

Analytical Chemistry Data Package

Project: ENVVEST Sediment Quality Validation Study 2011

Battelle Project No. 54220
CF No. 3151



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Analytical raw data available upon request

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ENVVEST Sinclair and Dyes Inlet
2011 Sediment Verification Study
METALS IN SEDIMENT, Dry Weight
(concentrations in µg/g dry wt)

MSL Code	Station or OUB Grid Cell	Sponsor Code	Depth (cm)	Collection Date	Percent Moisture	Al	Cr	Cu	Fe	Mn
					MDL	2	0.2	0.1	1.0	0.1
					RL	6	0.5	0.3	3	0.3
				Analysis Batch ID		I051111A	I051111A	I051111A	I051111A	I051111A
				CAS No.		7429-90-5	7440-47-3	7440-50-8	7439-89-6	7439-96-5
<u>Squeeze Cores</u>										
3151-280	PS03	SQV05-082	0-3cm	04/27/11	68.6	53638	71.9	161	27633	394
3151-281	PS03	SQV05-083	3-6cm	04/27/11	66.6	50569	81.8	180	29890	385
3151-282	PS03	SQV05-084	6-9cm	04/27/11	66.2	57680	92.5	205	35315	457
3151-283	PS03	SQV05-085	9-13cm	04/27/11	66.0	60474	100	232	37399	493
3151-284	PS03	SQV05-086	13-19cm	04/27/11	63.4	56227	96.3	257	34962	442
3151-285	PS03	SQV05-087	19-25cm	04/27/11	65.5	61283	109	303	38021	486
3151-286	PS09	SQV05-100	0-3cm	04/27/11	78.4	57365	82.5	321	34464	485
3151-287	PS09	SQV05-101	3-6cm	04/27/11	71.4	59075	101	317	36122	476
3151-288	PS09	SQV05-102	6-9cm	04/27/11	68.2	57178	99.0	335	35441	463
3151-289	PS09	SQV05-103	9-13cm	04/27/11	65.1	57824	102	298	36285	477
3151-290	PS09	SQV05-104	13-19cm	04/27/11	59.9	62117	114	335	39071	535
3151-291	PS09	SQV05-105	19-25cm	04/27/11	58.6	62065	111	315	37994	535
<u>2010 OUB Verification</u>										
3151-1	1500-G1		0-10cm	05/27/10	43.3	61720	104	28.3	28363	426
3151-3	1500-G3		0-10cm	05/27/10	37.2	56713	76.0	20.3	20921	350
3151-12	1500-G12		0-10cm	05/19/10	32.5	55714	63.8	21.3	17963	317
3151-21	1500-G19		0-10cm	05/04/10	71.5	61593	90.8	110	35492	437
3151-24	1500-G22		0-10cm	05/26/10	66.7	63002	94.9	96.3	34942	433
3151-25	1500-G23		0-10cm	05/27/10	59.0	58993	85.4	67.0	26416	377
3151-27	1500-G24		0-10cm	05/27/10	64.9	63715	86.2	98.1	34702	455
3151-28	1500-G25		0-10cm	05/27/10	52.4	55510	68.6	41.8	22344	334
3151-30	1500-G27		0-10cm	05/27/10	70.5	60467	90.2	96.3	34997	448
3151-32	1500-G29		0-10cm	05/27/10	57.0	61291	44.8	90.4	27345	410
3151-35	1500-G32		0-10cm	05/27/10	47.4	58437	74.7	48.0	24670	400
3151-48	500-G12		0-10cm	05/11/10	61.7	63086	123	91.6	34196	473
3151-50	500-G14		0-10cm	05/18/10	33.1	56533	74.6	36.7	23069	393
3151-55	500-G19		0-10cm	05/18/10	52.9	59529	86.9	107	31029	448
3151-66	500-G30		0-10cm	05/12/10	67.2	61198	96.4	146	34773	465
3151-74	500-G38		0-10cm	05/13/10	56.3	61444	115	297	43051	693
3151-75	500-G39		0-10cm	05/12/10	38.1	52364	86.3	203	25694	399
3151-80	500-G43		0-10cm	05/10/10	61.7	59039	94.0	216	39792	836
3151-81	500-G44		0-10cm	05/10/10	69.9	60927	96.1	114	34837	468
3151-83	500-G46		0-10cm	05/10/10	42.8	54551	103	72.1	25678	407
3151-88	500-G51		0-10cm	05/10/10	70.9	62132	88.8	102	35186	486
3151-89	500-G52		0-10cm	05/07/10	67.7	58123	109	231	36567	635
3151-90	500-G53		0-10cm	05/07/10	66.7	61856	89.7	95.2	34184	509
3151-91	500-G54		0-10cm	05/12/10	67.3	62276	85.7	97.7	33918	487
3151-97	500-G60		0-10cm	05/06/10	70.7	55726	87.1	1380	34263	464
3151-98	500-G61		0-10cm	05/07/10	60.9	53670	120	253	38586	493
3151-102	500-G65		0-10cm	05/06/10	58.0	59043	111	207	31956	470
3151-104	500-G67		0-10cm	05/06/10	63.0	56520	99.7	584	37032	606
3151-105	500-G68		0-10cm	05/06/10	63.6	56931	85.0	171	31265	474
3151-109	500-G71		0-10cm	05/13/10	36.7	56472	50.3	26.2	19230	397
				Average:	59.7					

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ENVVEST Sinclair and Dyes Inlet
2011 Sediment Verification Study
METALS IN SEDIMENT, Dry Weight
(concentrations in µg/g dry wt)

MSL Code	Station or OUB Grid Cell	Sponsor Code	Depth (cm)	Ni	Zn	Ag	Cd	Pb	As
				0.3	0.2	0.002	0.003	0.003	0.2
				1.0	0.7	0.006	0.01	0.01	0.5
						052511-6100	052511-6100	052511-6100	
				1051111A	1051111A	052711-6100	052711-6100	052711-6100	070711-6100
				7440-02-0	7440-66-6	7440-22-4	7440-43-9	7439-92-1	7440-38-2

Squeeze Cores

3151-280	PS03	SQV05-082	0-3cm	33.6	208	0.659	1.51	65.8	12.3
3151-281	PS03	SQV05-083	3-6cm	39.7	223	0.847	1.79	80.5	11.5
3151-282	PS03	SQV05-084	6-9cm	45.9	261	1.15	2.05	110	11.8
3151-283	PS03	SQV05-085	9-13cm	52.2	300	1.44	2.17	139	13.5
3151-284	PS03	SQV05-086	13-19cm	50.6	283	1.49	2.04	130	13.7
3151-285	PS03	SQV05-087	19-25cm	54.8	352	2.26	2.91	177	16.1
3151-286	PS09	SQV05-100	0-3cm	47.1	302	0.691	2.08	79.0	13.9
3151-287	PS09	SQV05-101	3-6cm	59.3	423	0.709	3.28	101	17.5
3151-288	PS09	SQV05-102	6-9cm	53.2	377	0.724	3.19	99.6	17.4
3151-289	PS09	SQV05-103	9-13cm	56.5	358	0.724	2.53	98.3	17.2
3151-290	PS09	SQV05-104	13-19cm	63.2	412	0.852	2.01	136	21.8
3151-291	PS09	SQV05-105	19-25cm	63.3	426	0.937	1.99	120	19.2

2010 OUB Verification

3151-1	1500-G1		0-10cm	40.5	73.9	0.364	0.262	18.1	3.03
3151-3	1500-G3		0-10cm	29.8	53.7	0.249	0.245	14.7	2.93
3151-12	1500-G12		0-10cm	21.4	54.2	0.293	0.593	15.2	3.37
3151-21	1500-G19		0-10cm	44.1	163	1.03	1.59	62.0	11.4
3151-24	1500-G22		0-10cm	41.8	159	0.848	1.06	59.5	10.8
3151-25	1500-G23		0-10cm	32.1	128	0.594	1.33	42.1	7.46
3151-27	1500-G24		0-10cm	43.3	162	0.730	0.954	70.0	11.2
3151-28	1500-G25		0-10cm	25.9	83.2	0.422	0.659	31.6	6.64
3151-30	1500-G27		0-10cm	41.1	157	0.662	1.10	54.3	10.4
3151-32	1500-G29		0-10cm	32.4	103	0.427	0.796	33.1	7.12
3151-35	1500-G32		0-10cm	28.8	103	0.361	0.582	35.3	6.00
3151-48	500-G12		0-10cm	41.7	151	0.651	1.44	57.2	10.3
3151-50	500-G14		0-10cm	29.6	82.1	0.420	0.561	29.9	4.11
3151-55	500-G19		0-10cm	36.5	291	0.536	0.989	76.4	14.4
3151-66	500-G30		0-10cm	43.2	182	0.874	1.39	82.5	11.2
3151-74	500-G38		0-10cm	41.6	547	0.852	1.07	153	19.4
3151-75	500-G39		0-10cm	42.4	447	1.03	1.44	205	6.00
3151-80	500-G43		0-10cm	40.7	769	1.04	1.14	149	17.5
3151-81	500-G44		0-10cm	42.2	175	0.765	1.12	60.6	11.2
3151-83	500-G46		0-10cm	34.0	147	0.350	0.535	41.3	5.79
3151-88	500-G51		0-10cm	41.3	161	0.754	1.14	57.8	11.6
3151-89	500-G52		0-10cm	46.4	494	1.10	1.32	168	19.0
3151-90	500-G53		0-10cm	40.5	176	0.572	1.14	62.1	11.8
3151-91	500-G54		0-10cm	39.9	183	0.631	1.03	74.3	11.8
3151-97	500-G60		0-10cm	40.3	450	0.675	1.79	298	19.7
3151-98	500-G61		0-10cm	144.4	832	1.20	1.82	168	19.6
3151-102	500-G65		0-10cm	41.3	485	3.05	1.69	153	19.9
3151-104	500-G67		0-10cm	41.5	576	0.788	1.65	265	18.3
3151-105	500-G68		0-10cm	38.3	296	0.621	1.44	112	14.0
3151-109	500-G71		0-10cm	20.2	59.0	0.207	0.378	25.8	4.12

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METALS IN SEDIMENT, Dry Weight
 (concentrations in µg/g dry wt)

MSL Code	Station or OUB Grid Cell	Sponsor Code	Depth (cm)	Collection Date	Percent Moisture	Al	Cr	Cu	Fe
					MDL	4.0	0.2	0.1	1.0
					RL	13	0.5	0.3	3
				Analysis Batch ID		I051111A	I051111A	I051111A	I051111A
				CAS No.		7429-90-5	7440-47-3	7440-50-8	7439-89-6
<u>Procedural Blank</u>									
Blank 1		MB			59.7	4 U	0.2 U	0.1 U	1.0 U
Blank 2		MB			59.7	4 U	0.2 U	0.146 J	1.0 U
<u>Laboratory Control Sample Results (Blank Spike)</u>									
LCS 1		LCS			59.7	48.4	2.0	2.0	51.3
Blank 1		MB			59.7	4 U	0.2 U	0.1 U	1.0 U
Spike Concentration						50	2	2	50
Percent Recovery						97%	99%	100%	103%
LCS 2		LCS			59.7	55.5	1.8	2.1	52.6
Blank 2		MB			59.7	4 U	0.2 U	0.146 J	1.0 U
Spike Concentration						50	2	2	50
Percent Recovery						111%	92%	106%	105%
<u>Standard Reference Material (SRM)</u>									
1944 R1		SRM			0.0	47057	227	344	33765
1944 R2		SRM			0.0	49333	234	369	34188
Certified or Reference Value						53300	266	380	35300
Range						± 4900	± 24.0	± 40	± 1600
% Recovery						88%	86%	91%	96%
% Recovery						93%	88%	97%	97%
<u>Matrix Spike/Matrix Spike Duplicate Results</u>									
3151-3MS	1500-G3		0-10cm	05/27/10	37.2	57040	104	44	20454
3151-3MSD	1500-G3		0-10cm	05/27/10	37.2	56731	102	44	20477
3151-3	1500-G3		0-10cm	05/27/10	37.2	56713	76.0	20.3	20921
Spike Concentration, MS						NS	25.4	25.4	NS
Spike Concentration, MSD						NS	25.3	25.3	NS
Percent Recovery, MS						NS	111%	92%	NS
Percent Recovery, MSD						NS	103%	92%	NS
3151-27MS	1500-G24		0-10cm	05/27/10	64.9	62141	114	116	33655
3151-27MSD	1500-G24		0-10cm	05/27/10	64.9	64170	117	121	34944
3151-27	1500-G24		0-10cm	05/27/10	64.9	63715	86.2	98.1	34702
Spike Concentration, MS						NS	25.1	25.1	NS
Spike Concentration, MSD						NS	25.3	25.3	NS
Percent Recovery, MS						NS	112%	73%	NS
Percent Recovery, MSD						NS	120%	91%	NS

