab

Non-Dry Dock Stormwater SW04/54220

Service Request: K1101848

Continuing Calibration Verification (CCV) Summary Carbon, Total Organic

Analytical Method: SM 5310 C

Units: mg/L

Analysis Lot		Lab Cada	Date	True Value	Measured Value	Percent	Acceptance Limits	
	LOI	Lab Code	Analyzed	value	value	Recovery	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	

Form 7

QA/QC Report

Client: Project: Battelle Marine Sciences Lab

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		Date			
	Lot	Lab Code	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

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

Units: mg/L Basis: NA

Analysis Method:

SM 2540 D

Solids, Total Suspended (TSS)

					Dilution	Date	Date	
Sample Name	Lab Code	Result Q	MRL	MDL	Factor	Extracted	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	

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

Batch QCDUP

Duplicate Sample

Sample K1101710-007DUP4 **RPD Analyte Name** Result Method MRL MDL Limit Result Average **RPD** 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.

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 3B

SuperSet Reference: 11 pgg

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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:

K1101788-005

Units: mg/L

Basis: NA

Batch QCDUP

Duplicate Sample

				Sample	K1101788	-005DUP11		RPD
Analyte Name	Method	MRL	MDL	Result	Result	Average	RPD	Limit
Solids, Total Suspended (TSS)	SM 2540 D	5.0	5.0	ND U	ND U	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.

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Form 3B

SuperSet Reference: 11 page 47 0 fr 7200

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

Batch QCDUP

Duplicate Sample

Sample K1101807-002DUP12 **RPD** Analyte Name Method MRL MDL Result **RPD** Limit Result Average Solids, Total Suspended (TSS) SM 2540 D 5.0 47.0 5.0 53.0 50.0 12 10

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

Winflow2\Starlimsbara Peackagie เพื่อกายหว่า Dock Stormwater, STE#4

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 3B

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SuperSet Reference:

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

Batch QCDUP

Duplicate Sample

K1101807-006DUP13 Sample **RPD** Analyte Name Method MRL MDL Result **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.

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Form 3B

SuperSet Reference: 11 page 49 of 7200

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.

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

Units: mg/L Basis: NA

Lab Control Sample

General Chemistry Parameters

K1101848-LCS2

Analyte Name	Method	Result	Spike Amount % R	% Rec ec 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.

Printed 3/16/11 14:45

Form 3C

SuperSet Reference: 11 page 51 of 72 00

Client: Project:

Battelle Marine Sciences Lab

Non-Dry Dock Stormwater SW04/54220

Service Request:

K1101848

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

		Date	Date	
Sample Name	Lab Code	Collected	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:

Date: 3201

Name:

Title:

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

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:

1 of 1

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) Residual Range Organics (RRO)	130 J 270 J	280 550	12 21	1 1	03/10/11 03/10/11	03/18/11 03/18/11	KWG1102237 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	

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

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 Acceptable
n-Triacontane	93	50-150	03/18/11	

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:

1 of 1

SuperSet Reference:

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

Sample Name	Lab Code	Sur1	Sur2
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.

 $\begin{array}{ll} Printed: & 03/23/2011 & 14\cdot09\cdot51 \\ u: Stealth \ Crystal.rpt \ Vorm2.rpt & v. \\ \end{array}$

Form 2A - Organic

SuperSet Reference:

Page 59 0172 1 of 1 RR126765

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

SW04-001DUP

			Sample	KWG11 Duplicate	02237-1	Relative Percent	RPD Limit
Analyte Name	MRL	MDL	Result	Result	Average	Difference	
Diesel Range Organics (DRO)	270	12	110	110	110	4 #	30
Residual Range Organics (RRO)	530	20	280	280	280	1 #	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.

SuperSet Reference:

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

		Sample	Batch Q KWG110 Duplicate	02237-2	Relative Percent	RPD Limit	
Analyte Name	MRL	MDL	Result	Result	Average	Difference	
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.

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			%Rec
Analyte Name	Result	Expected	%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.

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

File ID: J:\GC21\DATA\031711F\0317F216.D

Lab Code:

KWG1102237-4

Instrument ID: GC21

Extraction Method:

EPA 3510C

Level: Low

Analysis Method:

NWTPH-Dx

Extraction Lot: KWG1102237

This Method Blank applies to the following analyses:

			Date	Time
Sample Name	Lab Code	File ID	Analyzed	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

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

File ID: J:\GC21\DATA\031711F\0317F214.D

Lab Code:

KWG1102237-3

Instrument ID: GC21

Extraction Method:

EPA 3510C

Level: Low

Analysis Method:

NWTPH-Dx

Extraction Lot: KWG1102237

This Lab Control Sample applies to the following analyses:

			Date	Time
Sample Name	Lab Code	File ID	Analyzed	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

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

Column: ZB-1

Instrument ID:

GC21

Level ID	File ID	Level ID	File ID
A	J:\GC21\DATA\031311F\0313F110.D	I	J:\GC21\DATA\031311F\0313F136.D
В	J:\GC21\DATA\031311F\0313F112.D	J	J:\GC21\DATA\031311F\0313F138.D
C	J:\GC21\DATA\031311F\0313F114.D	K	J:\GC21\DATA\031311F\0313F140.D
D	J:\GC21\DATA\031311F\0313F116.D	L	J:\GC21\DATA\031311F\0313F142.D
E	J:\GC21\DATA\031311F\0313F118.D	M	J:\GC21\DATA\031311F\0313F144.D
F	J:\GC21\DATA\031311F\0313F120.D	N	J:\GC21\DATA\031311F\0313F146.D
G	J:\GC21\DATA\031311F\0313F132.D		

J:\GC21\DATA\031311F\0313F134.D Η

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)										1			1		
				G	20	914	Н	50	923	I	200	981	J	500	971
	K	2000	936	L	5000	999	М	20000	902	N	50000	923	1		
Residual Range Organics (RRO)			,	В	50	695	С	200	587	D	500	618	Е	2000	559
	F	5000	594	; ; ; ;			!			 					
o-Terphenyl		······································		i	·		:			F E	····				
				G	1.0	1260	Н	2.5	1240	I	10	1310	J	25	1250
	K	100	1230	L	250	1260							1		
n-Triacontane				1									1		
				G	1.0	1130	Н	2.5	1090	I	10	1120	J	25	1060
	K	100	1080	L	250	1080				1					

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

			Calibratio	n Evaluati	ion	
Analyte Name	Compound Type	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

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

Calibration ID: CAL10358

Analysis Method:

NWTPH-Dx

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

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: **Analysis Method:**

External Standard

NWTPH-Dx

Calibration Date: 03/14/2011

Calibration ID: CAL10358

Analysis Lot: KWG1102579

Column ID: ZB-1

Units: ppm

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	044	005	_	NT A	1.50/	A
. ,			944	995	3	NA	\pm 15 %	AverageRF
Residual Range Organics (RRO)	1000	960	611	588	-4	NA	\pm 15 %	AverageRF
o-Terphenyl	50	50	1260	1260	1	NA	\pm 15 %	AverageRF
n-Triacontane	50	50	1090	1090	0	NA	± 15 %	AverageRF

QA/QC Results

Client:

File ID:

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: **Analysis Method:**

External Standard

NWTPH-Dx

Calibration Date: 03/14/2011 Calibration ID: CAL10358

Analysis Lot: KWG1102579

Units: ppm

J:\GC21\DATA\031711F\0317F242.D

J:\GC21\DATA\031711F\0317F244.D

Column ID: ZB-1

			Average	CCV				
Analyte Name	Expected	Result	RF	\mathbf{RF}	% D	%Drift	Criteria	Curve Fit
Diesel Range Organics (DRO)	1000	1000	944	983	4	NA	\pm 15 %	AverageRF
Residual Range Organics (RRO)	1000	930	611	565	-7	NA	\pm 15 %	AverageRF
o-Terphenyl	50	49	1260	1230	-2	NA	\pm 15 %	AverageRF
n-Triacontane	50	46	1090	1000	-8	NA	± 15 %	AverageRF

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: Analysis Method:

External Standard

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	\pm 15 %	AverageRF
o-Terphenyl	50	49	1260	1230	-2	NA	\pm 15 %	AverageRF
n-Triacontane	50	48	1090	1050	-4	NA	± 15 %	AverageRF

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

			Date Analysis	Start		Date Analysis	Finish
File ID	Sample Name	Lab Code	Started	Time	Q	Finished	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

QA/QC Results

Client:

Battelle Marine Sciences Lab

Project:

Non-Dry Dock Stormwater SW04/54220

Sample Matrix:

Water

Extraction Prep Log Diesel and Residual Range Organics

Extraction Method: Analysis Method:

EPA 3510C

NWTPH-Dx

Extraction Lot: KWG1102237

Level: Low

Service Request: K1101848

Date Extracted: 03/10/2011

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 (360) 681-4564

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Non-Dry Dock Stormwater SW05_06 March 8-11, 2011 Chemical Analyses Equipment and Field Blanks

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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

								11110. μg/L		
Sample ID -		Fraction	_		Collection					
Metals	Station Code	(Total/Diss)	Type Name	MSL Code	Date	Hg	As	Ag	Al	Cd
				Instrument:		CVAF	ICP-MS	ICP-MS	ICP-MS	ICP-MS
Laboratory Achieve	ed Detection Lin	nits (Freshwate	er)			0.0001	0.03	0.002	0.3	0.004
Freshwater Reporti	ng Limit (MDL*	3.18)	, 			0.0003	0.1	0.006	1.0	0.01
SW05										
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		03/08/11	0.00246	0.694	0.00520 J	15.0	0.0931
SW05-0034	PSNS008	TME	Composite_equal_time		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		03/08/11	0.00210	0.387	0.00433 J	36.5	0.172
SW06										
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		03/09/11	0.00100	0.901	0.00289 J	10.9	0.108
SW06-0015	PSNS032	TME	Composite_equal_time		03/10/11	0.0129	1.23	0.0253	772	0.317
SW06-0016	PSNS032	DME	Composite_equal_time		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

							11115. μg/L			
Sample ID -		Fraction							CVAF Batch	ICP-MS Batch
Metals	Station Code	(Total/Diss)	Type Name	MSL Code	Cr	Cu	Pb	Zn	ID	ID
				Instrument:	ICP-MS	ICP-MS	ICP-MS	ICP-MS		
Laboratory Achieve	ed Detection Lin	nits (Freshwate	er)		0.08	0.007	0.002	0.05		
Freshwater Reporting		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		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		1.92	5.08	0.149	59.5	040511HGA	031811-6100
SW06-0015	PSNS032	TME	Composite_equal_time		2.76	12.4	11.8	114	040511HGA	031811-6100
SW06-0016	PSNS032	DME	Composite_equal_time		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 ENVVEST 2010_SW05_06