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METALS IN SEDIMENT, Dry Weight
 (concentrations in µg/g dry wt)

MSL Code	Station or OUB Grid Cell	Sponsor Code	Depth (cm)	Collection Date	Percent Moisture	Al	Cr	Cu	Fe
						MDL	4.0	0.2	0.1
						RL	13	0.5	0.3
						Analysis Batch ID	I051111A	I051111A	I051111A
						CAS No.	7429-90-5	7440-47-3	7440-50-8
								7440-50-8	7439-89-6
<u>Replicate Analysis Results</u>									
3151-35	1500-G32		0-10cm	05/27/10	47.4	58437	74.7	48.0	24670
3151-35DUP	1500-G32		0-10cm	05/27/10	47.4	58458	74.6	46.0	24074
MEAN						58447	74.6	47.0	24372
RPD						0%	0%	4%	2%
3151-288	PS09	SQV05-102	6-9cm	04/27/11	68.2	57178	99.0	335	35441
3151-288DUP	PS09	SQV05-102	6-9cm	04/27/11	68.2	58993	95.8	308	36047
MEAN						58086	97.4	321	35744
RPD						3%	3%	8%	2%

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METALS IN SEDIMENT, Dry Weight
 (concentrations in µg/g dry wt)

MSL Code	Station or OUB Grid Cell	Sponsor Code	Depth (cm)	Collection Date	Percent Moisture	Mn	Ni	Zn	Ag
					MDL	0.1	0.3	0.2	0.002
					RL	0.3	1.0	0.7	0.006
				Analysis Batch ID		1051111A	1051111A	1051111A	052511-6100 052711-6100
				CAS No.		7439-96-5	7440-02-0	7440-66-6	7440-22-4
<u>Procedural Blank</u>									
Blank 1		MB			59.7	0.1 U	0.3 U	0.2 U	0.002 U
Blank 2		MB			59.7	0.1 U	0.3 U	0.2 U	0.002 U
<u>Laboratory Control Sample Results (Blank Spike)</u>									
LCS 1		LCS			59.7	48.7	2.0	50.3	1.85
Blank 1		MB			59.7	0.1 U	0.3 U	0.2 U	0.002 U
Spike Concentration						50	2	50	2
Percent Recovery						97%	101%	101%	93%
LCS 2		LCS			59.7	51.3	2.1	50.3	1.81
Blank 2		MB			59.7	0.1 U	0.3 U	0.2 U	0.002 U
Spike Concentration						50	2	50	2
Percent Recovery						103%	103%	101%	91%
<u>Standard Reference Material (SRM)</u>									
1944 R1		SRM			0.0	488	62.6	606	6.41
1944 R2		SRM			0.0	494	64.6	644	6.34
Certified or Reference Value						505	76.1	656	6.4
Range						± 25	± 5.6	± 75	± 1.7
% Recovery						97%	82%	92%	100%
% Recovery						98%	85%	98%	99%
<u>Matrix Spike/Matrix Spike Duplicate Results</u>									
3151-3MS	1500-G3		0-10cm	05/27/10	37.2	358	52.8	241	4.98
3151-3MSD	1500-G3		0-10cm	05/27/10	37.2	361	52.4	241	5.17
3151-3	1500-G3		0-10cm	05/27/10	37.2	350	29.8	53.7	0.249
Spike Concentration, MS						NS	25.4	203	5.08
Spike Concentration, MSD						NS	25.3	203	5.08
Percent Recovery, MS						NS	91%	92%	93%
Percent Recovery, MSD						NS	89%	93%	97%
3151-27MS	1500-G24		0-10cm	05/27/10	64.9	466	63.2	342	5.15
3151-27MSD	1500-G24		0-10cm	05/27/10	64.9	477	65.8	357	4.78
3151-27	1500-G24		0-10cm	05/27/10	64.9	455	43.3	162	0.730
Spike Concentration, MS						NS	25.1	201	5.01
Spike Concentration, MSD						NS	25.3	202	4.91
Percent Recovery, MS						NS	79%	90%	88%
Percent Recovery, MSD						NS	89%	97%	82%

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METALS IN SEDIMENT, Dry Weight
 (concentrations in µg/g dry wt)

MSL Code	Station or OUB Grid Cell	Sponsor Code	Depth (cm)	Collection Date	Percent Moisture	Mn	Ni	Zn	Ag
					MDL	0.1	0.3	0.2	0.002
					RL	0.3	1.0	0.7	0.006
					Analysis Batch ID	1051111A	1051111A	1051111A	052511-6100 052711-6100
					CAS No.	7439-96-5	7440-02-0	7440-66-6	7440-22-4
<u>Replicate Analysis Results</u>									
3151-35	1500-G32		0-10cm	05/27/10	47.4	400	28.8	103	0.361
3151-35DUP	1500-G32		0-10cm	05/27/10	47.4	395	28.1	108	0.359
MEAN						398	28.5	106	0.360
RPD						1%	3%	5%	1%
3151-288	PS09	SQV05-102	6-9cm	04/27/11	68.2	463	53.2	377	0.724
3151-288DUP	PS09	SQV05-102	6-9cm	04/27/11	68.2	478	52.9	369	0.742
MEAN						470	53.1	373	0.733
RPD						3%	1%	2%	2%

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METALS IN SEDIMENT, Dry Weight
(concentrations in µg/g dry wt)

MSL Code	Station or OUB Grid Cell	Sponsor Code	Depth (cm)	Collection Date	Percent Moisture	Cd	Pb	As
					MDL	0.003	0.003	0.2
					RL	0.01	0.01	0.5
					Analysis Batch ID	052511-6100	052511-6100	070711-6100
					CAS No.	7440-43-9	7439-92-1	7440-38-2

Procedural Blank

Blank 1	MB	59.7	0.003 U	0.003 U	0.2 U
Blank 2	MB	59.7	0.003 U	0.003 U	0.2 U

Laboratory Control Sample Results (Blank Spike)

LCS 1	LCS	59.7	2.00	1.73	5.05
Blank 1	MB	59.7	0.003 U	0.003 U	0.2 U
Spike Concentration			2	2	5
Percent Recovery			100%	87%	101%
LCS 2	LCS	59.7	2.07	1.89	5.07
Blank 2	MB	59.7	0.003 U	0.003 U	0.2 U
Spike Concentration			2	2	5
Percent Recovery			104%	95%	101%

Standard Reference Material (SRM)

1944 R1	SRM	0.0	8.43	296	14.9
1944 R2	SRM	0.0	8.74	330	18.3
Certified or Reference Value			8.8	330	18.9
Range			± 1.4	± 48	± 2.8
% Recovery			96%	90%	79% &
% Recovery			99%	100%	97%

Matrix Spike/Matrix Spike Duplicate Results

3151-3MS	1500-G3	0-10cm	05/27/10	37.2	5.31	38.8	25.8
3151-3MSD	1500-G3	0-10cm	05/27/10	37.2	5.40	39.5	26.8
3151-3	1500-G3	0-10cm	05/27/10	37.2	0.245	14.7	2.93
Spike Concentration, MS					5.08	25.4	23.8
Spike Concentration, MSD					5.08	25.3	24.6
Percent Recovery, MS					100%	95%	96%
Percent Recovery, MSD					101%	98%	97%
3151-27MS	1500-G24	0-10cm	05/27/10	64.9	5.80	95.2	34.9
3151-27MSD	1500-G24	0-10cm	05/27/10	64.9	5.44	99.9	35.3
3151-27	1500-G24	0-10cm	05/27/10	64.9	0.954	70.0	11.2
Spike Concentration, MS					5.01	25.1	24.8
Spike Concentration, MSD					4.91	25.3	25.1
Percent Recovery, MS					97%	100%	96%
Percent Recovery, MSD					91%	118%	96%

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2011 Sediment Verification Study
METALS IN SEDIMENT, Dry Weight
 (concentrations in µg/g dry wt)

MSL Code	Station or OUB Grid Cell	Sponsor Code	Depth (cm)	Collection Date	Percent Moisture	Cd	Pb	As
					MDL	0.003	0.003	0.2
					RL	0.01	0.01	0.5
					Analysis Batch ID	052511-6100	052511-6100	070711-6100
					CAS No.	7440-43-9	7439-92-1	7440-38-2
<u>Replicate Analysis Results</u>								
3151-35	1500-G32		0-10cm	05/27/10	47.4	0.582	35.3	6.00
3151-35DUP	1500-G32		0-10cm	05/27/10	47.4	0.578	34.3	5.60
MEAN						0.580	34.8	5.80
RPD						1%	3%	7%
3151-288	PS09	SQV05-102	6-9cm	04/27/11	68.2	3.19	99.6	17.4
3151-288DUP	PS09	SQV05-102	6-9cm	04/27/11	68.2	3.23	101	18.3
MEAN						3.21	100	17.9
RPD						1%	1%	5%

QAI/QC NARRATIVE

PROJECT: 2011 Sediment Verification Study: SQV02 Metals Verification for OUB Screening and SQV05 (partial) Squeeze Core Sediment

PARAMETER: Silver (Ag), aluminum (Al), arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), iron (Fe), manganese (Mn), nickel (Ni), lead (Pb), and zinc (Zn)
Mercury (Hg), polycyclic aromatic hydrocarbons (PAH), and polychlorinated biphenyls (PCBs) will be reported separately.

LABORATORY: Pacific Northwest National Laboratory (PNNL), Battelle Marine Sciences Laboratory (MSL), Sequim, Washington

MATRIX: SQV02: Surface sediments (0-10 cm grabs)
SQV05: Sediment core profiles 0-25 cm

SAMPLE CUSTODY AND PROCESSING: *SQV02*
One hundred and three sediment samples were hand delivered by the U.S. Navy to MSL on 05/17/2010. The samples were split for metals, organics, and screening analyses. The screening splits were sent to SPAWAR, San Diego, CA. The metals and organics splits were archived frozen (<-20°C). All samples were assigned a Battelle Central File (CF) identification number (3151) and were entered into Battelle's log-in and custody tracking system.

SQV05(partial)
The SQV05 sediment samples were collected by the U.S. Navy and MSL on April 27, 2011. The squeeze cores (9 cm I.D.) reported in this deliverable were collected by divers using specialized polycarbonate core liners fitted with sampling ports at 1-cm intervals. Porewater was extracted from the intact sediment cores using a modification of the whole core squeezing technique originally described by Jahnke (1988) with modifications described by Warken et al. (2000; Figure 25). The porewater data are reported separately. Two sediment cores were collected and extruded to provide subsections at the following intervals: 0-3cm, 3-6cm, 6-9cm, 9-13cm, 13-19cm, and 19-25cm. The sediment cores were collected from the PS03 and PS09 locations as described in the sampling and analysis plan (Johnston et al. 2011).

The following lists information on sample receipt and processing activities:

Lab Sample IDs:		SQV02: 3151*various and SQV05: 3151*280-291
Description:		SQV02: surface sediment grabs and SQV05: sediment core profiles
Sample collection dates		SQV02: May 2010 and SQV05: 04/24/11
Laboratory arrival date		05/17/2010 and 04/27/2011
Digestion (Boric Acid)		05/05/11 and 05/06/11
ICP-MS Analysis (As, Ag, Cd, Pb)		05/25/11, 05/27/11, and As 07/07/11
ICP-OES Analysis (Al, Cr, Cu, Fe, Mn, Ni, Zn)		05/11/11

QAI/QC NARRATIVE

DATA QUALITY OBJECTIVES:

Analyte	Analytical Method	Spike Range of Recovery	SRM Accuracy	Relative Precision	Achieved Detection Limit ⁽¹⁾ (µg/g dry wt.)	Reporting Limit ⁽²⁾ (µg/g dry wt.)
Ag	ICP-MS	70-130%	≤20% PD	≤30% RPD	0.002	0.006
As	ICP-MS	70-130%	≤20% PD	≤30% RPD	0.2	0.5
Al	ICP-OES	70-130%	≤20% PD	≤30% RPD	2	6
Cd	ICP-MS	70-130%	≤20% PD	≤30% RPD	0.003	0.01
Cr	ICP-OES	70-130%	≤20% PD	≤30% RPD	0.2	0.5
Cu	ICP-OES	70-130%	≤20% PD	≤30% RPD	0.1	0.3
Fe	ICP-OES	70-130%	≤20% PD	≤30% RPD	1	3
Mn	ICP-OES	70-130%	≤20% PD	≤30% RPD	0.1	0.3
Ni	ICP-OES	70-130%	≤20% PD	≤30% RPD	0.3	1.0
Pb	ICP-MS	70-130%	≤20% PD	≤30% RPD	0.003	0.01
Zn	ICP-OES	70-130%	≤20% PD	≤30% RPD	0.2	0.7

(1) Reported from the annual Sediment MDL summary.

(2) Determined as 3.18 times achieved MDL

METHODS:

Sediment samples were analyzed for silver (Ag), aluminum (Al), arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), iron (Fe), manganese (Mn), lead (Pb), nickel (Ni) and zinc (Zn). Samples were freeze-dried and homogenized using a ball-mill prior to digestion according to Battelle SOP MSL-C-003, *Percent Dry Weight and Homogenizing Dry Sediment, Soil and Tissue*.

Sediment samples were digested in accordance with Battelle SOP MSL-I-006, *Mixed Acid Sediment Digestion*. Two digestions were conducted for each sample. First, was a total dissolution followed by boric acid neutralization. Second, was a strong acid leach using nitric acid to dissolve As. In the first method, an approximately 400-mg (dry weight) aliquot of each sample was combined with nitric, hydrochloric, and hydrofluoric acids in a Teflon digestion vessel and heated in an oven at 130°C (±10°C) for a minimum of eight hours. After cooling, boric acid was added to the digestate to neutralize the hydrofluoric acid and deionized water was added to achieve analysis volume.

In the second digestion, an approximately 300-mg (dry weight) aliquot was combined with nitric acid. The solution was digested in a heating block at 95°C (±2°C) for six hours. After cooling, deionized water was added to achieve analysis volume.

Digested samples were analyzed for Al, Cr, Cu, Fe, Mn, Ni, and Zn using inductively coupled plasma optical emissions spectroscopy (ICP-OES) according to Battelle SOP MSL-I-033, *Determination of Elements in Aqueous and Digestate Samples by ICP-OES*. This procedure is based on two methods modified and adapted for analysis of low level samples: EPA Method 6010B and 200.7.

Digested samples were analyzed for Ag, As, Cd, and Pb using inductively coupled plasma-mass spectrometry (ICP-MS) according to Battelle SOP MSL-I-022, *Determination of Elements in Aqueous and Digestate Samples by ICP/MS*. All results were reported in units of µg/g on a dry-weight basis.

HOLDING TIMES:

The recommended holding time for the reported analytes in sediment is one year frozen. The sediment samples were digested within the one year holding time.

DETECTION LIMITS:

Analytical results were reported to laboratory achieved detection limits derived from the annually verified Sediment MDL Study. The MDL study was conducted in compliance with

QAI/QC NARRATIVE

40 CFR Part 136 Appendix B Revision 1.11, which entails the analyses of at least seven replicates of the matrix (quartz sand) to calculate the MDL value. Data were evaluated and flagged in accordance to the following criteria:

- U Analyte not detected at or above laboratory achieved detection limit, MDL reported
- J Value reported is below the RL, but above the MDL.
- & Accuracy results outside QC criteria of $\leq 20\%$ PD (SRM).
- * Precision results outside QC criteria of $\leq 30\%$ RPD.
- N Spiked sample recovery not within the QC limits of 70-130%.
- B Analyte detected in the method blank above the RL, sample concentration < 10 times detected blank value.

METHOD BLANKS:

Two method blanks were analyzed with the sediment samples. All metals were either not detected or detected below the reporting limit (RL). Data are not blank corrected.

LABORATORY CONTROL SAMPLE ACCURACY:

Two laboratory control samples were analyzed with the samples. The LCS recoveries were within the QC acceptance criterion of $\pm 30\%$ recovery for all metals.

STANDARD REFERENCE MATERIAL ACCURACY:

The marine sediment reference material for trace metals (SRM) analyzed with the sediment samples was 1944. The SRM accuracy was expressed as the percent recovery between the determined concentration and the certified or reference value. Two replicates of 1944 were analyzed with the samples. The percent recoveries were within the QC acceptance criterion of 80-120% for all metals, except one replicate for As (79%). Other measures of accuracy for As were within the QC criterion; therefore, no further corrective action was taken.

MATRIX SPIKE ACCURACY:

One sediment samples from SQV02 and one from SQV05 were selected and spiked in duplicate. Matrix spike recoveries were within the QC acceptance criterion of 70-130% recovery for all metals. The samples were not spiked for Al, Fe, or Mn due to the high native sample concentrations. These elements are not considered chemicals of concern. Acceptable accuracy was demonstrated by the LCS and SRM.

LABORATORY PRECISION:

Laboratory precision was evaluated using two sets of duplicates and is expressed as the relative percent difference (RPD) of replicate results. The RPD values ranged from 0% to 8% and were within the QC criterion of $\leq 30\%$ RPD.

REFERENCES:

Jahnke, R. A. 1988. A simple, reliable, and inexpensive pore water sampler. *Limnology and Oceanography* 33:483-487.

Warnken, K. W., G. A. Gill, P. H. Santschi, L. L. Griffin. 2000. Benthic Exchange of Nutrients in Galveston Bay, Texas. *Estuaries* 23: 647-661.

Johnston, R.K., J. M. Brandenberger, G.A. Gill, J. Guerrero, J. Leather, G. Rosen, B. Beckwith, and J. Young. (2011). Sediment Quality Verification Study and Baseline for Process Improvement for Puget Sound Naval Shipyard & Intermediate Maintenance Facility. Sampling and Analysis Plan prepared for the U.S. Navy. PNNL-15594

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MSL Code	Station or OUB Grid Cell	Sponsor Code	Grab or Core Depth (cm)	Collection Date	Percent Moisture	Al	Cr	Cu	Fe	Mn
					MDL	4	0.2	0.1	1.0	0.1
					RL	13	0.5	0.3	3	0.3
					CAS No.	7429-90-5	7440-47-3	7440-50-8	7439-89-6	7439-96-5
Storm Drains										
3151-570	PSNS096	SQV01-0004	grab	4/20/2011	20.05	48902	140	137	41924	584
3151-571	PSNS015	SQV01-0005	grab	4/20/2011	14.29	54579	947	6018	69516	1072
3151-572	PSNS008	SQV01-0006	grab	4/20/2011	31.85	48562	219	775	53295	620
Pier 7										
3151-234	Pier 7 Drum-M	SQV04-006	grab	3/17/2011	53.21	53255	99.7	115	25634	416
3151-235	Pier 7 Drum-N	SQV04-007	grab	3/17/2011	49.77	54268	103	181	28374	451
3151-236 R1	Pier 7 Drum-E	SQV04-008	grab	3/17/2011	60.11	56952	89.7	129	31262	461
3151-237	Pier 7 Drum-W	SQV04-009	grab	3/17/2011	33.38	44433	115	62.9	19935	404
3151-238	Pier 7 Drum-S	SQV04-010	grab	3/17/2011	34.36	51021	97.4	79.0	24168	399
Pier 7 Transects										
3151-585	P7-T4-1	SQV06-013	grab	4/22/2011	47.07	48631	83.6	183	29528	539
3151-593	P7-T5-4	SQV06-021	grab	4/22/2011	46.50	57065	65.8	979	26756	391
3151-594	P7-T5-5	SQV06-022	grab	4/22/2011	8.97	56722	61.9	24.2	24023	399
3151-595	P7-T6-1	SQV06-023	grab	4/22/2011	33.35	31424	42.8	92.6	17364	351
3151-596	P7-T6-2	SQV06-024	grab	4/22/2011	38.67	30896	43.7	91.0	18035	357
3151-597	P7-T6-3	SQV06-025	grab	4/22/2011	57.97	54356	94.6	186	29044	421
3151-598	P7-T6-4	SQV06-026	grab	4/22/2011	29.80	51856	123	97.9	28129	438
3151-599 R1	P7-T6-5	SQV06-027	grab	4/22/2011	47.66	61253	78.8	82.0	29144	450
3151-600	P7-T7-1	SQV06-028	grab	4/22/2011	36.25	23478	33.5	52.4	13454	280
3151-601	P7-T7-2	SQV06-029	grab	4/22/2011	36.22	36493	54.0	89.1	19559	326
3151-602	P7-T7-3	SQV06-030	grab	4/22/2011	31.93	33655	29.1	29.6	17325	363
3151-603	P7-T7-4	SQV06-031	grab	4/22/2011	48.71	51796	78.3	130	28213	392
3151-604	P7-T7-5	SQV06-032	grab	4/22/2011	27.13	58249	102	123	26269	485
3151-605	P7-T7-6	SQV06-033	grab	4/22/2011	24.20	59618	111	34.8	26523	517
3151-606	P7-T8-1	SQV06-034	grab	4/22/2011	18.15	63311	108	40.5	35699	704
3151-607	P7-T8-2	SQV06-035	grab	4/22/2011	27.66	58484	47.3	29.8	20118	371
3151-608	P7-T8-3	SQV06-036	grab	4/22/2011	33.67	60528	59.8	45.5	22887	404
3151-609	P7-T9-1	SQV06-037	grab	4/22/2011	36.84	61458	72.7	29.8	24864	433
3050-610	P7-T9-2	SQV06-038	grab	4/22/2011	29.64	53327	76.2	70.5	22771	420
3151-611	P7-T9-3	SQV06-039	grab	4/22/2011	26.87	58407	58.3	32.8	21827	414
3151-612	P7-T9-4	SQV06-040	grab	4/22/2011	18.99	58345	41.1	15.0	19567	515
3151-613	P7-T9-5	SQV06-041	grab	4/22/2011	23.78	57065	47.5	34.4	19996	444
Clear Core										
3151-315	PS03	SQV05-118	0-3cm	4/27/2011	70.64	58535	83.8	167	30073	391
3151-316	PS03	SQV05-119	3-6cm	4/27/2011	63.95	58129	81.2	144	28332	402
3151-317	PS03	SQV05-120	6-9cm	4/27/2011	71.19	58133	87.0	191	33254	409
3151-318	PS03	SQV05-121	9-13cm	4/27/2011	65.67	60260	107	184	36791	464
3151-319	PS03	SQV05-122	13-19cm	4/27/2011	65.96	65006	99.9	221	37544	476
3151-320 R1	PS03	SQV05-123	19-25cm	4/27/2011	66.50	65847	110	287	38817	482
3151-321	PS09	SQV05-135	0-3cm	4/27/2011	75.62	62505	87.0	230	35572	614
3151-322	PS09	SQV05-136	3-6cm	4/27/2011	69.14	63068	116	351	36175	462
3151-323	PS09	SQV05-137	6-9cm	4/27/2011	69.85	61433	98.4	275	36278	458
3151-324	PS09	SQV05-138	9-13cm	4/27/2011	63.39	65490	116	310	38233	516
3151-325	PS09	SQV05-139	13-19cm	4/27/2011	58.54	66081	109	337	40073	577
3151-326	PS09	SQV05-140	19-23cm	4/27/2011	49.43	66883	115	451	36644	560
3151-327	PS10	SQV05-153	0-3cm	4/27/2011	78.98	60135	79.9	156	33353	420
3151-328	PS10	SQV05-154	3-6cm	4/27/2011	78.52	60352	78.0	144	32818	425
3151-329	PS10	SQV05-155	6-9cm	4/27/2011	69.85	63522	82.4	170	35552	474
3151-330	PS10	SQV05-156	9-13cm	4/27/2011	69.87	63900	88.2	189	37488	487
3151-331	PS10	SQV05-157	13-19cm	4/27/2011	66.37	64766	99.7	229	36490	510
3151-332	PS10	SQV05-158	19-25cm	4/27/2011	42.96	64175	117	424	39797	602
3151-333	PS10.1	SQV05-171	0-3cm	4/27/2011	75.46	60154	93.1	181	34074	471
3151-334	PS10.1	SQV05-172	3-6cm	4/27/2011	74.54	59579	93.6	204	36953	410
3151-335	PS10.1	SQV05-173	6-9cm	4/27/2011	53.76	62834	99.7	220	37294	433
3151-336	PS10.1	SQV05-174	9-13cm	4/27/2011	66.00	63159	104	254	38605	455