Station Code	Type Name	Collection Date	Analysis Date	Analysis Method	Component	Units	Result	Detection Limit	Reporting Limit
	• • • • • • • • • • • • • • • • • • • •		•	•					
PSNS096 PSNS032	Composite_equal_time	03/10/2011 03/10/2011	03/18/2011 S 03/18/2011 S		Hardness, Total as CaCO3	mg/L	30.2 = 10.9 =	0.8 0.8	2.0 2.0
	Composite_equal_time	03/10/2011	03/18/2011 S		Hardness, Total as CaCO3	mg/L	10.9 = 9.7 =	0.8	2.0
PSNS008	Composite_equal_time				Hardness, Total as CaCO3	mg/L			
PSNS015 PSNS008DUP	Composite_equal_time	03/08/2011 03/08/2011	03/18/2011 S 03/18/2011 S		Hardness, Total as CaCO3 Hardness, Total as CaCO3	mg/L	52.1 = 8.8 =	0.8 0.8	2.0 2.0
	Composite_equal_time				*	mg/L		0.8	2.0
PSNS032	Composite_equal_time	03/10/2011	03/18/2011 S		Hardness, Total as CaCO3	mg/L	10.1 =		
PSNS096	Composite_equal_time	03/10/2011	03/14/2011 S		Solids, Total Suspended (TSS)	mg/L	25.5 =	5.0	5.0
PSNS032	Composite_equal_time	03/10/2011	03/14/2011 S		Solids, Total Suspended (TSS)	mg/L	10 =	5.0	5.0
PSNS008	Composite_equal_time	03/08/2011	03/14/2011 S		Solids, Total Suspended (TSS)	mg/L	25 =	5.0	5.0
PSNS015	Composite_equal_time	03/08/2011	03/14/2011 S		Solids, Total Suspended (TSS)	mg/L	19.5 =	5.0	5.0
PSNS008DUP	Composite_equal_time	03/08/2011	03/14/2011 S		Solids, Total Suspended (TSS)	mg/L	25 =	5.0	5.0
PSNS032	Composite_equal_time	03/10/2011	03/14/2011 S		Solids, Total Suspended (TSS)	mg/L	31.5 =	5.0	5.0
PSNS096	Composite_equal_time	03/10/2011	03/15/2011 S		Carbon, Total Organic	mg/L	1.17 =	0.07	0.50
PSNS032	Composite_equal_time	03/10/2011	03/15/2011 S		Carbon, Total Organic	mg/L	2.17 =	0.07	0.50
PSNS008	Composite_equal_time	03/08/2011	03/15/2011 S		Carbon, Total Organic	mg/L	2.92 =	0.07	0.50
PSNS015	Composite_equal_time	03/08/2011	03/15/2011 S		Carbon, Total Organic	mg/L	3.43 =	0.07	0.50
PSNS008DUP	Composite_equal_time	03/08/2011	03/15/2011 S	SM 5310 C	Carbon, Total Organic	mg/L	2.8 =	0.07	0.50
PSNS032	Composite_equal_time	03/10/2011	03/15/2011 S		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 N	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	240 = J	12	270
PSNS008	Grab	03/08/2011	03/22/2011 N	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	830 = , O	21	540
PSNS015	Grab	03/08/2011	03/22/2011 N	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	170 = J	12	260
PSNS015	Grab	03/08/2011	03/22/2011 N	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	540 = , O	20	520
PSNS032	Grab	03/08/2011	03/22/2011 N	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	170 = J	12	260
PSNS032	Grab	03/08/2011	03/22/2011 N	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	420 = J	20	520
PSNS032DUP	Grab	03/09/2011	03/22/2011 N	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	170 = J	12	270
PSNS032DUP	Grab	03/09/2011	03/22/2011 N	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	440 =, J	20	530
PSNS032	Grab	03/09/2011	03/22/2011 N		Diesel Range Organics (DRO)	ug/L	210 = J	11	250
PSNS032	Grab	03/09/2011	03/22/2011 N		Residual Range Organics (RRO)	ug/L	530 =, O	19	500
PSNS096	Grab	03/09/2011	03/22/2011 N	NWTPH-Dx	Diesel Range Organics (DRO)	ug/L	110 =, J	12	270
PSNS096	Grab	03/09/2011	03/22/2011 N	NWTPH-Dx	Residual Range Organics (RRO)	ug/L	280 = J	20	530

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 -		Fraction											ICP-MS
Metals	Station Code	(Total/Diss)	Sample Type	MSL Code	As	Ag	Al	Cd	Cr	Cu	Pb	Zn	Batch ID
				Instrument:	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	
Laboratory A	chieved Detecti	on Limits (Fre	eshwater)	0.03	0.002	0.3	0.004	0.08	0.007	0.002	0.05		
Freshwater Ro	eporting Limit ((MDL* 3.18)			0.1	0.006	1.0	0.01	0.3	0.02	0.006	0.2	
METHOD	T A NITZG												
METHOD B MB-1	LANKS	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
MD-1		TIVIE	Presilwater	I KIVI DIAIIK	0.03 0	0.002 0	0.5 0	0.004 0	0.08 0	0.007 0	0.002 0	0.0073 J	031811-0100
LABORATO	ORY CONTRO	L SAMPLES	S										
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
			Perce	ent Recovery, LCS	103%	102%	111%	101%	107%	102%	101%	106%	
MATRIX SP	IKE RESULT	<u>S</u>											
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		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%		
			Perce	ent 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%	
REPLICATI	E 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		0.973	0.0192	282	0.174	1.76	6.98	4.25	72.3	031811-6100
			1 - 1 -	Mean	0.955	0.0196	282	0.179	1.75	6.98	4.21	72.1	
				RPD	3.9%	3.6%	0.0%	5.6%	1.1%	0.1%	1.9%	0.7%	
	REFERENCE												
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%	

Non-Dry Dock Stormwater ENVVEST 2010_SW05_06 Metals in Water UNITS: µg/L

		Fraction				
Sample ID - Metals	Station Code	(Total/Diss)	Sample Type	MSL Code	Hg	CVAF Batch ID
T. 1	D. C. T. C.			Instrument:	CVAF	
Laboratory Achieved Reporting Limit (MD					0.0001 0.0003	
METHOD BLANKS					0.000	
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 CO	ONTROL SAMPLES	S				
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
				ent Recovery, LCS 1		
			Perce	ent 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
				ent Recovery, LCS 1	97%	
			Perce	ent Recovery, LCS 2	117%	
MATRIX SPIKE RI		DME	C ' 1	2174.52	0.00100	04051111614
SW06-0031 MS1	PSNS096 PSNS096	DME DME	Composite_equal_time Composite_equal_time		0.00100 0.0157	040511HGA 040511HGA
MSD1	PSNS096	DME	Composite_equal_time		0.0157	040511HGA 040511HGA
MSD1	1 3113030	DME	Composite_equal_time	Spiking Level, MS		0403111IGA
				Spiking Level, MSD	0.0154	
				rcent Recovery, MS		
				cent Recovery, MSD		
				RPD	0.1%	
SW05-0038	PSNS008FD	TME	Composite_equal_time	3174-59	0.0131	040511HGA
MS2	PSNS008FD	TME	Composite_equal_time		0.0349	040511HGA
MSD2	PSNS008FD	TME	Composite_equal_time		0.0345	040511HGA
			•	Spiking Level, MS	0.0219	
				Spiking Level, MSD	0.0243	
			Pe	rcent Recovery, MS	100%	
			Pero	cent Recovery, MSD	88%	
				RPD	12.1%	
REPLICATE PREC						
SW05-0036	PSNS015	TME	Composite_equal_time		0.163	040511HGA
DUP	PSNS015	TME	Composite_equal_time		0.0300	040511HGA
TRP	PSNS015	TME	Composite_equal_time		0.174	040511HGA
QRD	PSNS015	TME	Composite_equal_time		0.0307	040511HGA
				Mean RSD	0.0995 80% *	
(re-prepared sample)				NSD	ðU 70 °	
SW05-0036	PSNS015	TME	Composite_equal_time	3174-57r5	0.0367	040811HGA
DUP	PSNS015	TME	Composite_equal_time		0.0280	040811HGA
	15115015	1	50mposite_equal_time	Mean	0.0323	0.001111011
				RPD	27%	
					2. / 0	

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
				Instrument:	CVAF	
STANDARD REFE	RENCE MATERIA	L				
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 ≤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 inidicates 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: 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.

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.

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.

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.

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 $4.0\pm2^{\circ}$ 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

03/18/11

by ICP-MS

(As, Ag, Al, Cd, Cr, Cu, Pb, Zn)

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-1-013*, *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 ≤20% PD
- * Precision result outside OC 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.

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SW05-0003	PSNS 032	3.8-11 (0852)	SW						×						2	Grab	5		
SW05-0004	PSNS 032 DUP		SW						X						2	Grab	5	Dup of 032	
SW05-0005	PSNS 008	3-8-11 (0855)		X	×	X	×	×								Comp	5	Co~d = 36 Turb=	30
SW05-0006	PSNS OO 8 DUP	3.8.11 (0855)	SW	Х	X	X		X							<i>t</i>	Comp	5	Cond = 37 Turb= 29	Dup of 008
SW05-0007	PSNS 015	3.8.11 (1139)	SW	X		X	X		Ĺ		Ĺ				1	Comp	5	COND = 374 Turb=23	
SW05-0008	PSNS 032	3.8.11 (0904)	SW	X	X	X	X	X							_	Comp	5	COND = 79 Turb=15	
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SAMPLE CHAIN OF CUSTODY FORM

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Page: 1 of 3 SW = Stormwater

Battelle

Marine Sciences Laboratory 1529 West Sequim Bay Road

Project No.: 54220 Project: Non-dry Dock Stormwater SW05 and SW06																Laboratory:	Battelle MS	L
Project	: Non-dry Dock Sto	rmwater SW05 an	nd SW06													Attention: J	lill Brandent	erger
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SW06-0042	PSNS096	03/10/11 0111	SW			Х									1	comp	SW06	
SW06-0043	PSNS096	03/10/11 0111	SW				Х								1	comp	SW06	
SW05-0014	PSNS032	03/10/11 0904	SW	Х											1	comp	SW05	
SW05-0015	PSNS032	03/10/11 0904	SW		Х										1	comp	SW05	
SW05-0016	PSNS032	03/10/11 0904	SW			X_					Ш				1	comp	SW05	
SW05-0017	PSNS032	03/10/11 0904	SW				Х							\perp	1	comp	SW05	
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Battelle SAMPLE CHAIN OF CUSTODY FORM Marine Sciences Laboratory Date: 3/10/2011 1529 West Sequim Bay Road SW = Stormwater Page: 2 of 3 Laboratory: Battelle MSL Project No.: 54220 Jill Brandenberger Attention: Project: Non-dry Dock Stormwater SW05 Phone: (360) 681-4564 Analyze parameters per QAP/FSP containers TME/DME Hardness 000 DME 700 TSS TPH Sample Type (grab Collection ģ Storm# vs. Comp) Lab Code Date/Time Matrix Station ID Sample Label SW05 SW comp PSNS008 3/8/11 0855 Х SW05-0019 SW05 SW 3/8/11 0855 comp SW05-0020 PSNS008 SW05 PSNS008 3/8/11 0855 SW Х comp SW05-0021 SW05 SW 1 PSNS015 comp 3/8/11 1139 SW05-0022 Х SW05 SW PSNS015 comp 3/8/11 1139 Х SW05-0023 SW05 SW 1 SW05-0024 PSNS015 3/8/11 1139 X comp SW05 SW 3/8/11 1139 Х comp SW05-0025 PSNS015 SW05 SW 1 field dup comp SW05-0026 PSNS 008 FD 3/8/11 0855 SW05 field dup SW 1 SW05-0027 PSNS 008 FD 3/8/11 0855 х comp SW05 field dup SW 1 SW05-0028 PSNS 008 FD comp 3/8/11 0855 X SW05 SW field dup PSNS 008 FD comp SW05-0029 Х 3/8/11 0855 Received by: Total # of Containers Relinquished by: Shipment Method: 1400 Fedex to CAS Date Signature Signature 250152 Sample Disposition: Printed Name **Printed Name** Company Distribution: Relinquished by: Received by: 1) PNNL 2) CAS Signature Time Signature Date 3) TAI