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					RL	13	0.5	0.3	3	0.3
					CAS No.	7429-90-5	7440-47-3	7440-50-8	7439-89-6	7439-96-5
3151-337	PS10.1	SQV05-175	13-19cm	4/27/2011	63.99	62226	156	326	38847	498
3151-338	PS10.1	SQV05-176	19-24cm	4/27/2011	63.56	62730	110	299	39243	492
3151-339	PS11	SQV05-189	0-3cm	4/27/2011	76.09	59670	81.1	136	34782	436
3151-340	PS11	SQV05-190	3-6cm	4/27/2011	76.95	58434	81.3	136	34453	420
3151-341 R1	PS11	SQV05-191	6-9cm	4/27/2011	73.80	60147	86.8	148	36298	530
3151-342	PS11	SQV05-192	9-13cm	4/27/2011	72.17	60723	80.4	141	35867	410
3151-343	PS11	SQV05-193	13-19cm	4/27/2011	73.08	59929	82.6	136	34881	396
3151-344	PS11	SQV05-194	19-25cm	4/27/2011	68.73	62715	85.8	166	37154	424
3151-345	PS08	SQV05-207	0-3cm	4/27/2011	74.30	56932	94.3	206	35576	466
3151-346	PS08	SQV05-208	3-6cm	4/27/2011	61.83	49226	81.7	164	30655	379
3151-347	PS08	SQV05-209	6-9cm	4/27/2011	66.56	56675	94.1	184	33459	432
3151-348	PS08	SQV05-210	9-13cm	4/27/2011	60.72	55049	91.0	228	34455	403
3151-349	PS08	SQV05-211	13-19cm	4/27/2011	60.29	59692	103	702	39870	480
3151-350	PS08	SQV05-212	19-25cm	4/27/2011	58.93	58912	100	239	37106	456
3151-789	PS06	SQV05-1015	0-3cm	4/29/2011	62.39	63030	92.9	193	35701	588
3151-790	PS06	SQV05-1016	3-6cm	4/29/2011	57.27	63966	97.3	196	35294	502
3151-791	PS06	SQV05-1017	6-9cm	4/29/2011	55.35	63583	112	182	35076	496
3151-792	PS06	SQV05-1018	9-13cm	4/29/2011	52.55	66167	114	229	40324	574
3151-793	PS06	SQV05-1019	13-19cm	4/29/2011	53.08	66359	101	261	40497	567
3151-794	PS06	SQV05-1020	19-25cm	4/29/2011	43.25	62714	106	242	42281	968
3151-795	PS06DUP	SQV05-1033	0-3cm	4/29/2011	57.46	64420	91.4	158	33690	547
3151-796	PS06DUP	SQV05-1034	3-6cm	4/29/2011	54.81	65581	90.6	167	34198	522
3151-801	PS07	SQV05-1039	0-3cm	4/29/2011	77.10	62893	76.8	138	34357	492
3151-802 R1	PS07	SQV05-1040	3-6cm	4/29/2011	74.79	62306	78.6	141	34728	452
3151-803	PS07	SQV05-1041	6-9cm	4/29/2011	73.53	63335	80.5	143	35792	455
3151-804	PS07	SQV05-1042	9-13cm	4/29/2011	70.99	64444	82.4	146	36183	461
3151-805	PS07	SQV05-1043	13-19cm	4/29/2011	66.44	66358	86.8	157	36887	489
3151-806	PS07	SQV05-1044	19-25cm	4/29/2011	69.58	65520	85.6	161	36949	488
Grabs										
3151-423	PS03-1	SQV05-263	Grab	4/27/2011	53.59	39445	65.9	324	32492	315
3151-424	PS03-2	SQV05-267	Grab	4/27/2011	58.02	56333	97.6	187	33271	404
3151-425	PS03-3	SQV05-271	Grab	4/27/2011	45.73	44786	107	291	26385	345
3151-426	PS03-4	SQV05-275	Grab	4/27/2011	54.67	39525	73.5	300	24158	357
3151-427	PS03-5	SQV05-279	Grab	4/27/2011	81.54	53821	82.6	349	32526	394
3151-428	PS03-6	SQV05-283	Grab	4/27/2011	34.32	775	23.1	55.5	4010	161
3151-429	PS09-1	SQV05-287	Grab	4/27/2011	43.44	23149	129	584	33427	456
3151-430	PS09-2	SQV05-291	Grab	4/27/2011	31.24	46941	193	874	63645	1015
3151-431	PS09-3	SQV05-295	Grab	4/27/2011	66.95	53477	139	748	54582	561
3151-432	PS09-4	SQV05-299	Grab	4/27/2011	51.10	21931	64.4	341	19699	352
3151-433 R1	PS09-5	SQV05-303	Grab	4/27/2011	71.17	58914	99.5	263	35245	462
3151-434	PS09-6	SQV05-307	Grab	4/27/2011	73.95	57006	84.5	269	34246	630
3151-435	PS10-1	SQV05-311	Grab	4/27/2011	84.33	50666	103	308	32572	454
3151-436	PS10-2	SQV05-315	Grab	4/27/2011	81.67	54995	77.5	173	32867	430
3151-437	PS10-3	SQV05-319	Grab	4/27/2011	70.32	58294	101	398	38025	534
3151-438	PS10-4	SQV05-323	Grab	4/27/2011	78.34	55639	93.6	285	33866	414
3151-439	PS10-5	SQV05-327	Grab	4/27/2011	87.33	49598	66.8	130	29835	419
3141-440	PS10-6	SQV05-331	Grab	4/27/2011	83.53	53852	72.0	139	32299	407
3151-441	PS10.1-1	SQV05-335	Grab	4/27/2011	73.66	55639	101	433	33938	425
3151-442	PS10.1-2	SQV05-339	Grab	4/27/2011	75.75	54952	124	357	34614	488
3151-443	PS10.1-3	SQV05-343	Grab	4/27/2011	71.67	52824	83.5	248	32251	442
3151-444	PS10.1-4	SQV05-347	Grab	4/27/2011	66.71	53604	98.7	182	31852	451
3151-445	PS10.1-5	SQV05-351	Grab	4/27/2011	77.70	57018	96.8	204	34237	484
3151-446	PS10.1-6	SQV05-355	Grab	4/27/2011	46.20	22364	48.8	101	14376	350
3151-447	PS11-1	SQV05-359	Grab	4/27/2011	70.51	55478	88.2	270	34662	420
3151-448	PS11-2	SQV05-363	Grab	4/27/2011	34.65	55974	110	366	34357	703
3151-449	PS11-3	SQV05-367	Grab	4/27/2011	50.95	57891	118	336	32899	532

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METALS IN SEDIMENT, Dry Weight
 (concentrations in µg/g dry wt)

MSL Code	Station or OUB Grid Cell	Sponsor Code	Grab or Core Depth (cm)	Collection Date	Percent Moisture	Al	Cr	Cu	Fe	Mn
					MDL	4	0.2	0.1	1.0	0.1
					RL	13	0.5	0.3	3	0.3
					CAS No.	7429-90-5	7440-47-3	7440-50-8	7439-89-6	7439-96-5
3151-450	PS11-4	SQV05-371	Grab	4/27/2011	74.63	56651	84.5	222	33903	405
3151-451	PS11-5	SQV05-375	Grab	4/27/2011	75.86	58036	80.5	156	33947	457
3151-452	PS11-6	SQV05-379	Grab	4/27/2011	75.03	58606	81.4	139	33909	434
3151-453	PS08-1	SQV05-383	Grab	4/27/2011	74.92	59416	91.3	180	36506	451
3151-454	PS08-2	SQV05-387	Grab	4/27/2011	51.24	44956	92.6	531	29753	456
3151-455	PS08-3	SQV05-391	Grab	4/27/2011	68.61	63656	89.0	215	38233	510
3151-456	PS08-4	SQV05-395	Grab	4/27/2011	70.56	61467	90.2	175	36318	492
3151-457	PS08-5	SQV05-399	Grab	4/27/2011	78.87	61652	85.4	172	35814	475
3151-458	PS08-6	SQV05-403	Grab	4/27/2011	75.94	63059	88.6	169	36194	480
3151-717	PS06-1	SQV05-1058	Grab	4/29/2011	74.59	63869	82.5	151	35645	486
3151-718	PS06-2	SQV05-1062	Grab	4/29/2011	74.32	65460	85.3	155	35661	465
3151-719	PS06-3	SQV05-1066	Grab	4/29/2011	67.87	62723	92.5	260	39572	484
3151-720	PS06-4	SQV05-1070	Grab	4/29/2011	44.75	65484	86.3	66.5	29282	435
3151-721	PS06-5	SQV05-1074	Grab	4/29/2011	70.17	55194	95.8	234	34149	450
3151-722	PS06-6	SQV05-1078	Grab	4/29/2011	44.52	38593	143	234	27906	440
3151-723	PS07-1	SQV05-1082	Grab	4/29/2011	41.45	52108	58.9	72.6	23789	409
3151-724	PS07-2	SQV05-1086	Grab	4/29/2011	61.97	60192	75.1	102	29607	448
3151-725	PS07-3	SQV05-1090	Grab	4/29/2011	75.62	60265	82.6	149	33758	483
3151-726	PS07-4	SQV05-1094	Grab	4/29/2011	75.89	60403	80.9	146	33186	462
3151-727	PS07-5	SQV05-1098	Grab	4/29/2011	82.73	57997	73.9	126	32343	412
3151-728	PS07-6	SQV05-1102	Grab	4/29/2011	66.81	60580	69.7	86.3	27676	405

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MSL Code	Station or OUB Grid Cell	Sponsor Code	Grab or Core Depth (cm)	Ni	Zn	Ag	Cd	Pb	As
				0.3	0.2	0.002	0.003	0.003	0.2
				1.0	0.7	0.006	0.01	0.01	0.5
				7440-02-0	7440-66-6	7440-22-4	7440-43-9	7439-92-1	7440-38-2
Storm Drains									
3151-570	PSNS096	SQV01-0004	grab	92.1	516	0.321	0.946	242	6.90 Bb
3151-571	PSNS015	SQV01-0005	grab	282	296	358	0.390	2840	11.8 Bb
3151-572	PSNS008	SQV01-0006	grab	122	831	263	8.13	1300	21.7 Bb
Pier 7									
3151-234	Pier 7 Drum-M	SQV04-006	grab	39.2	215	0.466	1.15	65.8	7.50 Bb
3151-235	Pier 7 Drum-N	SQV04-007	grab	39.4	401	0.523	1.68	167	13.0 Bb
3151-236 R1	Pier 7 Drum-E	SQV04-008	grab	38.0	334	0.521	2.10	118	11.5 Bb
3151-237	Pier 7 Drum-W	SQV04-009	grab	29.9	181	0.213	0.533	48.3	3.80 Bb
3151-238	Pier 7 Drum-S	SQV04-010	grab	29.7	260	0.252	0.830	52.3	6.20 Bb
Pier 7 Transects									
3151-585	P7-T4-1	SQV06-013	grab	39.4	439	0.936	1.55	212	25.2 Bb
3151-593	P7-T5-4	SQV06-021	grab	35.1	378	0.418	1.14	45.1	10.0 Bb
3151-594	P7-T5-5	SQV06-022	grab	29.2	81.4	0.143	0.215	16.3	7.00 Bb
3151-595	P7-T6-1	SQV06-023	grab	21.4	239	0.337	1.09	79.7	14.8 Bb
3151-596	P7-T6-2	SQV06-024	grab	21.9	239	0.358	0.986	54.7	10.4 Bb
3151-597	P7-T6-3	SQV06-025	grab	39.9	395	0.575	1.65	419	15.3 Bb
3151-598	P7-T6-4	SQV06-026	grab	78.5	391	0.273	1.15	628	6.40 Bb
3151-599 R1	P7-T6-5	SQV06-027	grab	36.6	182	0.456	1.15	55.4	10.7 Bb
3151-600	P7-T7-1	SQV06-028	grab	18.1	111	0.270	0.720	31.3	8.20 Bb
3151-601	P7-T7-2	SQV06-029	grab	24.9	181	0.381	0.900	70.4	9.20 Bb
3151-602	P7-T7-3	SQV06-030	grab	15.4	147	0.136	0.548	23.1	6.40 Bb
3151-603	P7-T7-4	SQV06-031	grab	31.6	225	0.467	1.28	94.1	11.8 Bb
3151-604	P7-T7-5	SQV06-032	grab	34.3	168	0.291	0.591	39.3	8.10 Bb
3151-605	P7-T7-6	SQV06-033	grab	34.9	136	0.222	0.509	25.7	7.40 Bb
3151-606	P7-T8-1	SQV06-034	grab	38.9	119	0.139	0.709	22.5	10.7 Bb
3151-607	P7-T8-2	SQV06-035	grab	23.7	149	0.154	0.677	24.0	6.50 Bb
3151-608	P7-T8-3	SQV06-036	grab	25.1	161	0.241	0.850	43.2	10.5 Bb
3151-609	P7-T9-1	SQV06-037	grab	26.7	79.0	0.192	0.759	16.1	8.20 Bb
3050-610	P7-T9-2	SQV06-038	grab	25.4	183	0.181	0.815	69.1	7.40 Bb
3151-611	P7-T9-3	SQV06-039	grab	21.9	131	0.164	0.650	31.7	7.20 Bb
3151-612	P7-T9-4	SQV06-040	grab	20.3	67.4	0.125	0.341	13.5	6.20 Bb
3151-613	P7-T9-5	SQV06-041	grab	22.7	334	0.213	0.711	57.5	7.20 Bb
Clear Core									
3151-315	PS03	SQV05-118	0-3cm	41.1	235	1.49	1.87	82.0	13.7 Bb
3151-316	PS03	SQV05-119	3-6cm	37.2	194	0.774	1.62	69.6	11.2 Bb
3151-317	PS03	SQV05-120	6-9cm	41.9	241	1.36	2.02	89.0	14.6 Bb
3151-318	PS03	SQV05-121	9-13cm	70.1	324	1.20	2.01	110	14.6 Bb
3151-319	PS03	SQV05-122	13-19cm	52.2	280	1.48	2.14	123	16.3 Bb
3151-320 R1	PS03	SQV05-123	19-25cm	54.4	323	2.00	2.36	154	19.3 Bb
3151-321	PS09	SQV05-135	0-3cm	48.0	279	0.667	2.16	74.0	16.2 Bb
3151-322	PS09	SQV05-136	3-6cm	55.3	461	0.775	4.09	101	23.6 Bb
3151-323	PS09	SQV05-137	6-9cm	56.0	344	0.743	2.67	82.7	17.2 Bb
3151-324	PS09	SQV05-138	9-13cm	62.9	348	0.875	2.18	111	19.3 Bb
3151-325	PS09	SQV05-139	13-19cm	59.9	342	0.926	1.69	119	23.2 Bb
3151-326	PS09	SQV05-140	19-23cm	56.0	417	0.833	1.51	143	32.5 Bb
3151-327	PS10	SQV05-153	0-3cm	41.5	225	0.679	1.73	72.7	17.6 Bb
3151-328	PS10	SQV05-154	3-6cm	39.1	210	0.718	1.61	74.9	13.3 Bb
3151-329	PS10	SQV05-155	6-9cm	44.0	243	0.749	1.80	82.5	15.7 Bb
3151-330	PS10	SQV05-156	9-13cm	46.3	273	0.933	1.88	107	18.2 Bb
3151-331	PS10	SQV05-157	13-19cm	48.9	324	0.998	1.83	148	18.6 Bb
3151-332	PS10	SQV05-158	19-25cm	61.3	757	1.25	2.53	475	31.7 Bb
3151-333	PS10.1	SQV05-171	0-3cm	45.2	270	0.863	1.63	112	17.6 Bb
3151-334	PS10.1	SQV05-172	3-6cm	44.9	301	0.802	1.80	126	16.3 Bb
3151-335	PS10.1	SQV05-173	6-9cm	49.5	312	0.892	1.49	116	18.6 Bb
3151-336	PS10.1	SQV05-174	9-13cm	52.9	374	1.05	1.70	258	19.8 Bb

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				0.3	0.2	0.002	0.003	0.003	0.2
				1.0	0.7	0.006	0.01	0.01	0.5
				7440-02-0	7440-66-6	7440-22-4	7440-43-9	7439-92-1	7440-38-2
3151-337	PS10.1	SQV05-175	13-19cm	84.2	416	1.32	1.72	189	25.5 Bb
3151-338	PS10.1	SQV05-176	19-24cm	57.5	383	1.41	1.51	165	26.2 Bb
3151-339	PS11	SQV05-189	0-3cm	41.2	230	0.635	1.87	69.4	12.9 Bb
3151-340	PS11	SQV05-190	3-6cm	40.7	259	0.553	1.61	71.7	14.2 Bb
3151-341 R1	PS11	SQV05-191	6-9cm	45.6	235	0.606	1.62	68.0	16.2 Bb
3151-342	PS11	SQV05-192	9-13cm	41.3	236	0.614	1.85	72.7	13.9 Bb
3151-343	PS11	SQV05-193	13-19cm	42.5	223	0.669	1.65	70.4	12.4 Bb
3151-344	PS11	SQV05-194	19-25cm	44.8	254	0.730	1.98	84.9	13.6 Bb
3151-345	PS08	SQV05-207	0-3cm	43.9	338	0.670	1.56	93.2	16.2 Bb
3151-346	PS08	SQV05-208	3-6cm	39.4	375	0.520	1.40	84.5	11.9 Bb
3151-347	PS08	SQV05-209	6-9cm	41.3	329	0.982	1.47	85.6	14.0 Bb
3151-348	PS08	SQV05-210	9-13cm	41.3	353	0.592	1.39	82.0	14.5 Bb
3151-349	PS08	SQV05-211	13-19cm	49.9	495	0.891	1.52	110	16.9 Bb
3151-350	PS08	SQV05-212	19-25cm	49.6	351	0.966	1.29	121	19.0 Bb
3151-789	PS06	SQV05-1015	0-3cm	39.5	383	0.654	1.15	101	18.2 Bb
3151-790	PS06	SQV05-1016	3-6cm	40.5	321	0.701	1.13	104	19.2 Bb
3151-791	PS06	SQV05-1017	6-9cm	43.4	330	0.852	1.12	177	17.6 Bb
3151-792	PS06	SQV05-1018	9-13cm	46.3	414	0.936	0.930	116	24.1 Bb
3151-793	PS06	SQV05-1019	13-19cm	46.6	502	1.70	1.13	209	45.5 Bb
3151-794	PS06	SQV05-1020	19-25cm	39.7	1031	1.45	0.758	303	47.6 Bb
3151-795	PS06DUP	SQV05-1033	0-3cm	39.6	295	0.700	1.09	96.4	18.8 Bb
3151-796	PS06DUP	SQV05-1034	3-6cm	40.4	259	0.725	1.15	115	22.3 Bb
3151-801	PS07	SQV05-1039	0-3cm	41.4	189	0.690	2.03	64.9	14.9 Bb
3151-802 R1	PS07	SQV05-1040	3-6cm	42.1	206	0.697	2.51	68.1	14.8 Bb
3151-803	PS07	SQV05-1041	6-9cm	43.1	211	0.719	2.21	70.4	14.7 Bb
3151-804	PS07	SQV05-1042	9-13cm	43.1	210	0.737	2.31	72.5	15.5 Bb
3151-805	PS07	SQV05-1043	13-19cm	45.1	222	0.803	2.03	83.5	13.9 Bb
3151-806	PS07	SQV05-1044	19-25cm	45.2	217	0.802	1.90	80.8	14.5 Bb
Grabs									
3151-423	PS03-1	SQV05-263	Grab	35.3	238	0.799	1.71	71.0	11.6 Bb
3151-424	PS03-2	SQV05-267	Grab	41.4	311	1.04	2.18	92.8	11.6 Bb
3151-425	PS03-3	SQV05-271	Grab	31.5	483	1.42	1.77	181	10.4 Bb
3151-426	PS03-4	SQV05-275	Grab	29.4	280	1.31	1.33	119	11.2 Bb
3151-427	PS03-5	SQV05-279	Grab	41.9	247	0.983	1.77	78.2	13.8 Bb
3151-428	PS03-6	SQV05-283	Grab	13.2	143	0.0299	0.492	5.55	2.10 Bb
3151-429	PS09-1	SQV05-287	Grab	107	719	0.742	1.59	190	39.2 Bb
3151-430	PS09-2	SQV05-291	Grab	154	2172	1.26	2.63	390	223 Bb
3151-431	PS09-3	SQV05-295	Grab	133	1363	1.15	8.98	140	28.3 Bb
3151-432	PS09-4	SQV05-299	Grab	31.5	489	0.476	1.29	124	32.1 Bb
3151-433 R1	PS09-5	SQV05-303	Grab	57.1	328	0.693	1.78	89.3	15.7 Bb
3151-434	PS09-6	SQV05-307	Grab	44.9	320	0.603	2.04	72.0	15.2 Bb
3151-435	PS10-1	SQV05-311	Grab	58.6	446	1.03	2.00	150	18.2 Bb
3151-436	PS10-2	SQV05-315	Grab	41.1	266	0.691	2.55	76.7	14.4 Bb
3151-437	PS10-3	SQV05-319	Grab	58.0	485	1.01	2.16	192	23.3 Bb
3151-438	PS10-4	SQV05-323	Grab	44.6	411	1.22	2.74	129	15.8 Bb
3151-439	PS10-5	SQV05-327	Grab	35.3	192	0.830	1.83	58.2	12.3 Bb
3141-440	PS10-6	SQV05-331	Grab	37.9	216	0.622	1.96	64.3	13.0 Bb
3151-441	PS10.1-1	SQV05-335	Grab	47.9	673	0.836	2.12	171	16.8 Bb
3151-442	PS10.1-2	SQV05-339	Grab	53.0	718	1.24	2.62	352	21.0 Bb
3151-443	PS10.1-3	SQV05-343	Grab	42.0	374	0.717	1.89	93.9	16.3 Bb
3151-444	PS10.1-4	SQV05-347	Grab	47.5	280	0.664	1.56	91.5	16.6 Bb
3151-445	PS10.1-5	SQV05-351	Grab	43.9	336	1.02	2.23	116	14.6 Bb
3151-446	PS10.1-6	SQV05-355	Grab	20.4	166	0.317	0.776	60.3	4.20 Bb
3151-447	PS11-1	SQV05-359	Grab	47.7	428	0.772	2.36	113	24.9 Bb
3151-448	PS11-2	SQV05-363	Grab	45.2	795	0.879	1.42	1180	36.6 Bb
3151-449	PS11-3	SQV05-367	Grab	51.2	503	0.845	1.71	184	23.5 Bb