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Battelle SAMPLE CHAIN OF CUSTODY FORM Marine Sciences Laboratory Date: 3/10/2011 1529 West Sequim Bay Road SW = Stormwater Page: 3 of 3 |Laboratory: Battelle MSL Project No.: 54220 Attention: Jill Brandenberger Project: Non-dry Dock Stormwater SW06 Phone: (360) 681-4564 Analyze parameters per QAP/FSP No. containers TME/DME Hardness DME DOC TSS TOC Sample Type (grab Collection vs. Comp) Storm# Lab Code Date/Time Matrix Station ID Sample Label SW06 1 SW comp 3/10/11 0513 SW06-0011 PSNS032 SW06 SW 1 3/10/11 0513 comp PSNS032 SW06-0012 SW06 1 SW 3/10/11 0513 comp PSNS032 SW06-0013 SW06 SW 3/10/11 0513 X comp PSNS032 SW06-0014 SW06 SW grab PSNS032 3/8/11 1310 X SW06-0001 3/9/11 1mB 3/11/11 Total # of Containers Received by: Relinquished by: Shipment Method: Fedex to CAS Signature Date Signature Sample Disposition: **Printed Name** Company **Printed Name** Distribution: Received by: Religquished by: 1) PNNL 3/10/11 OOK 2) CAS Time Signature Signature Aborba 3) TAI **Printed Name Printed Name** Company

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SAMPLE CHAIN OF CUSTODY FORM

Battelle

Date:	3/10/2011												-			Marine Scien	ces Labora	tory
Page:	1 of 1		SW = Stori	mwa	ater											1529 West S	equim Bay	Road
Project No.:	54220															Laboratory: I	Battelle MS	L į
Project:	Non-dry Dock Sto	rmwater SW05 ar	nd SW06													Attention: J	ill Brandent	perger
				An	alyz	ер	arar	net	ers	per	QAF	?/F	SP_				Phone: (36	60) 681-4564
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				ess		O		₹	111	_		1	İ		ě			
				등	100	DOG	TSS	<u>:</u>	DME	TPH		ł	1	- 1	ā			
				Hardness	-			TME/DME							containers	Sample		
		Collection						_			1					Type (grab		
Sample Label	Station ID	Date/Time	Matrix	Ĺ											ž	vs. Comp)	Storm#	Lab Code
SW06-0030	PSNS096	03/09/11 1340	SW					Х							1	comp	SW06	3174*51
SW06-0031	PSNS096	03/09/11 1340	SW	L					X		\perp				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	L					Х						1	comp	SW05	3174*54
SW05-0034	PSNS008	03/08/11 0855	SW					Х					\perp		1	comp	SW05	3174*55
SW05-0035	PSNS008	03/08/11 0855	SW						Х						1	comp	SW05	3174*56
SW05-0036	PSNS015	03/08/11 1139	SW					Х							1	comp	SW05	3174*57
SW05-0037	PSNS015	03/08/11 1139	SW						Х						1	comp	SW05	3174*58
SW05-0038	PSNS008FD	03/08/11 0855	SW					Х							1	comp	SW05	3174*59
SW05-0039	PSNS008FD	03/08/11 0855	SW						Х						1	comp	SW05	3174*60
SW06-0015	PSNS032	03/10/11 0513	SW					Х					\perp		1	comp	SW06	3174*61
SW06-0016	PSNS032	03/10/11 0513	SW						Х						1	comp	SW06	3174*62
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reprinted 6	Signature am original s	Date 3/10/11	Time					Sigr	natur	е						Retained at	Battelle	
7	Printed Name	Company			Printed Name											Sample Disp	osition:	
Relinquished by:		<u> </u>			Re	ceiv	ed	by:								Distribution:		
															1) PNNL			
	Signature	Date	Time					Sigr	atur	е						2) CAS		
					-											3) TAI		
	Printed Name	Company			Printed Name													

Battelle SAMPLE CHAIN OF CUSTODY FORM Marine Sciences Laboratory Date: 3/10/2011 1529 West Sequim Bay Road SW = Stormwater Page: 1 of 1 Laboratory: Battelle MSL Project No.: 54220 Attention: Jill Brandenberger Project: Non-dry Dock Stormwater SW05 Analyze parameters per QAP/FSP Phone: (360) 681-4564 TME/DME containers Hardness DME 700 200 TSS H_D Sample Type (grab Collection Š vs. Comp) Storm# Lab Code Sample Label Station ID Date/Time Matrix 3174*51 SW0.6-0030 SW comp SW086 PSNS096 SW SW0\$6 3174*52 SW05-0031 PSNS096 comp 3174*53 SW SW05 comp SW05-0032 PSNS032 SW SW05 3174*54 SW05-0033 PSNS032 х comp 3174*55 SW SW05 SW05-0034 PSNS008 х comp SW 3174*56 SW05 SW05-0035 comp PSNS008 х 3174*57 SW SW05 SW05-0036 PSNS015 X comp 3174*58 SW05 SW05-0037 PSNS015 SW Х comp **SW05** 3174*59 PSNS 008 FD SW comp SW05-0038 X SW05 3174*60 SW05-0039 PSNS 008 FD SW comp 5006 3174-61 1406-0015 PSONS 037 5W com 12 X 52 SW 060 3174-62 5W06-0016 P3N>037 comp Received by: Total # of Containers Relinquished by: Shipment Method: Retained at Battelle Signature Time Signature Date Sample Disposition: Printed Name Printed Name Company Distribution: Relinquished by: Received by: 1) PNNL 2) CAS Signature Time Signature Date 3) TAI **Printed Name** Printed Name Company

SAMPLE CHAIN OF CUSTODY FORM																Battelle		
Date	: 3/11/2011															Marine Scien	ices Labora	tory
Page	: 1 of 1		SW = Storr	nwa	ater											1529 West S	equim Bay	Road
Project No.	: 54220			1												Laboratory:	Battelle MS	L
Project	: Non-dry Dock S	Stormwater SW05 ar	nd SW06	ł												Attention: J	lill Brandent	
				Ana	alyz	ер	araı	met	ers	per	QA	\P/F	SP				Phone: (36	60) 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
SW06-0009	PSNS096	03/09/11 1340	SW							х	1	\Box			2	grab	SW06	
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Relinquished by:	L		<u> </u>	<u> </u>		l ceiv				<u> </u>	L	<u></u>	Щ		\dashv	Total # of Co	ntainers	
rteiliquistied by.				Į	170	CIV	cu	υy.							l	TOTAL # 01 CO	maniers	
Jm Ban	lle		03/11/11 151	5												Shipment Me	sthod:	
Signature Date Time		5			-	Ciar								Fedex to CAS				
Jill Brandenberger	Signature	PNNL	Tillie	Signature											J	I EUEX IO OA	5	
	Printed Name	Company						Prin	ted I	Nam	ne					Sample Disp	osition:	
Relinquished by:				Received by:											Distribution: 1) PNNL		<u> </u>	
	Signature	Date	Time					Sigr	natur	re				-		2) CAS 3) TAI		
	Printed Name	Company		Printed Name				3) IAI										





SAMPLE LOGIN

Project Manager: Brandenberger
Date Received: 03/09/11

Batch: 8

Login Designee: JMB

Marine Sciences Laboratory 1529 West Sequim Bay Road Sequim, Washington 98382

PH: (360) 681-4565

Project: Non Dry Dock SW05

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

SOP#: MSL-A-001 Page 1 of 1





SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 03/09/11

Batch: 9

Login Designee: JMB

Marine Sciences Laboratory 1529 West Sequim Bay Road Sequim, Washington 98382

PH: (360) 681-4565

Project: Non Dry Dock SW06

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

SOP#: MSL-A-001 Page 1 of 1

LUG-IN CHECKLIS! Reference SOP# MSL-A-001
Central File #: 3174 Sample No(s): 53-68 62 31111 Batch:
Project Name: Pont 5005 Project Manager: Brandenters ex
TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)
Yes No WP#
Navy-type Project (requires high-level sample tracking procedures)
USDA Samples (see Compliance Agreement Checklist) PM Verification:
Filter Samples: Amount: 300 ml Entire sample Half of sample
Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Login Lab)
Special instructions: 40/17 for TOC DOL TSS Hardness
Sample Preservation Instructions: webls: 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 5005-005=1
Custody seal present Seal intact? YES NO
001
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 websls)
Sample condition(s): Acceptable Sther (explain):
Container type: Tellan Poly Class Cap. Vial Other:
Notes:
Completed By: 0, /2500 Date/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: 10.2% HN03 Notes: 1M2 1 0M2 Lot# 12090/0
0.5% HCl (Hg samples) Notes: Lot#
Refrigerate/Freeze Notes: TOC OOC 735 Herdness TPA
Other Notes:
Completed By: B, Lase Kettahoe Date/Time: 3/9/11 1740
Storage Shelf: V 11 1

LOG-IN CHECKLIST		nce SOP# MSL-A-001
Central File #: 3174 Sample No(s): 51-52-5	51-62 Mulu Batch:	9
Project Name: PSN5 5W05 5 5W06		maden berger
TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when	n possible)	7
Matrix: V	VP#	
Navy-type Project (requires high-level sample tracking	na procedures)	
USDA Samples (see Compliance Agreement Checklist		
Filter Samples: Amount: 500 - Entire sam	nple Half of sample	
Freeze dry sample(s) - samples will be weighed and pl	laced in ultralow temp freezer (L	ogin Lab)
Special instructions: 501/2	TOL POL TSS HAVE	كحب
1 010	21. HND, others	Y'C
See LIMS for archive/disposal inform	nation	
TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN		
Yes No N/A Indicate in Appropriate Box		
Custody seal present Seal intac	t? YES NO	30003-010 = 2.6°C
Cooler temperature (acceptable range: 4±2°C	or solids:frozen)	5w06= 71 °C
(if multiple coolers, note temp. of each)		*c
Project Manager notified of any custody/logii	n discrepancies (cooler temp, spo	nsor codes, etc)
Comment/Remedy:		
Were all chain of custody forms signed and de	ated?	
Were samples filtered at MSL? 500 ml	for metals	
Sample condition(s):	plain):	
Container type: Tellan Pels (Plass) Cap. Vial	Other:	
Notes:		
Completed By: D. San	Date/Time: 3/10/4	1150
SAMPLE PRESERVATION		
	C.C. / C	
Sample(s) were preserved prior to arrival at MSL (noted on C		in) .
Random pH checked for ~10% of samples (use dip paper)	Sample IDs:	
Complete pH check required for project (use pH meter and r	ecord on pH Record form)	
Sample(s) were preserved at MSL		
Type: 0.2% HN03 Notes: TV4	5 PMZ LO	1# 12090/6
-GH-		1# /2090/6 1#
Type: 0.2% HNO3 Notes: TV4	Lo	7 3 7 7 9
Type: 0.2% HNO3 Notes:	Lo	7 3 7 7 0
Type: 0.2% HNO3 Notes: TV4 0.5% HCl (Hg samples) Notes: TOC	Lo	7 3 7 7 0