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				1.0	0.7	0.006	0.01	0.01	0.5
				7440-02-0	7440-66-6	7440-22-4	7440-43-9	7439-92-1	7440-38-2
3151-450	PS11-4	SQV05-371	Grab	43.9	373	0.694	2.25	99.7	15.4 Bb
3151-451	PS11-5	SQV05-375	Grab	41.1	243	0.758	1.65	78.3	13.2 Bb
3151-452	PS11-6	SQV05-379	Grab	40.2	228	0.656	1.65	76.7	10.8 Bb
3151-453	PS08-1	SQV05-383	Grab	67.1	266	0.787	1.51	83.3	13.2 Bb
3151-454	PS08-2	SQV05-387	Grab	36.6	606	0.573	1.68	87.6	20.8 Bb
3151-455	PS08-3	SQV05-391	Grab	52.1	418	0.718	4.80	84.3	17.1 Bb
3151-456	PS08-4	SQV05-395	Grab	46.8	318	0.700	1.73	77.5	15.9 Bb
3151-457	PS08-5	SQV05-399	Grab	42.4	295	0.712	1.82	79.5	15.0 Bb
3151-458	PS08-6	SQV05-403	Grab	43.3	257	0.749	1.63	80.8	15.5 Bb
3151-717	PS06-1	SQV05-1058	Grab	41.9	211	0.762	1.76	64.1	14.7 Bb
3151-718	PS06-2	SQV05-1062	Grab	42.9	215	0.719	1.68	71.0	15.6 Bb
3151-719	PS06-3	SQV05-1066	Grab	46.7	278	0.740	1.64	69.9	15.7 Bb
3151-720	PS06-4	SQV05-1070	Grab	35.2	153	0.329	0.606	37.7	10.1 Bb
3151-721	PS06-5	SQV05-1074	Grab	39.4	420	0.682	1.49	116	16.1 Bb
3151-722	PS06-6	SQV05-1078	Grab	34.7	540	1.55	0.987	250	58.8 Bb
3151-723	PS07-1	SQV05-1082	Grab	30.0	139	0.360	0.717	52.8	8.10 Bb
3151-724	PS07-2	SQV05-1086	Grab	37.5	179	0.520	1.16	67.6	11.5 Bb
3151-725	PS07-3	SQV05-1090	Grab	41.6	229	0.749	2.00	88.8	16.8 Bb
3151-726	PS07-4	SQV05-1094	Grab	39.6	220	0.773	1.94	81.5	14.2 Bb
3151-727	PS07-5	SQV05-1098	Grab	39.1	189	0.653	2.07	65.0	14.1 Bb
3151-728	PS07-6	SQV05-1102	Grab	35.9	148	0.444	1.28	50.8	11.3 Bb

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2011 Sediment Verification Study
METALS IN SEDIMENT, Dry Weight
(concentrations in µg/g dry wt)

MSL Code	Station or OUB Grid Cell	Sponsor Code	Depth (cm)	Collection Date	Percent Moisture	Al	Cr	Cu	Fe	Mn
					MDL	4.0	0.2	0.1	1.0	0.1
					RL	13	0.5	0.3	3	0.3
					CAS No.	7429-90-5	7440-47-3	7440-50-8	7439-89-6	7439-96-5

Procedural Blank

Blank 072711	MB					4 U	0.2 U	0.1 U	1.0 U	0.1 U
Blank 072811	MB					4 U	0.2 U	0.103 J	1.14 J	0.1 U
Blank 080111	MB					4 U	0.2 U	0.1 U	1.0 U	0.1 U
Blank 080311 re	MB					4 U	0.2 U	0.1 U	4.03	0.1 U
Blank 080911 R1	MB					4.10 J	0.2 U	0.1 U	1.0 U	0.1 U
Blank 081111	MB					4 U	0.2 U	0.217 J	1.0 U	0.1 U
Blank 081611	MB					4 U	0.2 U	0.1 U	1.0 U	0.1 U

Mean Reagent Blank used to correct As

Laboratory Control Sample Results (Blank Spike)

LCS-072711	LCS					8.72	4.93	4.99	4.58	5.26
Blank 072711	MB					4 U	0.2 U	0.1 U	1.0 U	0.1 U
Spike Concentration						NS	5	5	NS	5
Percent Recovery							99%	100%		105%
LCS 072811	LCS					4 U	5.15	5.19	91.9	5.41
Blank 072811	MB					4 U	0.2 U	0.103 J	1.14 J	0.1 U
Spike Concentration						NS	5	5	NS	5
Percent Recovery							103%	102%		108%
LCS 080111	LCS					8.35	5.03	5.07	5.25	5.05
Blank 080111	MB					4 U	0.2 U	0.1 U	1.0 U	0.1 U
Spike Concentration						NS	5	5	NS	5
Percent Recovery							101%	101%		101%
LCS 080311	LCS					7.88	5.50	5.14	5.46	4.93
Blank 080311 re	MB					4 U	0.2 U	0.1 U	4.03	0.1 U
Spike Concentration						NS	5	5	NS	5
Percent Recovery							110%	103%		99%
LCS 080911	LCS					10.5	5.21	5.04	3.98	5.39
Blank 080911 R1	MB					4.10 J	0.2 U	0.1 U	1.0 U	0.1 U
Spike Concentration						NS	5	5	NS	5
Percent Recovery							104%	101%		108%
LCS 081111	LCS					4 U	4.71	4.81	7.85	5.02
Blank 081111	MB					4 U	0.2 U	0.217 J	1.0 U	0.1 U
Spike Concentration						NS	5	5	NS	5
Percent Recovery							94%	92%		100%
LCS 081611	LCS					4 U	4.72	4.94	4.21	5.11
Blank 081611	MB					4 U	0.2 U	0.1 U	1.0 U	0.1 U
Spike Concentration						NS	5	5	NS	5
Percent Recovery							94%	99%		102%

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MSL Code	Station or OUB Grid Cell	Sponsor Code	Depth (cm)	Collection Date	Percent Moisture	Al	Cr	Cu	Fe	Mn
					MDL	4.0	0.2	0.1	1.0	0.1
					RL	13	0.5	0.3	3	0.3
					CAS No.	7429-90-5	7440-47-3	7440-50-8	7439-89-6	7439-96-5
Standard Reference Material (SRM)										
PACS-2 072711		SRM				60426	80.8	288	37224	406
PACS-2 072811		SRM				59007	81.5	295	37943	388
PACS-2 080111		SRM				63431	81.0	300	38683	395
PACS-2 080311		SRM				62482	83.7	303	39686	378
PACS-2 080911		SRM				63666	79.3	294	38987	415
PACS-2 081111		SRM				61630	76.6	270	37512	401
PACS-2 081611		SRM				61463	77.1	270	37953	394
Certified or Reference Value						66200	90.7	310	40900	440
Range						± 3200	± 4.6	± 12	± 600	± 19
% Recovery						91%	89%	93%	91%	92%
% Recovery						89%	90%	95%	93%	88%
% Recovery						96%	89%	97%	95%	90%
% Recovery						94%	92%	98%	97%	86%
% Recovery						96%	87%	95%	95%	94%
% Recovery						93%	84%	87%	92%	91%
% Recovery						93%	85%	87%	93%	89%
Matrix Spike Results										
3151-452 MS2		MS				NS	108	165	NS	461
3151-452 PS11-6		SQV05-379	Grab	4/27/2011	75.03	58606	81.4	139	33909	434
Spike Concentration, MS						NS	26.7	26.7	NS	NS
Percent Recovery, MS						NS	98%	97%	NS	NS
3151-439 MS2		MS				NS	93.8	154	NS	444
3151-439 PS10-5		SQV05-327	Grab	4/27/2011	87.33	49598	66.8	130	29835	419
Spike Concentration, MS						NS	25.1	25.1	NS	NS
Percent Recovery, MS						NS	108%	99%	NS	NS
3151-327 MS2		MS				NS	102	177	NS	443
3151-327 PS10		SQV05-153	0-3cm	4/27/2011	78.98	60135	79.9	156	33353	420
Spike Concentration, MS						NS	25.1	25.1	NS	NS
Percent Recovery, MS						NS	90%	84%	NS	NS
3151-350 MS2		MS				NS	122	249	NS	473
3151-350 PS08		SQV05-212	19-25cm	4/27/2011	58.93	58912	100	239	37106	456
Spike Concentration, MS						NS	24.1	24.1	NS	NS
Percent Recovery, MS						NS	92%	42% N	NS	NS
3151-458 MS2		MS				NS	111	193	NS	509
3151-458 PS08-6		SQV05-403	Grab	4/27/2011	75.94	63059	88.6	169	36194	480
Spike Concentration, MS						NS	23.7	23.7	NS	NS
Percent Recovery, MS						NS	93%	100%	NS	NS

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MSL Code	Station or OUB Grid Cell	Sponsor Code	Depth (cm)	Collection Date	Percent Moisture	Al	Cr	Cu	Fe	Mn
					MDL	4.0	0.2	0.1	1.0	0.1
					RL	13	0.5	0.3	3	0.3
					CAS No.	7429-90-5	7440-47-3	7440-50-8	7439-89-6	7439-96-5
<u>Matrix Spike Results</u>										
3151-607 MS2		MS				NS	64	48	NS	410
3151-607	P7-T8-2	SQV06-035	grab	4/22/2011	27.66	58484	47.3	29.8	20118	371
Spike Concentration, MS						NS	23.3	23.3	NS	NS
Percent Recovery, MS						NS	70%	78%	NS	NS
3151-724 MS2		MS				NS	122	127	NS	485
3151-724	PS07-2	SQV05-1086	Grab	4/29/2011	61.97	60192	75.1	102	29607	448
Spike Concentration, MS						NS	26.1	26.1	NS	NS
Percent Recovery, MS						NS	181% N	95%	NS	NS
<u>Replicate Analysis Results</u>										
3151-236 R1	Pier 7 Drum-E	SQV04-008	grab	3/17/2011	60.11	56952	89.7	129	31262	461
3151-236 R2		DUP				54705	91.6	120	29325	452
MEAN						55828	90.7	124.7	30294	456
RPD						4%	2%	8%	6%	2%
3151-433 R1	PS09-5	SQV05-303	Grab	4/27/2011	71.17	58914	99.5	263	35245	462
3151-433 DUP		DUP				59366	109	285	35630	480
MEAN						59140	104	274	35437	471
RPD						1%	9%	8%	1%	4%
3151-320 R1	PS03	SQV05-123	19-25cm	4/27/2011	66.50	65847	110	287	38817	482
3151-320 R2		DUP				64119	107	277	37923	473
MEAN						64983	109	282	38370	478
RPD						3%	3%	3%	2%	2%
3151-341 R1	PS11	SQV05-191	6-9cm	4/27/2011	73.80	60147	86.8	148	36298	530
3151-341 R2		DUP				60754	87.0	205	36518	536
MEAN						60451	86.9	177	36408	533
RPD						1%	0%	33% *	1%	1%
3151-802 R1	PS07	SQV05-1040	3-6cm	4/29/2011	74.79	62306	78.6	141	34728	452
3151-802 R2		DUP				61927	81.0	142	34852	448
MEAN						62117	79.8	142	34790	450
RPD						1%	3%	0%	0%	1%
3151-599 R1	P7-T6-5	SQV06-027	grab	4/22/2011	47.66	61253	78.8	82.0	29144	450
3151-599 R2		DUP				61593	74.5	93.1	30033	466
MEAN						61423	76.6	87.5	29589	458
RPD						1%	6%	13%	3%	4%

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METALS IN SEDIMENT, Dry Weight
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MSL Code	Station or OUB Grid Cell	Sponsor Code	Depth (cm)	Ni	Zn	Ag	Cd	Pb	As
				0.3	0.2	0.002	0.003	0.003	0.2
				1.0	0.7	0.006	0.01	0.01	0.5
				7440-02-0	7440-66-6	7440-22-4	7440-43-9	7439-92-1	7440-38-2
Procedural Blank									
Blank 072711		MB		0.3 U	0.2 U	0.002 U	0.00613 J	0.003 U	18.8
Blank 072811		MB		0.3 U	0.371 J	0.002 U	0.00438 J	0.003 U	17.3
Blank 080111		MB		0.3 U	0.2 U	0.002 U	0.003 U	0.003 U	21.5
Blank 080311 re		MB		0.3 U	0.256 J	0.002 U	0.003 U	0.003 U	19.7
Blank 080911 R1		MB		0.3 U	0.381 J	0.00532 J	0.00633 J	0.003 U	19.9
Blank 081111		MB		0.3 U	0.2 U	0.002 U	0.00587 J	0.003 U	19.7
Blank 081611		MB		0.3 U	0.2 U	0.002 U	0.003 U	0.003 U	15.4
Mean Reagent Blank used to correct As									18.9
Laboratory Control Sample Results (Blank Spike)									
LCS-072711		LCS		4.80	4.87	4.59	4.78	4.98	24.7
Blank 072711		MB		0.3 U	0.2 U	0.002 U	0.00613 J	0.003 U	18.8
Spike Concentration				5	5	5	5	5	5
Percent Recovery				96%	97%	92%	95%	100%	118%
LCS 072811		LCS		11.8	5.05	4.52	4.76	4.82	23.2
Blank 072811		MB		0.3 U	0.371 J	0.002 U	0.00438 J	0.003 U	17.3
Spike Concentration				5	5	5	5	5	5
Percent Recovery				236% N	94%	90%	95%	96%	118%
LCS 080111		LCS		4.96	4.89	4.83	5.14	5.15	27.3
Blank 080111		MB		0.3 U	0.2 U	0.002 U	0.003 U	0.003 U	21.5
Spike Concentration				5	5	5	5	5	5
Percent Recovery				99%	98%	97%	103%	103%	116%
LCS 080311		LCS		5.40	5.46	5.02	5.30	5.38	27.9
Blank 080311 re		MB		0.3 U	0.256 J	0.002 U	0.003 U	0.003 U	19.7
Spike Concentration				5	5	5	5	5	5
Percent Recovery				108%	104%	100%	106%	108%	164% N
LCS 080911		LCS		5.05	4.97	4.59	4.93	5.10	25.1
Blank 080911 R1		MB		0.3 U	0.381 J	0.00532 J	0.00633 J	0.003 U	19.9
Spike Concentration				5	5	5	5	5	5
Percent Recovery				101%	92%	92%	98%	102%	104%
LCS 081111		LCS		4.93	4.81	4.74	4.84	4.95	24.6
Blank 081111		MB		0.3 U	0.2 U	0.002 U	0.00587 J	0.003 U	19.7
Spike Concentration				5	5	5	5	5	5
Percent Recovery				99%	92%	95%	97%	99%	98%
LCS 081611		LCS		5.09	5.43	4.48	4.96	4.93	21.2
Blank 081611		MB		0.3 U	0.2 U	0.002 U	0.003 U	0.003 U	15.4
Spike Concentration				5	5	5	5	5	5
Percent Recovery				102%	105%	90%	99%	99%	116%

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METALS IN SEDIMENT, Dry Weight
(concentrations in µg/g dry wt)

MSL Code	Station or OUB Grid Cell	Sponsor Code	Depth (cm)	Ni	Zn	Ag	Cd	Pb	As
				0.3	0.2	0.002	0.003	0.003	0.2
				1.0	0.7	0.006	0.01	0.01	0.5
				7440-02-0	7440-66-6	7440-22-4	7440-43-9	7439-92-1	7440-38-2
Standard Reference Material (SRM)									
PACS-2 072711		SRM		33.5	344	1.12	2.08	175	27.3 Bb
PACS-2 072811		SRM		34.1	361	1.09	2.16	170	25.0 Bb
PACS-2 080111		SRM		33.6	353	1.60	2.36	178	25.9 Bb
PACS-2 080311		SRM		35.3	367	1.11	2.07	182	24.9 Bb
PACS-2 080911		SRM		35.3	341	1.71	2.59	182	25.8 Bb
PACS-2 081111		SRM		32.1	336	1.17	2.23	177	26.3 Bb
PACS-2 081611		SRM		32.7	339	1.06	2.15	172	23.6 Bb
Certified or Reference Value				39.5	364	1.22	2.11	183	26.2
Range				± 2.3	± 23	± 0.14	± 0.15	± 8	± 1.5
% Recovery				85%	94%	92%	99%	96%	104%
% Recovery				86%	99%	89%	102%	93%	95%
% Recovery				85%	97%	131% &	112%	97%	99%
% Recovery				89%	101%	91%	98%	99%	95%
% Recovery				89%	94%	140% &	123% &	99%	98%
% Recovery				81%	92%	96%	106%	97%	100%
% Recovery				83%	93%	87%	102%	94%	90%
Matrix Spike Results									
3151-452 MS2		MS		66.4	259	2.34	3.51	107	40.7 Bb
3151-452 PS11-6		SQV05-379	Grab	40.2	228	0.656	1.65	76.7	10.8 Bb
Spike Concentration, MS				26.7	26.7	1.81	1.81	26.7	26.7
Percent Recovery, MS				98%	114%	93%	103%	113%	112%
3151-439 MS2		MS		58.7	221	2.32	3.69	88.1	39.5 Bb
3151-439 PS10-5		SQV05-327	Grab	35.3	192	0.830	1.83	58.2	12.3 Bb
Spike Concentration, MS				25.1	25.1	2.01	2.01	25.1	25.1
Percent Recovery, MS				93%	118%	74%	93%	119%	108%
3151-327 MS2		MS		64.6	242	2.50	3.85	96.8	41.0 Bb
3151-327 PS10		SQV05-153	0-3cm	41.5	225	0.679	1.73	72.7	17.6 Bb
Spike Concentration, MS				25.1	25.1	2.01	2.01	25.1	25.1
Percent Recovery, MS				92%	70%	91%	105%	96%	93%
3151-350 MS2		MS		73.4	374	2.83	3.27	138	39.9 Bb
3151-350 PS08		SQV05-212	19-25cm	49.6	351	0.966	1.29	121	19.0 Bb
Spike Concentration, MS				24.1	24.1	2.04	2.04	24.1	24.1
Percent Recovery, MS				99%	96%	91%	97%	71%	87%
3151-458 MS2		MS		66.3	282	2.63	3.56	104	38.0 Bb
3151-458 PS08-6		SQV05-403	Grab	43.3	257	0.749	1.63	80.8	15.5 Bb
Spike Concentration, MS				23.7	23.7	1.95	1.95	23.7	23.7
Percent Recovery, MS				97%	106%	96%	99%	98%	95%

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MSL Code	Station or OUB Grid Cell	Sponsor Code	Depth (cm)	Ni	Zn	Ag	Cd	Pb	As
				0.3	0.2	0.002	0.003	0.003	0.2
				1.0	0.7	0.006	0.01	0.01	0.5
				7440-02-0	7440-66-6	7440-22-4	7440-43-9	7439-92-1	7440-38-2
<u>Matrix Spike Results</u>									
3151-607 MS2		MS		41.4	164	1.92	2.55	49.6	26.4 Bb
3151-607	P7-T8-2	SQV06-035	grab	23.7	149	0.154	0.677	24.0	6.50 Bb
Spike Concentration, MS				23.3	23.3	1.97	1.97	23.3	23.3
Percent Recovery, MS				76%	65% N	90%	95%	110%	85%
3151-724 MS2		MS		60.0	205	2.34	3.18	92.3	38.0
3151-724	PS07-2	SQV05-1086	Grab	37.5	179	0.520	1.16	67.6	11.5 Bb
Spike Concentration, MS				26.1	26.1	1.93	1.93	26.1	26.1
Percent Recovery, MS				86%	100%	94%	105%	95%	102%
<u>Replicate Analysis Results</u>									
3151-236 R1	Pier 7 Drum-E	SQV04-008	grab	38.0	334	0.521	2.10	118	11.5 Bb
3151-236 R2		DUP		44.7	451	0.500	1.63	99.2	9.20 Bb
MEAN				41.3	392	0.511	1.87	109	10.4
RPD				16%	30%	4%	25%	17%	22%
3151-433 R1	PS09-5	SQV05-303	Grab	57.1	328	0.693	1.78	89.3	15.7 Bb
3151-433 DUP		DUP		52.3	404	0.817	1.94	88.0	21.5 Bb
MEAN				54.7	366	0.755	1.86	88.7	18.6
RPD				9%	21%	16%	9%	1%	31% *
3151-320 R1	PS03	SQV05-123	19-25cm	54.4	323	2.00	2.36	154	19.3 Bb
3151-320 R2		DUP		52.8	317	2.03	2.30	155	18.2 Bb
MEAN				53.6	320	2.02	2.33	155	18.8
RPD				3%	2%	1%	3%	1%	6%
3151-341 R1	PS11	SQV05-191	6-9cm	45.6	235	0.606	1.62	68.0	16.2 Bb
3151-341 R2		DUP		44.4	232	0.648	1.53	65.6	17.1 Bb
MEAN				45.0	233	0.627	1.58	66.8	16.7
RPD				3%	1%	7%	6%	4%	5%
3151-802 R1	PS07	SQV05-1040	3-6cm	42.1	206	0.697	2.51	68.1	14.8 Bb
3151-802 R2		DUP		41.0	205	0.720	2.39	71.1	14.4 Bb
MEAN				41.5	206	0.709	2.45	69.6	14.6
RPD				3%	1%	3%	5%	4%	3%
3151-599 R1	P7-T6-5	SQV06-027	grab	36.6	182	0.456	1.15	55.4	10.7 Bb
3151-599 R2		DUP		36.3	194	0.478	1.22	126	11.3 Bb
MEAN				36.4	188	0.467	1.19	90.7	11.0
RPD				1%	6%	5%	6%	78% *	5%

QAI/QC NARRATIVE

PROJECT:	2011 Sediment Verification Study: SQV01 2011 Storm Drains, SQV04 Pier 7 Drums, SQV05 (partial) Grabs and Clear Cores, SQV06 Pier 7 Transects
PARAMETER:	Silver (Ag), aluminum (Al), arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), iron (Fe), manganese (Mn), nickel (Ni), lead (Pb), and zinc (Zn) Mercury (Hg) is reported separately.
LABORATORY:	Pacific Northwest National Laboratory (PNNL), Battelle Marine Sciences Laboratory (MSL), Sequim, Washington
MATRIX:	SQV01: 2011 Storm Drain Grabs (sediment) SQV04: Pier 7 Surface sediment grabs (to fill a 50 gallon drum) SQV05: Surface sediment grabs (0-6 cm) and Clear Cores 0-25 cm, subsectioned at 3 then 6 cm intervals SQV06: Pier 7 Transects Surface Grabs (0-10cm)
SAMPLE CUSTODY AND PROCESSING:	Sediment samples were collected as described in the sampling and analysis plan (Johnston et al. 2011). A brief description of each sample type is provided below.