Reprinted 1/4 Kllo2162

SAMPLE CHAIN	OF CUSTODY FO	RM														Battelle		
Date	: Reprinted 03/11/1	11 JMB														Marine Scien	nces Labora	tory
Page	: 1 of 3		SW = Stor	mwa	ater											1529 West S		
Project No.																Laboratory:		
Project	: Non-dry Dock Sto	rmwater SW05 ar	nd SW06														Jill Brandenl	
				An	alyz	ер	arar	nete	ers	per	QA	P/F	SP					60) 681-4564
		Collection		Hardness	TOC	DOC	TSS	TME/DME	DME	ТРН					containers	Sample Type (grab		
Sample Label	Station ID	Date/Time	Matrix											ı	Š	vs. Comp)	Storm#	Lab Code
SW05-0001	PSNS008	03/08/11 0829	SW	 				一		х					2	grab	SW05	Lab Oodc
SW05-0002	PSNS015	03/08/11 0934	SW					_		x		-		\dashv	2	grab	SW05	
SW05-0003	PSNS032	03/08/11 0852	sw					_		Х				\dashv	2	grab	SW05	
SW05-0004	PSNS032DUP	03/08/11 0855	SW							х				1	2	grab	SW05	
Removed line 3/1	1/11 JMB	***************************************					┪									J		
6 W 06-0040	PSNS096	03/10/11 0111	SW	х											1	comp	SW06	
SW06-0041	PSNS096	03/10/11 0111	SW		х			T						\neg	1	comp	SW06	
SW06-0042	PSNS096	03/10/11 0111	SW			х									1	comp	SW06	
SW06-0043	PSNS096	03/10/11 0111	SW				х								1	comp	SW06	
SW05-0014	PSNS032	03/10/11 0904	SW	х				\neg						\neg	1	comp	SW05	
SW05-0015	PSNS032	03/10/11 0904	SW		х			\neg					\Box		1	comp	SW05	
SW05-0016	PSNS032	03/10/11 0904	SW			х		\Box							1	comp	SW05	
SW05-0017	PSNS032	03/10/11 0904	SW			\neg	x								1	comp	SW05	
SW05-0018	PSNS008	03/10/11 0855	SW	Х									\Box	\neg	1	comp	SW05	
Relinquished by: Immu	3/1	idu (reprint	rd)		Red	eiv	ed b	y:								Total # of Co Shipment Me		
1 sent s		Date original	Time					Sign	ature	9			****			Fedex to CAS		
•	Printed Name	Company						Print	ed N	lame					1	Sample Dispe	osition:	
Relinquished by:		· · · · · · · · · · · · · · · · · · ·	······································		Red	eiv	ed t	y:								Distribution:		
								_								1) PNNL		
	Signature	Date	Time					Sign	ature	e						2) CAS		
							-	_								3) TAI		
	Printed Name	Company						Print	ed N	lame	3					,	***********	

Reprinted 2/4, KNOZ162

Battelle SAMPLE CHAIN OF CUSTODY FORM Marine Sciences Laboratory Date: 3/10/2011 1529 West Sequim Bay Road SW = Stormwater Page: 2 of 3 Laboratory: Battelle MSL Project No.: 54220 Attention: Jill Brandenberger Project: Non-dry Dock Stormwater SW05 Phone: (360) 681-4564 Analyze parameters per QAP/FSP TME/DME containers Hardness DME DOC Sample Type (grab Collection Date/Time vs. Comp) Storm# Lab Code Matrix Sample Label Station ID SW05 PSNS008 3/8/11 0855 SW comp SW05-0019 SW SW05 3/8/11 0855 comp SW05-0020 **PSNS008** SW05 SW SW05-0021 PSNS008 3/8/11 0855 X comp SW05 SW 1 3/8/11 1139 comp SW05-0022 **PSNS015** SW05 3/8/11 1139 SW Х 1 SW05-0023 PSNS015 comp SW05 SW05-0024 PSNS015 3/8/11 1139 SW X comp SW05 SW05-0025 PSNS015 3/8/11 1139 SW X comp SW05-0026 PSNS 008 FD 3/8/11 0855 SW comp SW05 field dup SW SW05 field dup SW05-0027 PSNS 008 FD 3/8/11 0855 X comp SW05 field dup SW SW05-0028 PSNS 008 FD 3/8/11 0855 x comp SW05-0029 PSNS 008 FD 3/8/11 0855 SW X comp **SW05** field dup Total # of Containers Received by: Relinquished by: 1400 Shipment Method:) Fedex to CAS Date Signature Signature 250132 Sample Disposition: Company Printed Name **Printed Name** Received by: Distribution: Relinguished by: 1) PNNL 2) CAS ime Signature Signature Date 3) TAI

Printed Name

Printed Name

Company

Reported 3/4 KNOZ162

SAMPLE CHAIN	OF CUSTODY FO	RM														Battelle		
Date:	3/10/2011															Marine Scien	ices Labora	itory
	3 of 3		SW = Stor	mwa	iter											1529 West S	Sequim Bay	Road
Project No.:				1												Laboratory:	Battelle MS	L
	Non-dry Dock Sto	rmwater SW06	į	1												Attention: J	lill Branden	
•	•			Ana	alyz	e pa	ran	nete	rs	per	QAF	P/FS	SP.				Phone: (30	60) 681-4564
				Hardness	тос	DOC	TSS	TME/DME	DME	TPH					containers	Sample		
		Collection		Ϊ́				2								Type (grab		
Sample Label	Station ID	Date/Time	Matrix												S O	vs. Comp)	Storm#	Lab Code
Sample Label	PSNS032	3/10/11 0513	SW	x	\vdash	-			 	╁	-	\vdash	-		1	comp	SW06	Lub Godo
SW06-0011		3/10/11 0513	SW	 ^-	V	-			├─	┼─	-	\vdash		_	1	comp	SW06	
SW06-0012 SW06-0013	PSNS032 PSNS032	3/10/11 0513	SW									comp	SW06					
SW06-0013	PSNS032	3/10/11 0513	SW	-		^ +	x	\vdash	-	┼─		$\vdash \dashv$	\dashv	\dashv	1	comp	SW06	
SW06-0014	PSNS032	3/8/11 1310	SW	-	-		<u> </u>		 	x	╫	\vdash	\vdash	\neg	1	grab	SW06	
37700-0001	F3113032	3/9/11	∦	 					-	^	\vdash	\vdash			•	91 3.2	01100	
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	Signature	Date	Time					Sign	naty	re			***************************************	C. PORTO, PRINCE	4	Fedex to CA	S	
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Relinquished by:	Hasin	3/10/11 1	MD0	Re	ceiv	ed I	by:								Distribution: 1) PNNL			
Bulo	Signature	Battelle	Time		_			Sign	natu	ire			-			2) CAS 3) TAI		
1	Printed Name	Company			<u> </u>			Prin	nted	Nam	ne .							

Reprinted 4/4

SAMPLE CHAIN	OF CUSTODY F	ORM														Battelle		
	e: 3/11/2011															Marine Scien	nces Labora	itory
	: 1 of 1		SW = Storr	ทพล	ater													
Project No.															1			
Project	:: Non-dry Dock S	tormwater SW05 ar	nd SW06													Attention: .	Jill Brandeni	perger
	7		1	An	alyz	e p	arar	net	ers	per	QAI	P/FS	SP_		_		Phone: (36	60) 681-4564
Sample Label	Station ID		Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME						No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW06-0009	PSNS096	03/09/11 1340	SW					\dashv		X					2	grab		
					_						_4	4	4	_	4	······································		
										\vdash	\dashv	-+	\dashv	+	\dashv			
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				\dashv	\dashv	7	\dashv	-1	\neg		十	+	\dashv	\dashv	\dashv			
											7	7	十	十	十		larine Sciences Laboratory 529 West Sequim Bay Road aboratory: Battelle MSL Ittention: Jill Brandenberger Phone: (360) 681 Sample ype (grab s. Comp) Storm# Lab grab SW06 Dital # of Containers simple Disposition: stribution: PNNL CAS	
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		<u> </u>					\dashv	\dashv	\dashv	_	_	\perp	_	_	4			
				\dashv	\dashv					\dashv	\dashv		+	+	\dashv			
Relinquished by:			1	-	L Rec	eiv.	ed b	T	1						+	Total # of Co	ntainers	
Jm Km	lle	0	3/11/11 151:			A	7 / 444	1			3/11	1/11	04	10		Sample Type (grab vs. Comp) Storm# La		
ill Brandenberger	Signature	Date PNNL	Time				W	Sign	áture	•	i	B	49	,	1	Fedex to CAS	6	
Dalia accial Ci	Printed Name	Company		\perp					ed N	lame							osition:	
Relinquished by:				- [1	Rec	eive	ed b	y:									-	
	Signature	Date	Time					Sign	ature	•					72) CAS		
	Printed Name	Company						Print	ed N	lame						•		

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SAMPLE CHAIN OF CUSTODY FORM

Date: 3/10/2011

Page: 1 of 3 SW = Stormwater

Project No : 54220

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Marine Sciences Laboratory
1529 West Sequim Bay Road
II aboratory: Battelle MSI

Battelle

Project No.:																Laboratory:		
Project:	Non-dry Dock Sto	rmwater SW05		١.									_			Attention: J	ill Branden	
	I	T	T	An	alyz	e pa	arar	nete	ers p	per	QAI	2/FS	32				Phone: (36	60) 681-4564
Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	ТРН					No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW05-0001	PSNS008	3/8/11 0829	SW					<u></u>	<u> </u>	X	<u> </u>				2	grab	SW05	
SW05-0002	PSNS032	3/8/11 0852	SW		<u> </u>	<u> </u>		<u> </u>	<u> </u>	X					2	grab	SW05	
SW05-0003	PSNS015	3/8/11 0934	SW		<u> </u>				<u> </u>	X	<u> </u>		<u> </u>		2	grab	SW05	Line I
SW05-0004	PSNS096	3/9/11 1340	SW						<u>L</u>	X					2	grab	SW05	
SW05-0005	PSNS 008 FD	3/8/11 0855	SW							X	_	<u> </u>			2	grab	SW05	
SW05-0040	PSNS096	3/10/11 0111	SW	×								<u> </u>			1	comp	SW05	
SW05-0011	PSNS096	3/10/11 0111	SW		×										1	comp	SW05	
SW05-0012	PSNS096	3/10/11 0111	SW			Х									1	comp	SW05	
SW05-0013	PSNS096	3/10/11 0111	SW			<u> </u>	X					<u> </u>			1	comp	SW05	
SW05-0014	PSNS032	3/8/11 0904	SW	X								<u> </u>			1	comp	SW05	
SW05-0015	PSNS032	3/8/11 0904	SW		X										1	comp	SW05	
SW05-0016	PSNS032	3/8/11 0904	SW			х						<u> </u>			1	comp	SW05	
SW05-0017	PSNS032	3/8/11 0904	SW			<u> </u>	X								1	comp	SW05	
SW05-0018	PSNS008	3/8/11 0855	SW	x								10		<u> </u>	1	comp	SW05	
Relinquished by:	Signature 950/52	3/10/11 Date Helle	Time		Re	ceiv	/ed	11	A/ patu	/ /// re/ ///		/ / 4	3/	11/11 HD	NL	Total # of Co Shipment Me Fedex to CA	ethod:	
	Printed Name	Company						Prir	nted	Nam	ie	* ***	W			Sample Disp	osition:	
Relinquished by:					Re	ceiv	/ed	by:								Distribution: 1) PNNL		
	Signature	Date	Time					Sig	natu	re			···			2) CAS 3) TAI		
	Printed Name	Company						Prir	nted	Nam	ie							

V1102162

SAMPLE CHAIN OF CUSTODY FORM

Battelle

Marine Sciences Laboratory Date: 3/10/2011 1529 West Sequim Bay Road Page: 2 of 3 SW = Stormwater Laboratory: Battelle MSL Project No.: 54220 Attention: Jill Brandenberger Project: Non-dry Dock Stormwater SW05 Phone: (360) 681-4564 Analyze parameters per QAP/FSP TME/DME containers Hardness DME TPH **TOC** DOC TSS Sample Collection Type (grab g vs. Comp) Date/Time Matrix Storm# Lab Code Sample Label Station ID 1 SW05 SW05-0019 PSNS008 3/8/11 0855 SW x comp SW SW05-0020 1 SW05 PSNS008 3/8/11 0855 Х comp SW SW05 SW05-0021 PSNS008 3/8/11 0855 Х 1 comp 3/8/11 1139 SW SW05 SW05-0022 PSNS015 comp SW PSNS015 3/8/11 1139 SW05 SW05-0023 1 х comp SW SW05 3/8/11 1139 SW05-0024 **PSNS015** x comp SW SW05-0025 **PSNS015** 3/8/11 1139 1 SW05 Х comp SW SW05 SW05-0026 PSNS 008 FD 3/8/11 0855 1 field dup Х comp SW05 SW05-0027 PSNS 008 FD 3/8/11 0855 SW 1 field dup lχ comp SW PSNS 008 FD 1 SW05 SW05-0028 3/8/11 0855 х comp field dup SW05-0029 PSNS 008 FD 3/8/11 0855 SW SW05 field dup Х comp Total # of Containers Received by: Relinquished by: Shipment Method: 00W Fedex to CAS Signature Signature Date Time 200032 Printed Name Sample Disposition: Printed Name Company Distribution: Relinguished by: Received by: 1) PNNL 2) CAS Time Signature Signature Date 3) TAI Printed Name Printed Name Company

original 3/3 161102162

SAMPLE CHAIN OF CUSTODY FORM

Battelle

Date:	3/10/2011															Marine Scien		
	3 of 3		SW = Stori	mwa	ater											1529 West S		
Project No.:																Laboratory: I		
Project:	Non-dry Dock Sto	ormwater SW06		١, ,	<u> </u>						7 A D	/EC	D				ill Brandent	
		1	1	An	aıyz	e pa	aran	nete	ers	perd	QAP T	75	7				Phone. (30	60) 681-4564
Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	ТРН					No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW06-0011	PSNS032	3/10/11 0513	SW	x	┼─		\vdash		_			\dashv	_	\dashv	1	comp	SW06	Lub Oode
SW06-0017	PSNS032	3/10/11 0513	SW	 	x	 	 	\vdash				\dashv	\dashv	\dashv	1	comp	SW06	
SW06-0013	PSNS032	3/10/11 0513	SW	T	 	x	†	ļ	\vdash			一	\neg	十	1	comp	SW06	
SW06-0014	PSNS032	3/10/11 0513	SW	T	<u> </u>		X								1	comp	SW06	
SW06-0001	PSNS032	3/8/11 1310	SW							х					1	grab	SW06	
*																		
					<u> </u>	<u> </u>		<u> </u>	<u> </u>									
								<u> </u>	<u> </u>	ļ								
					<u> </u>	<u> </u>		<u> </u>		ļ		_		_				
				Ь.			<u>L.</u>	<u> </u>		<u> </u>						T		
Relinquished by:		Sign	Notice and the second s	LINE CONTRACTOR CONTRA	TKe	Cen	ved	by:	4				, eggs	th Bout on Est bout	A. S. S. S. S. S. S. S. S. S. S. S. S. S.	Total # of Co		****
										The second second	-		Market State of the State of th			Shipment Me Fedex to CA		
	Signature	Date	Time	Station.				Sigi	natu	re	owen .		3		COLUMNIA	redex to CA	ა	
	Printed Name	Company				entre de la constitución de la c	A CONTRACTOR OF THE PARTY OF TH	Prin	nted	Nam	 е	A	-			Sample Disp	osition:	
Religquished by:	\ \	Company			Re	ceiv	veď,		7/	77		1//	10	1.	/_	Distribution:		
Bul	But Hase 3/10/11 1400						1	Juli	U	/	4	144	+ 3	111//	1	1) PNNL		
10	Signature	Date \	Time				7	Sig	natu	re ,	13 11 12		1	400)	2) CAS		
Vanla	Labora	Battelle			<u></u>		Y	W	11	_/	1/10)				3) TAI		
10	Printed Name	Company					**	Prir	ntęd	Nam	e							
* SWD5-100	09 3/9/11 139	10 2-500 He	L bottle	5.	af	rel	1 2	3/11/	11									
¥5N05-000	09 3/9/11 139	10 2-500 Ht	L bottle	5.	afi	ireli	V E	9///										

Columbia Analytical Services, Inc. Cooler Receipt and Preservation Form

Client / Project:				Service R	Lequest K	11	0216	2		
Received: 5/11///	Opened: <u>3/11///</u>		By:	1	_Unloade	d:	111/11	_By:_	A	<u> </u>
1 Samples were received via?	Mail Fed Ex) UPS	DHL	PDX	Courie	r H	and Delivered			
2. Samples were received in: (circ	Marine Ma	Box	Envelop		other				NA	
3. Were <u>custody seals</u> on coolers?	? NA	Y N	-		ny and wh					
If present, were custody seals i	ntact?	Y N	If	present, v	were they s	igned a	nd dated?	3	Y	N
Cooler Temp Temp °C Blank °C -0.5 H. 8	Thermometer ID 302 29/	Cooler/C ID	NA NA	7-	945 14 945 19	Trackin 155 9 155 2	ig Number 1515 1456		NA	Filed
7. Parliment 1. 1.			And the state of t			0.1				
7. Packing material used. <i>Inser</i>8. Were custody papers properly f	The state of the s	to a many productive production and a second contract of the c	Get Packs	wet 10	se Sleeve	s Oth	er	NA	(Y)	N
 Did all bottles arrive in good co 	. , ,		in the table	e below.				NA	Y	
10. Were all sample labels comple								NA	(Y)	Continue of the Continue of th
11. Did all sample labels and tags				or discrept	ancies in th	ne table	on page 2.	NA	Y	(\overline{N})
12. Were appropriate bottles/conta	iners and volumes r	eceived for	the tests in	ndicated?				NA	$(\widehat{\mathbf{Y}})$	N
13. Were the pH-preserved bottles	(see SMO GEN SOP)	received at	t the appro	priate pH	? Indicate	in the to	able below	NA	(Y)	N
14. Were VOA vials received with	out headspace? Ind	licate in the	table belo	w.				NA	Y	N
15. Was C12/Res negative?								NA	Y	N
6								100		
Sample ID on Bottle		Sample ID o	in COC				Identified by:			
						·				
	Bottle Count O	of Head-				Volume	Reagent Lo			
Sample ID		emp space	Broke p	H Re	agent	added	Number		nitials	Time
3N05-0004	1-500 MCL		K							
						······································				
			 							
Notes, Discrepancies, & Resolu	tions: RUE	4-501	0 m/	14/1 /	mber	·s f	or Swee	5-10	109	3/9/192/1
	not on	MA		. D-N	el r	Da V	Pottles-	In.	Chi	<u></u>
	Fisher A. M. V.	ger "soor"		-4 /	WEC.	C B	7-11175	JUK		~ ~ ~
					10 J			.¢i		
				·····						

Client: Battelle Marine Sciences Lab
Project: Non-dry Dock Stormwater SW05

Service Request No.: Date Received: K1102162 3/11/11

Sample Matrix: Water

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.

pproved by Houng Holme_Date 3-30-

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

Units: mg/L Basis: NA

Analysis Method:

SM 2340 C

Hardness, Total as CaCO3

C I N					Dilution	Date	Date	
Sample Name	Lab Code	Result Q	MRL	MDL	Factor	Extracted	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	

17

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

SW06-0040DUP

Duplicate Sample

				Sample		2-006DUP5		RPD
Analyte Name	Method	MRL	MDL	Result	Result	Average	RPD	Limit
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.

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Form 3B

11-0000172208 rev 00

SuperSet Reference:

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

Units: mg/L Basis: NA

Lab Control Sample Summary General Chemistry Parameters

> Lab Control Sample K1102162-LCS1

Analyte Name Method Result Amount % 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.

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SuperSet Reference:

11-0000172208 rev 00

Form 3C

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-LCS2

Spike

% Rec

Analyte Name

Method

Result

Amount % 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.

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Form 3C

SuperSet Reference:

11-0000172208 rev 00

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

Units: mg/L Basis: NA

Analysis Method:

SM 2540 D

Solids, Total Suspended (TSS)

					Dilution		Date	
Sample Name	Lab Code	Result Q	MRL	MDL	Factor	Extracted	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	

21

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

Batch QCDUP

Duplicate Sample

				Sample		-001DUP1		RPD
Analyte Name	Method	MRL	MDL	Result	Result	Average	RPD	Limit
Solids, Total Suspended (TSS)	SM 2540 D	5.0	5.0	6.5	5.5	6.00	17 *	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.

Printed 3/23/11 11:01

Form 3B

11-0000172208 rev 00 SuperSet Reference:

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 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

Batch QCDUP

Duplicate Sample

				Sample	K1102153	-003DUP3		RPD
Analyte Name	Method	MRL	MDL	Result	Result	Average	RPD	Limit
Solids, Total Suspended (TSS)	SM 2540 D	5.0	5.0	10.5	10.0	10.3	5	10

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

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

Data Package, Non-Dry Dock Stormwater, STE#5 and 6

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

Printed 3/23/11 11:01

Form 3B

SuperSet Reference:

11-0000172208 rev 00

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

Batch QCDUP

Duplicate Sample

RPD K1102154-001DUP4 Sample **RPD** Limit Average Result **Analyte Name** Method MRL MDL Result 10 5.0 ND U ND U NC NC SM 2540 D 5.0 Solids, Total Suspended (TSS)

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 3B

SuperSet Reference: 11-0000172208 rev 00

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 Limits

Solids, Total Suspended (TSS) SM 2540 D 320 320 100 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.

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Form 3C

SuperSet Reference:

11-0000172208 rev 00

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-LCS2

Spike Amount % Rec

% Rec

Analyte Name

Method

Result

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.

Printed 3/23/11 11:01

SuperSet Reference:

11-0000172208 rev 00

Form 3C

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

Units: mg/L Basis: NA

Analysis Method:

SM 5310 C

Carbon, Dissolved Organic (DOC)

					Dilution	Date	Date	
Sample Name	Lab Code	Result Q	MRL	MDL	Factor	Extracted	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	

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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

SW06-0042DUP

Duplicate Sample

				Sample	K1102162	2-008DUP6		RPD
Analyte Name	Method	MRL	MDL	Result	Result	Average	RPD	Limit
Carbon, Dissolved Organic (DOC)	SM 5310 C	0.50	0.07	1.31	1.45	1.38	10	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.

Printed 3/23/11 11:02

Form 3B

SuperSet Reference: 11-0000172208 rev 00

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 Spike Sample

Result Result Analyte Name

Amount

% Rec Limits % Rec

101

Carbon, Dissolved Organic (DOC)

1.31

26.5

25.0

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

29

SuperSet Reference:

11-0000172208 rev 00

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

Spike

% Rec

Analyte Name

Method

Result

Amount % Rec

Limits

Carbon, Dissolved Organic (DOC)

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.

Printed 3/23/11 11:02

\\Inflow2\Starlims\LimsReps\LabControlSample.rpt

Form 3C

SuperSet Reference:

11-0000172208 rev 00

QA/QC Report

Client: Project:

Battelle Marine Sciences Lab

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

QA/QC Report

Client: Project:

Battelle Marine Sciences Lab

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		Date			
	Lot	Lab Code	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

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

Units: mg/L Basis: NA

Analysis Method:

SM 5310 C

Carbon, Total Organic

					Dilution	Date	Date	
Sample Name	Lab Code	Result Q	MRL	MDL	Factor	Extracted	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	

33

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

Batch QCDUP

Duplicate Sample

KQ1102281-18DUP10 RPD Sample Limit **Analyte Name** Method MRL MDL Result Result Average **RPD** 2 33 SM 5310 C 2.14 2.19 2.17 Carbon, Total Organic 0.50 0.07

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 3/23/11 11:25

Form 3B

SuperSet Reference: 11-0000172208 rev 00

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

Sample Spike % Rec Limits **Analyte Name** Result Result Amount % Rec 2.14 99 Carbon, Total Organic 26.8 25.0 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 3/23/11 11:25

Form 3A

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SuperSet Reference

11-0000172208 rev 00

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

% Rec Spike Amount % Rec Limits Analyte Name Method Result 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.

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QA/QC Report

Client: Project:

Battelle Marine Sciences Lab

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

QA/QC Report

Client: Project:

Battelle Marine Sciences Lab

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		Date		
	Lot	Lab Code	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

38

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) Residual Range Organics (RRO)	240 J 830 O	270 540	12 21	1	03/17/11 03/17/11	03/22/11 03/22/11	KWG1102468 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:

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Form 1A - Organic

Page

SuperSet Reference: RR126869

1 of 1

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:

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Form 1A - Organic

Page 1 of 1

SuperSet Reference:

RR126869 Page 58 of 81

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:

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Form 1A - Organic

SuperSet Reference: RR1

Page 1 of 1

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) Residual Range Organics (RRO)	170 J 440 J	270 530	12 20	1 1	03/17/11 03/17/11	03/22/11 03/22/11	KWG1102468 KWG1102468	_

Surrogate Name	%Rec	Control Limits	Date Analyzed	Note
Terphenyl	88	50-150	03/22/11	Acceptable
n-Triacontane	92	50-150	03/22/11	Acceptable

Comments:

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Form 1A - Organic

Page

1 of 1

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 Acceptable
n-Triacontane	94	50-150	03/22/11	

Comments:

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Form 1A - Organic

Page 1 of 1

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) Residual Range Organics (RRO)	110 J 280 J	270 530	12 20	1	03/17/11 03/17/11	03/22/11 03/22/11	KWG1102468 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:

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Form 1A - Organic

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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:

Lab Code:

Method Blank

Units: ug/L

Extraction Method:

KWG1102468-3

Basis: NA

EPA 3510C

Level: Low

Analysis Method:

NWTPH-Dx

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:

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Form 1A - Organic

Page 1 of 1

QA/QC Report

Client:

Battelle Marine Sciences Lab

Project:

Non-dry Dock Stormwater SW05/54220

Sample Matrix:

Water

Surrogate Recovery Summary Diesel and Residual Range Organics

Extraction Method: EPA 3510C

Analysis Method:

NWTPH-Dx

Service Request: K1102162

Units: PERCENT

Level: Low

Sample Name	Lab Code	Sur1	Sur2
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 (%)

Surl = o-Terphenyl 50-150 Sur2 = n-Triacontane50-150

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

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

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Form 2A - Organic

Page 1 of 1

Data Package, Non-Dry Dock Stormwater, STE#5 and 6

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SuperSet Reference: RR126869 Page 64 of 81

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: Analysis Method:

EPA 3510C NWTPH-Dx Units: ug/L Basis: NA

Level: Low

Extraction Lot: KWG1102468

SW05-0001DUP

			Sample	KWG11 Duplicate	02468-1	Relative Percent	RPD Limit
Analyte Name	MRL	MDL	Result	Result	Average	Difference	KFD Limit
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.

Printed: 03/25/2011 14:46:47

Form 3B - Organic

Page

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RR126869 SuperSet Reference: Page 65 of 81

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 %Rec Limits %Rec **Analyte Name** Result Expected 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.

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Form 3C - Organic

Page 1 of 1

SuperSet Reference:

RR126869

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:

			Date	Time
Sample Name	Lab Code	File ID	Analyzed	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

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

File ID: J:\GC21\DATA\032111F\0321F116.D

Lab Code:

KWG1102468-2

Instrument ID: GC21

Extraction Method: EPA 3510C

Level: Low

Analysis Method:

NWTPH-Dx

Extraction Lot: KWG1102468

This Lab Control Sample applies to the following analyses:

Date	Time
Analyzed	Analyzed
03/22/11	00:51
03/22/11	01:13
03/22/11	01:35
03/22/11	01:58
03/22/11	02:20
03/22/11	03:05
03/22/11	03:27
03/22/11	03:49
	03/22/11 03/22/11 03/22/11 03/22/11 03/22/11 03/22/11 03/22/11

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Form 4B - Organic

Page 1 of 1

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: **Instrument ID:**

CAL10358

GC21

Column: ZB-1

Level ID	File ID	Level ID	File ID
A	J:\GC21\DATA\031311F\0313F110.D	I	J:\GC21\DATA\031311F\0313F136.D
В	J:\GC21\DATA\031311F\0313F112.D	J	J:\GC21\DATA\031311F\0313F138.D
C	J:\GC21\DATA\031311F\0313F114.D	K	J:\GC21\DATA\031311F\0313F140.D
D	J:\GC21\DATA\031311F\0313F116.D	L	J:\GC21\DATA\031311F\0313F142.D
E	J:\GC21\DATA\031311F\0313F118.D	M	J:\GC21\DATA\031311F\0313F144.D
F	J:\GC21\DATA\031311F\0313F120.D	N	J:\GC21\DATA\031311F\0313F146.D
G	J:\GC21\DATA\031311F\0313F132.D		
Н	J:\GC21\DATA\031311F\0313F134.D		

Level			Level			Leve	Ì		Leve	1		Level		
ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF	ID	Amt	RF
			:			r 1								
			G	20	914	Н	50	923	I	200	981	Ј	500	971
K	2000	936	L	5000	999	M	20000	902	N	50000	923	1		
			В	50	695	С	200	587	D	500	618	Е	2000	559
F	5000	594	! !			1			t 1 1 1					
						!			t t			† !		
			1											
			G	1.0	1260	Н	2.5	1240	I	10	1310	J	25	1250
K	100	1230	L	250	1260				!					
***************************************			!						-			!		***************************************
			G	1.0	1130	Н	2.5	1090	I	10	1120	J	25	1060
K	100	1080	L	250	1080	!			1			!		
	K F	ID Amt K 2000 F 5000 K 100	ID Amt RF K 2000 936 F 5000 594 K 100 1230	ID Amt RF ID K 2000 936 L F 5000 594 B K 100 1230 C G C G	ID Amt RF ID Amt K 2000 936 L 5000 F 5000 594 B 50 K 100 1230 L 20 G 1.0 C 1.0 1.0 G 1.0 1.0	ID Amt RF ID Amt RF K 2000 936 L 5000 999 F 5000 594 B 50 695 K 100 1230 L 250 1260 G 1.0 1130	ID Amt RF ID Amt RF ID K 2000 936 G 20 914 H K 2000 936 L 5000 999 M F 5000 594 B 50 695 C K 100 1230 G 1.0 1260 H G 1.0 1130 H	ID Amt RF ID Amt RF ID Amt K 2000 936 L 5000 999 H 50 F 5000 594 B 50 695 C 200 K 100 1230 L 250 1260 H 2.5 G 1.0 1130 H 2.5	ID Amt RF ID Amt RF ID Amt RF K 2000 936 L 5000 999 M 20000 902 F 5000 594 B 50 695 C 200 587 K 100 1230 L 250 1260 H 2.5 1240 G 1.0 1130 H 2.5 1090	ID Amt RF ID Amt RF ID Amt RF ID K 2000 936 L 5000 999 H 50 923 I K 2000 936 L 5000 999 M 20000 902 N F 5000 594 B 50 695 C 200 587 D K 100 1230 L 250 1260 H 2.5 1240 I G 1.0 1130 H 2.5 1090 I	ID Amt RF ID Amt RF ID Amt RF ID Amt RF ID Amt RF ID Amt K 2000 936 L 5000 999 M 20000 902 N 50000 F 5000 594 B 50 695 C 200 587 D 500 K 100 1230 L 250 1260 H 2.5 1240 I 10 G 1.0 1130 H 2.5 1090 I 10	ID Amt RF ID Amt RF ID Amt RF ID Amt RF L 2000 936 L 5000 999 M 20000 902 N 50000 923 F 5000 594 B 50 695 C 200 587 D 500 618 K 100 1230 L 250 1260 H 2.5 1240 I 10 1310 K 100 1230 L 250 1260 H 2.5 1090 I 10 1120	ID Amt RF ID Amt RF ID Amt RF ID Amt RF ID K 2000 936 L 5000 999 M 20000 902 N 50000 923 J F 5000 594 B 50 695 C 200 587 D 500 618 E K 100 1230 L 250 1260 H 2.5 1240 I 10 1310 J G 1.0 1130 H 2.5 1090 I 10 1120 J	ID Amt RF ID Amt RF ID Amt RF ID Amt RF ID Amt RF ID Amt RF ID Amt RF ID Amt RF ID Amt RF ID Amt RF ID Amt RF ID Amt Amt RF ID Amt Amt RF ID Amt Amt B 500 999 M 20000 9923 II 200 981 J 500 500 5000 923 II 500 618 E 2000 200 800 R 2000 800 R 800 618 E 2000 800 M 800 800 M <t< td=""></t<>

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

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Form 6A - Organic

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SuperSet Reference:

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

			Calibratio	n Evaluat	ion	
Analyte Name	Compound Type	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.

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Form 6A - Organic

Page 2 of 2

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

Calibration ID: CAL10358

Analysis Method:

NWTPH-Dx

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

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Form 6B - Organic

Page 1 of 1

SuperSet Reference:

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: Analysis Method:

External Standard

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	\pm 15 %	AverageRF
n-Triacontane	50	47	1090	1020	-7	NA	± 15 %	AverageRF

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

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Form 7 - Organic

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Data Package, Non-Dry Dock Stormwater, STE#5 and 6

100

SuperSet Reference: RR126869 Page 72 of 81

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: Analysis Method:

External Standard

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.

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Form 7 - Organic 101

SuperSet Reference:

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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 $% \left(x\right) =\left(x\right) +\left(x\right$

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Form 8 - Organic

Page 1 of 1

 $\label{lem:u:Stealth} $$ u:\Stealth\Crystal.rpt\Form8.rpt $$ Data Package, Non-Dry Dock Stormwater, STE\#5 and 6$$

102

SuperSet Reference: RR126869 Page 74 of 81

QA/QC Results

Client:

Battelle Marine Sciences Lab

Project:

Non-dry Dock Stormwater SW05/54220

Sample Matrix:

Water

Extraction Prep Log Diesel and Residual Range Organics

Extraction Method: EPA 3510C **Analysis Method:**

NWTPH-Dx

Extraction Lot: KWG1102468

Level: Low

Service Request: K1102162

Date Extracted: 03/17/2011

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

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Form 9 - Organic

Page 1 of 1

QA/QC Report

Client:

Battelle Marine Sciences Lab

Project:

Non-dry Dock Stormwater SW05/54220

Sample Matrix:

Water

Surrogate Recovery Summary Diesel and Residual Range Organics

Extraction Method:

EPA 3510C

Analysis Method:

NWTPH-Dx

Service Request: K1102162

Units: PERCENT

Level: Low

Sample Name	Lab Code	<u>Sur1</u>	Sur2
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-Terphenyl50-150 Sur2 = n-Triacontane50-150

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

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

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Form 2A - Organic

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Data Package, Non-Dry Dock Stormwater, STE#5 and 6

106

SuperSet Reference: RR126869 Page 76 of 81

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

SW05-0001DUP

			Sample	KWG11 Duplicate	02468-1	Relative Percent	RPD Limit
Analyte Name	MRL	L MDL	Result	Result	Average	Difference	
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.

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Form 3B - Organic

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SuperSet Reference: RR126869

Data Package, Non-Dry Dock Stormwater, STE#5 and 6

107

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 %Rec Limits %Rec **Analyte Name** Result Expected 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.

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Form 3C - Organic

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SuperSet Reference:

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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:

Lab Code:

Method Blank

KWG1102468-3

Extraction Method: EPA 3510C **Analysis Method:**

NWTPH-Dx

File ID: J:\GC21\DATA\032111F\0321F118.D

Instrument ID: GC21

Level: Low

Extraction Lot: KWG1102468

This Method Blank applies to the following analyses:

			Date	Time
Sample Name	Lab Code	File ID	Analyzed	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

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Form 4A - Organic

SuperSet Reference: RR126869

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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

File ID: J:\GC21\DATA\032111F\0321F116.D

Lab Code:

KWG1102468-2

Instrument ID: GC21

Extraction Method: EPA 3510C

Level: Low

Analysis Method:

NWTPH-Dx

Extraction Lot: KWG1102468

This Lab Control Sample applies to the following analyses:

			Date	Time
Sample Name	Lab Code	File ID	Analyzed	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

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Form 4B - Organic

Page 1 of 1

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Data Package, Non-Dry Dock Stormwater, STE#5 and 6

110

SuperSet Reference: RR126869 Page 80 of 81

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: Analysis Method:

External Standard

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

Average **CCV Analyte Name** Expected \mathbf{RF} RF %D %Drift Criteria Result **Curve Fit** Diesel Range Organics (DRO) 1000 1100 6 944 1000 NA ± 15 % AverageRF Residual Range Organics (RRO) 1000 990 611 607 -1 $\pm 15\%$ AverageRF NA o-Terphenyl 50 50 1260 1250 0 NA \pm 15 % AverageRF n-Triacontane 50 47 1090 1020 -7 NA ± 15 % AverageRF

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

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Form 7 - Organic

Page 1 of 1

Data Package, Non-Dry Dock Stormwater, STE#5 and 6

224

SuperSet Reference: RR126869

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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 (360) 681-4564

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Non-Dry Dock Stormwater SW07 April 14, 2011 Chemical Analyses

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$BATTELLE\ MARINE\ SCIENCE\ LABORATORIES$

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

6 1 15	ā :			1	6 11					
Sample ID -	Station	Fraction			Collection					
Metals	Code	(Total/Diss)	Type Name	MSL Code	Date	Hg	As	Ag	Al	Cd
				Instrument:		CVAF	ICP-MS	ICP-MS	ICP-MS	ICP-MS
Laboratory A	chieved Detec	ction Limits (F	reshwater)			0.0001	0.03	0.002	0.3	0.004
Freshwater R	eporting Limi	t (MDL* 3.18)				0.0003	0.1	0.006	1.0	0.01
SW07										
	DCMC015	TME	Commencial constations	2174 (2	04/14/11	0.107	1 21	0.0021	517	0.0010
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

							7111101 µg /2			
Sample ID -	Station	Fraction							CVAF Batch	ICP-MS Batch
Metals	Code	(Total/Diss)	Type Name	MSL Code	Cr	Cu	Pb	Zn	ID	ID
				Instrument:	ICP-MS	ICP-MS	ICP-MS	ICP-MS		
Laboratory A	chieved Dete	ection Limits (F	reshwater)		0.08	0.007	0.002	0.05	1	
Freshwater R	eporting Lim	it (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 1529 West Sequim Bay Road Sequim, Washington 98382-9099 360/681-4564

Non-Dry Dock Stormwater ENVVEST 2010_SW07

Station Code	Type Name	Collection Date	Analysis Date	Analysis Method	Component	Units	Result	Detection Limit	Reporting Limit
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

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 -		Fraction											ICP-MS
Metals	Station Code	(Total/Diss)	Sample Type	MSL Code	As	Ag	Al	Cd	Cr	Cu	Pb	Zn	Batch ID
				Instrument:	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	ICP-MS	
Laboratory Ac	chieved Detecti	on Limits (Fres	shwater)		0.03	0.002	0.3	0.004	0.08	0.007	0.002	0.05	
Freshwater Re	eporting Limit (MDL* 3.18)			0.1	0.006	1.0	0.01	0.3	0.02	0.006	0.2	
METHOD B	LANKS												
MB-1	LAINE	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
LABORATO	RY CONTRO	L SAMPLES											
Spiking Level		<u> </u>			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
			Perc	ent Recovery, LCS	104%	100%	105%	102%	105%	101%	99%	103%	
MATRIX SP	IKE RESULT	<u>s</u>											
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	
				cent Recovery, MS	107%	92%	116%	102%	113%	96%	101%	101%	
			Perce	ent 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	E 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	1.63	0.0254	662	0.255	3.45 B	12.1	11.2	117	
				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 PD	26.7 1.5%	7.62 8.8%	52.0 1.2%	22.8 1.3%	38.6 15%	85.2 2.5%	27.9 2.5%	53.2 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

		Fraction				
Sample ID - Metals	Station Code	(Total/Diss)	Sample Type	MSL Code	Hg	CVAF Batch ID
				Instrument:	CVAF	
Laboratory Achieved					0.0001	
Reporting Limit (MD	DL* 3.18)				0.0003	
METHOD BLANKS	S			3.554 0.4844	0.0004.77	0.48.24.27.07.4
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
LABORATORY CO	ONTROL SAMPLES	3				
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
				nt Recovery, LCS 1	101%	
			Perce	nt 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	
				rcent Recovery, MS	99%	
			Perc	ent Recovery, MSD	103%	
				RPD	4.0%	
REPLICATE PREC	CISION					
SW07-0027	PSNS015	DME	Composite_equal_time	3174-64	0.00584	042511HGA
DUP	PSNS015	DME	Composite_equal_time		0.00581	042511HGA
				Mean	0.00583	
				RPD	1%	
STANDARD REFE	RENCE MATERIA	<u>L</u>				
SRM 1641 (1)		TME	Freshwater	1641d 042211	1557	042511HGA
				Certified Value	1590	
				range	±18	
	SRM 1641 (1)			PD	2%	

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 ≤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 inidicates 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: 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.

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.

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. $500~mL~0.45\mu m$ 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.

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 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.

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 ≤20% PD
- * Precision result outside OC 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.

SAMPLE CHAIN	OF CUSTODY FO	RM										-				Bat	telle	•			
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Page:	_ of															1529	9 We	st Se	equim E	Bay Road	•
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Sample Label	Station ID	Date/Time	Matrix			ĭŏ	F	Æ	崖	E,	7			_	<u>8</u>		mp)	St	orm#		tes
3W07-0001	PSNS 015	4.14.11 (1924)	SW	X	X	X		X		Y	_			_	1	<u>C</u> o.	MP		7	560	10
SW07 -0002		4.14.11 (2122)	SW	X	X	$ \lambda $	X	K.	_	<u> </u>				_	_		L	<u> </u>		771	13
5W07-0003	PSNS 032	4.14.11 (1736)	SW	ŢΧ	X	X	X	X			_				4					326	25
5007-0004	PSNSDO88PM	4-14-11 (1821)	SW	ΤX	X	X	X	X.	<u> </u>					_	4				 	4700	16
<u>5007 - 0005</u>	PSNS 008 DUP	4.14.11 (1821)	SW	<u> </u>	X	X	X	X	<u> </u>		<u> </u>	\Box			\perp		<u>/</u>	<u> </u>	Ψ	6802	14
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				3) TAI																	

Printed Name

1) No lab. turbidity analysis required
2) This is the duplicate of PSNSOO8
3) Cond. values for these Samples >200 us/cm. Process accordingly
Data Package, Non-Dry Dock Stormwater STE#7

Company

Printed Name

Battelle SAMPLE CHAIN OF CUSTODY FORM Marine Sciences Laboratory Date: 4/15/2011 Page: 1 of 1 SW = Stormwater 1529 West Sequim Bay Road Project No.: 54220 Laboratory: Battelle MSL Project: Non-dry Dock Stormwater SW07 Jill Brandenberger Attention: Analyze parameters per QAP/FSP Phone: (360) 681-4564 TME/DME containers Hardness DME TPH **T**0C DOC TSS Sample Type (grab Collection ģ Sample Label Date/Time Matrix vs. Comp) Station ID Storm# Lab Code SW07-0026 **PSNS015** 04/14/11 1924 SW x 1 SW07 3174*63 comp SW07-0027 SW PSNS015 04/14/11 1924 1 SW07 х comp 3174*64 SW07-0028 SW PSNS096 04/14/11 2122 1 SW07 3174*65 x comp SW07-0029 PSNS096 04/14/11 2122 SW 3174*66 1 SW07 Х comp PSNS032 SW07-0030 04/14/11 1736 SW 1 SW07 3174*67 x comp SW07-0031 PSNS032 04/14/11 1736 SW SW07 Х 1 3174*68 comp SW07-0032 PSNS008 04/14/11 1821 SW SW07 3174*69 x 1 comp SW07-0033 SW PSNS008 04/14/11 1821 1 SW07 3174*70 Х comp SW07-0034 SW PSNS008 04/14/11 1821 SW07DUP х 1 3174*71 comp SW07-0035 PSNS008 SW SW07DUP 04/14/11 1821 1 3174*72 Х comp

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Relinquished by:		4/15/11	1737	Received by: 4/15/11	Total # of Containers
June					Shipment Method:
Jm Bran	Signature Lesse	Date	Time	C.Susum 1745	Retained at Battelle
	Printed Name	Company		Printed Name	Sample Disposition:
Relinquished by:				Received by:	Distribution:
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	Signature	Date	Time	Signature	2) CAS
					3) TAI
	Printed Name	Company		Printed Name	





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

	T						
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

Central File #: 3174 Sample No(s): 63-72 Batch: 10
Project Name: SWO7 Non Dry Doct SW Project Manager: Jm 13
TO BE COMPLETED BY PROJECT MANAGER (prior to arrival when possible)
Matrix: Storm wet 6 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: 501.7 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±2°C or solids:frozen) (if multiple coolers, note temp, of each)
Cooler temperature (acceptable range: 4±2°C or solids: frozen) Grock
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): Other (explain):
Container type: Delta Case Cap Vial Other:
Notes: Coolars were hand delivery from the field; CAS Solits taken at MSL &
Completed By: 1/15/11 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: 1 0.2% HN03 Notes: Optime (1803 Lot# 121008
0.5% HCl (Hg samples) Notes: Lot#
Refrigerate/Freeze Notes:
Other Notes:
Completed By: 10 11 1915

Battelle Marine Sciences Labs, 1529 West Sequim Bay Rd, Sequim, Washington 98362 PH: (360) 681-4565

SAMPL		CUA	INI	OΕ	α	CTO	nv	EO	O NA
SAMPL	-	L.HA	IN			\sim 10	11 1 Y	F()	H IVI

Date: 4/15/2011

Page: 1 of 2 SW = Stormwater Battelle

K1103359 Marine Sciences Laboratory 1529 West Sequim Bay Road

Project No.																Laboratory:	Battelle MS	L
Project	: Non-dry Dock St	ormwater SW07														Attention: .	lill Brandenl	perger
			-	An	alyz	e p	ara	mete	ers	per	QΑ	P/F	SP	·······			Phone: (36	60) 681-4564
Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	10C	DOC	TSS	TME/DME	DME	НДТ					No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW07-0006	PSNS015	04/14/11 1924	SW	+											1	comp	SW07	Lab Code
SW07-0007	PSNS015	04/14/11 1924	SW	+	Х										1	comp	SW07	
SW07-0008	PSNS015	04/14/11 1924	SW	1		Х									1	comp	SW07	
SW07-0009	PSNS015	04/14/11 1924	SW				Х								1	comp	SW07	
SW07-0010	PSNS096	04/14/11 2122	SW	×											1	comp	SW07	
SW07-0011	PSNS096	04/14/11 2122	SW		х										1	comp	SW07	
SW07-0012	PSNS096	04/14/11 2122	SW			Х									1	comp	SW07	
SW07-0013	PSNS096	04/14/11 2122	SW				Х								1	comp	SW07	
SW07-0014	PSNS032	04/14/11 1736	SW	Х											1	comp	SW07	
SW07-0015	PSNS032	04/14/11 1736	SW		Х										1	comp	SW07	
SW07-0016 ·	PSNS032	04/14/11 1736	SW			Х									1	comp	SW07	
SW07-0017	PSNS032	04/14/11 1736	SW				Χ								1	comp	SW07	
SW07-0018	PSNS008	04/14/11 1821	SW	X											1	comp	SW07	
SW07-0019	PSNS008	04/14/11 1821	SW		Х										1	comp	SW07	
Relinguished by:	The second secon	Whati	,		Re	ceiv	ed	by:				O.	AS			Total # of Co	ntainers	
11/10/1		4/18/1	<u>(</u>		T	7	<u>L</u>	<u> </u>	and the second	at a series of the						Shipment Me	thod:	
Fidex	Signature	Date	Time		'E	r	a C	\$igr ∫			<u>'</u>	Ĺ		i-1/		Fedex to CAS	5	
	Printed Name	Company					-	_	ted N				9	.vo	Ī	Sample Disp	osition:	
Relinquished by:					Re	ceiv	ed	by:	J.,,	**-						Distribution:		
																1) PNNL		
	Signature	Date	Time					Sign	atur	e						2) CAS		
												~~~				3) TAI		
	Printed Name	Company						Print	ted N	Name	Э							

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#### SAMPLE CHAIN OF CUSTODY FORM

Date: 4/15/2011

Page: 2 of 2 SW = Stormwater Battelle

Marine Sciences Laboratory 1529 West Sequim Bay Road

	. 2012		OVV - Oton		الالا											1020 (Vest o		
Project No.																Laboratory:	Battelle MS	L
Project	: Non-dry Dock St	ormwater SW07														Attention: .	Jill Brandenl	berger
			···	An	alyz	ze p	ara	met	ers	per	QA	P/F	SP	, <u>.</u>			Phone: (36	60) 681-4564
Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	DME	HDH					No. containers	Sample Type (grab vs. Comp)	Storm#	Lab Code
SW07-0020	PSNS008	04/14/11 1821	SW			X	ļ			<u> </u>	ļ				1	comp	SW07	
SW07-0021	PSNS008	04/14/11 1821	SW	<u> </u>	ļ	<u> </u>	X	<u> </u>	<u> </u>				<u> </u>		1	comp	SW07	
SW07-0022	PSNS008	04/14/11 1821	SW	X_	<u> </u>		<u> </u>		ļ	<u> </u>	<u> </u>				1	comp	SW07	Field Dup
SW07-0023	PSNS008	04/14/11 1821	SW	<u> </u>	X		ļ	<u> </u>	ļ	ļ	<u> </u>				1	comp	SW07	Field Dup
SW07-0024	PSNS008	04/14/11 1821	SW	<u> </u>		X		L_		ļ	ļ	ļ	ļ		1_	comp	SW07	Field Dup
SW07-0025	PSNS008	04/14/11 1821	SW	<u> </u>	ļ		X		<u> </u>	<u> </u>	-				1	comp	SW07	Field Dup
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to Fo	Signature	Date	Time		1/1	ZY	~~	Sign	natur NS	re <u>40</u> 7	$\sim$		4-1	9-1		Fedex to CA	S	
	Printed Name	Company							ted I	Nam	е		0	90	Ö	Sample Disp	osition:	_
Relinquished by:					Re	ceiv	/ed	by:								Distribution: 1) PNNL		
	Signature	Date	Time					Sigr	natur	re						2) CAS 3) TAI		
	Printed Name	Company						Prin	ted I	Nam	e		****			,		

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

Received: 4-19-11 Opened: 4-19-11 By:	Service Request K11 ( ) 555
	Bt Unloaded: 4-19-11 By: Bt
. Samples were received via? Mail Fed Ex UPS DH Samples were received in: (circle) Cooler Box Envel . Were custody seals on coolers? NA Y N If	
If present, were custody seals intact?	If present, were they signed and dated? (Y) N
Cooler Temp Thermometer Cooler/COC	
Temp °C         Blank °C         ID         ID         NA           1 · A         1 · O         3 II	7969 9844 0200
7. Packing material used. Inserts Baggies Bubble Wrap Gel Pag	ks Wet Ice Sleeves Other
Were custody papers properly filled out (ink, signed, etc.)?	NA (Y) N
Did all bottles arrive in good condition (unbroken)? <i>Indicate in the ta</i>	hard and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second and a second
0. Were all sample labels complete (i.e analysis, preservation, etc.)?	NA 🕅 N
1. Did all sample labels and tags agree with custody papers? Indicate ma	ajor discrepancies in the table on page 2. NA $\stackrel{oldsymbol{\circ}}{\widehat{\mathrm{Y}}}$ N
2. Were appropriate bottles/containers and volumes received for the tests	s indicated? NA 😨 N
3. Were the pH-preserved bottles (see SMO GEN SOP) received at the app	ropriate pH? Indicate in the table below NA 🕜 N
4. Were VOA vials received without headspace? Indicate in the table be	elow. NA Y N
5. Was C12/Res negative?	MA Y N
Bottle Count Out of Head-Sample ID Bottle Type Temp space Broke	Volume   Reagent Lot   Initials   Time
Notes, Discrepancies, & Resolutions:	
Notes, Discrepancies, & Resolutions:	
Notes, Discrepancies, & Resolutions:	

Client:

Battelle Marine Sciences Lab

Project:

Sample Matrix:

Non-dry Dock Stormwater SW07

Water

Service Request No.:

**Date Received:** 

K1103359

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

_____

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

Units: mg/L Basis: NA

Analysis Method:

SM 2340 C

#### Hardness, Total as CaCO3

					Dilution	Date	Date	
Sample Name	Lab Code	Result Q	MRL	MDL	Factor	Extracted	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	I	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	

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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

SW07-0006DUP

**Duplicate Sample** 

K1103359-001DUP3 **RPD** Sample **Analyte Name** Method MRL MDL Result Result Average **RPD** Limit Hardness, Total as CaCO3 77.3 77.7 77.5 <1 20 SM 2340 C 2.0 0.8

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 5/6/11 7:36

Form 3B

\\Inflow2\Starlims\LimsReps\DuplicateSummary.rpt

SuperSet Reference:

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		Spike Amount % Ro	% Rec ec 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.

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Form 3C

14

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

Units: mg/L Basis: NA

Lab Control Sample Summary **General Chemistry Parameters** 

> Lab Control Sample K1103359-LCS2

% Rec Spike **Analyte Name** Method Amount % Rec Limits Result 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.

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Form 3C

SuperSet Reference:

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

Units: mg/L Basis: NA

Analysis Method:

SM 2540 D

#### Solids, Total Suspended (TSS)

Sample Name	Lab Code	Result Q	MRL	MDL	Dilutior 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	

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

SW07-0009DUP

Duplicate Sample

				Sample	•	0-004DUP5		RPD
Analyte Name	Method	MRL	MDL	Result	Result	Average	RPD	Limit
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.

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

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

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Form 3B

17

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SuperSet Reference;

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.

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

SuperSet Reference:

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 Amount % 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.

Printed 5/6/11 7:37

Form 3C

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\\Inflow2\Starlims\LimsReps\LabControlSample.rpt

SuperSet Reference:

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.

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Form 3C

\\Inflow2\Starlims\LimsReps\LabControlSample.rpt

SuperSet Reference:

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

> Units: mg/L Basis: NA

Analysis Method:

SM 5310 C

Carbon, Dissolved Organic (DOC)

					Dilution	Date	Date	
Sample Name	Lab Code	Result Q	MRL	MDL	Factor	Extracted	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	

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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

SW07-0008DUP

Duplicate Sample

				Sample	•	9-003DUP4		RPD
Analyte Name	Method	MRL	MDL	Result	Result	Average	RPD	Limit
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.

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 3B

SuperSet Reference:

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

% Rec Sample Spike Amount % Rec Limits **Analyte Name** Result Result Carbon, Dissolved Organic (DOC) 3.01 27.5 25.0 98 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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QA/QC Report

Lab Control Sample Summary

Client:

Battelle Marine Sciences Lab

Project:

Non-dry Dock Stormwater SW07/54220

Sample Matrix:

**Analyte Name** 

Water

Service Request: K1103359

Date Analyzed: 4/21/11

**General Chemistry Parameters** 

Units: mg/L Basis: NA

Lab Control Sample K1103359-LCS1

% Rec Spike Result Amount % Rec Limits

26.0

Carbon, Dissolved Organic (DOC)

SM 5310 C

Method

25.3

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.

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Form 3C

SuperSet Reference:

QA/QC Report

Client: Project:

Battelle Marine Sciences Lab

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		Date	True	Measured	Percent	Acceptance
	Lot	Lab Code	Analyzed	Value	Value	Recovery	Limits
CCVI	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

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QA/QC Report

Client: Project:

Battelle Marine Sciences Lab

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

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 Collected: 4/14/11 Date Received: 4/19/11

> Units: mg/L Basis: NA

Analysis Method:

SM 5310 C

#### Carbon, Total Organic

					Dilution	Date	Date	
Sample Name	Lab Code	Result Q	MRL	MDL	Factor	Extracted	Analyzed	Note
SW07-0007	K1103359-002	3.02	0.50	0.07	I	NA	4/21/11 16:20	
SW07-0011	K1103359-006	2.23	0.50	0.07	l	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	

SuperSet Reference:

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

SW07-0015DUP

**Duplicate Sample** 

K1103359-010DUP6 **RPD** Sample **Analyte Name** Method MRL MDL Result Result Average **RPD** Limit Carbon, Total Organic SM 5310 C 1.75 33 0.50 0.07 1,75 1.75 <1

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 3B

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SuperSet Reference:

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

% Rec Sample Spike **Analyte Name** Result Result Amount % Rec Limits 1.75 100 83 - 117 Carbon, Total Organic 26.6 25.0

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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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

Spike % Rec Method Amount % Rec Limits Analyte Name Result 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.

QA/QC Report

Client: Project:

Battelle Marine Sciences Lab

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		Date	True	Measured	Percent	Acceptance
	Lot	Lab Code	Analyzed	Value	Value	Recovery	Limits
CCVI	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

SuperSet Reference:

QA/QC Report

Client: Project:

Battelle Marine Sciences Lab

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		Date			
	Lot	Lab Code	Analyzed	MDL	MRL	Result Q
CCBI	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