SQV01 – 2011 Storm Drain

Three sediment samples were collected by Taylor/TEC from three separate storm drain located in the Puget Sound Naval Shipyard and Intermediate Maintenance Facility (PSNS&IMF). This effort was conducted in collaboration with the Non-Dry Dock Stormwater Project (see QAPP Taylor Associates, Inc. and Pacific Northwest National Laboratory 2011). The samples were collected in 8oz precleaned glass jars by scooping available sediment from the storm drain. They were hand delivered by Taylor/TEC to the Navy and then MSL on 04/28/2011. The samples were split for metals and grain size analyses. The metals splits were archived frozen (<-20°C) until lyophilization.

SQV04- Pier 7 Drum

Five samples were collected from the Pier 7 Drum sampling conducted by the Navy on 03/17/2011. The samples were hand delivered to MSL on 03/24/11. The samples were split for metals, organics, grain size, and screening analyses. The metals splits were archived frozen (<-20°C) until lyophilization.

SQV05(partial)- Clear Cores, and Grab Samples April 2011

The SQV05 sediment samples were collected at PSNS&IMF by the U.S. Navy and MSL on 04/27/11 and 04/29/11 (see QAPP Johnston et al. 2011). Three types of samples were collected by Navy divers: 1) squeeze core for porewater and sediment (reported separately), 2) clear cores, and 3) surface grabs (0-6cm). The clear cores consisted of a 40 cm cellulose acetate butyrate (CAB) plastic core tube with a 5.5 cm I.D. One clear core was collected at each of the eight sampling locations and one duplicate core was collected. The core was extruded and sub-sectioned at the following intervals: 0-3cm, 3-6cm, 6-9cm, 9-13cm, 13-19cm, and 19-25cm. Six sediment grabs were collected from the eight sampling locations using 16 oz amber glass jars that were precleaned for organics and metals. The samples were split for metals, organics, grain size, and screening analyses. The metals splits were archived frozen (<-20°C) until lyophilization.

Table 1 lists the measurement quality criteria, method detection limits (MDL), and reporting limits (RL) for each metal.

QAI/QC NARRATIVE

Table 1 Measurement quality criteria

Analyte	Analytical Method	Spike Range of Recovery	SRM Accuracy	Relative Precision	Achieved Detection Limit ⁽¹⁾ (µg/g dry wt.)	Reporting Limit ⁽²⁾ (µg/g dry wt.)
Ag	ICP-MS	70-130%	≤20% PD	≤30% RPD	0.002	0.006
As	ICP-MS	70-130%	≤20% PD	≤30% RPD	0.2	0.5
Al	ICP-OES	70-130%	≤20% PD	≤30% RPD	4	13
Cd	ICP-MS	70-130%	≤20% PD	≤30% RPD	0.003	0.01
Cr	ICP-OES	70-130%	≤20% PD	≤30% RPD	0.2	0.5
Cu	ICP-OES	70-130%	≤20% PD	≤30% RPD	0.1	0.3
Fe	ICP-OES	70-130%	≤20% PD	≤30% RPD	1	3
Mn	ICP-OES	70-130%	≤20% PD	≤30% RPD	0.1	0.3
Ni	ICP-OES	70-130%	≤20% PD	≤30% RPD	0.3	1.0
Pb	ICP-MS	70-130%	≤20% PD	≤30% RPD	0.003	0.01
Zn	ICP-OES	70-130%	≤20% PD	≤30% RPD	0.2	0.7

(1) Reported from the annually verified Sediment MDL summary.

(2) Determined as 3.18 times achieved MDL

METHODS:

Sediment samples were analyzed for silver (Ag), aluminum (Al), arsenic (As), cadmium (Cd), chromium (Cr), copper (Cu), iron (Fe), manganese (Mn), lead (Pb), nickel (Ni) and zinc (Zn). Samples were freeze-dried and homogenized using a ball-mill prior to digestion according to Battelle SOP MSL-C-003, *Percent Dry Weight and Homogenizing Dry Sediment, Soil and Tissue*.

Sediment samples were digested in accordance with Battelle SOP MSL-I-006, *Mixed Acid Sediment Digestion*. The sediment were digested following the total dissolution method followed by boric acid neutralization. In brief, an approximately 400-mg (dry weight) aliquot of each sample was combined with nitric, hydrochloric, and hydrofluoric acids in a Teflon digestion vessel and heated in an oven at 130°C (±10°C) for a minimum of eight hours. After cooling, boric acid was added to the digestate to neutralize the hydrofluoric acid and deionized water was added to achieve analysis volume.

Digested samples were analyzed for Al, Cr, Cu, Fe, Mn, Ni, and Zn using inductively coupled plasma optical emissions spectroscopy (ICP-OES) according to Battelle SOP MSL-I-033, *Determination of Elements in Aqueous and Digestate Samples by ICP-OES*. This procedure is based on two methods modified and adapted for analysis of low level samples: EPA Method 6010B and 200.7.

Digested samples were analyzed for Ag, As, Cd, and Pb using inductively coupled plasma-mass spectrometry (ICP-MS) according to Battelle SOP MSL-I-022, *Determination of Elements in Aqueous and Digestate Samples by ICP/MS*. All results were reported in units of µg/g on a dry-weight basis.

HOLDING TIMES:

The recommended holding time for the reported analytes in sediment is one year frozen. The sediment samples were digested within the one year holding time.

DETECTION LIMITS:

Analytical results were reported to laboratory achieved detection limits derived from the annually verified Sediment MDL Study. The MDL study was conducted in compliance with 40 CFR Part 136 Appendix B Revision 1.11, which entails the analyses of at least seven replicates of the matrix (quartz sand) to calculate the MDL value.

QAI/QC NARRATIVE

Data were evaluated and flagged in accordance to the following criteria:

- U Analyte not detected at or above laboratory achieved detection limit, MDL reported
- J Value reported is below the RL, but above the MDL.
- & Accuracy results outside QC criteria of $\leq 20\%$ PD (SRM).
- * Precision results outside QC criteria of $\leq 30\%$ RPD.
- N Spiked sample recovery not within the QC limits of 70-130%.
- B Analyte detected in the method blank above the RL, sample concentration < 10 times detected blank value.
 - b Reagent blank corrected using mean reagent blank concentration.

METHOD BLANKS:

Seven method blanks were analyzed with the sediment samples. All metals were either not detected or detected below the reporting limit (RL) with the exception of one replicate of Fe (4.03) and the As. All Fe sample concentrations are at least 10x the RL; the detected blank should have no impact on the field concentrations. The boric acid used to neutralize the digestion contained an average of 18.9 $\mu\text{g/g}$ As. The As data were blank corrected. The impact to the data usability is negligible. The contamination was systematic and not random, therefore, the data could be corrected using the mean reagent blank and quality control samples demonstrate the data quality was not impacted by the contamination. The data are flagged to represent the correction, but are not considered impacted. All other data were not blank corrected.

LABORATORY CONTROL SAMPLE ACCURACY:

Seven laboratory control samples were analyzed with the samples. The LCS recoveries were within the QC acceptance criterion of $\pm 30\%$ recovery for all metals except one LCS for Ni (236%) and one LCS for As (164%). The accuracy of Ni and As were demonstrated by the other quality control samples including the standard reference material (SRM) and matrix spikes (MS). There are no LCS results reported for Al and Fe.

STANDARD REFERENCE MATERIAL ACCURACY:

The marine SRM analyzed with the sediment samples was PACS-2. The SRM accuracy was expressed as the percent recovery between the determined concentration and the certified or reference value. The percent recoveries were within the QC acceptance criterion of 80-120% for all metals, except two replicates for Ag (131% and 140%) and one replicate for Cd (123%). Other measures of accuracy were within the QC criterion; therefore, no further corrective action was taken.

MATRIX SPIKE ACCURACY:

Matrix spike recoveries were within the QC acceptance criterion of 70-130% recovery for all metals of concern except one MS for each Cu (42%), Cr (181%), and Zn (65%). In each case, the spiking level was insufficient relative to the native sample concentration. The samples were not spiked for Al, Fe, or Mn due to the high native sample concentrations. Acceptable accuracy was demonstrated by the LCS for Mn and SRM for all three metals.

LABORATORY PRECISION:

Laboratory precision was evaluated by laboratory duplicates and was expressed as the relative percent difference (RPD) of replicate results. The RPD values were within the QC criterion of $\leq 30\%$ RPD except one replicate for As (31%), one for Cu (33%), and one for Pb (78%). The high RPDs were attributed to sample heterogeneity and not a lack of precision in the laboratory method. Other RPDs for these metals were within the criterion.

QAI/QC NARRATIVE

- REFERENCES:** Johnston, R.K., J. M. Brandenberger, G.A. Gill, J. Guerrero, J. Leather, G. Rosen, B. Beckwith, and J. Young. (2011). Sediment Quality Verification Study and Baseline for Process Improvement for Puget Sound Naval Shipyard & Intermediate Maintenance Facility. Sampling and Analysis Plan prepared for the U.S. Navy. PNNL-15594
- Taylor Associates, Inc. and Pacific Northwest National Laboratory 2011. Non-Dry Dock Stormwater Monitoring Conducted at Puget Sound Naval Shipyard Bremerton, WA Project ENVVEST Study Area. Prepared for U.S. Navy, January 2011.

Station	Core Segment	Sample Type	MSL Code	Batch ID	Digest Weight (g)	Hg
<i>Instrument:</i>					<i>HYDRA-AA¹</i>	
Laboratory Achieved Detection Limits						0.00570
Seawater Reporting Limit (MDL* 3.18)						0.0181
1500-G24		Composite	3151-27	72611	0.398	0.769
PQ1		Fine (<65 µm)	3151-110a	20111	0.0215	0.993
PQ1		Fine (<65 µm)	3151-110b	20111	0.0215	1.23
PQ1		Fine (<65 µm)	3151-110c	20111	0.0230	0.892
PQ1		Coarse	3151-110	20111	0.0266	0.503
PQ2		Fine (<65 µm)	3151-111a	20111	0.0208	2.57
PQ2		Fine (<65 µm)	3151-111b	20111	0.0223	2.22
PQ2		Fine (<65 µm)	3151-111c	20111	0.0204	2.17
PQ2		Coarse	3151-111	20111	0.0226	2.80
DD6-1		Bulk	3151-112a	20111	0.0183	0.373
DD6-1		Bulk	3151-112b	20111	0.0413	0.371
DD6-1		Bulk	3151-112c	20111	0.0404	0.381
DD6-4		Bulk	3151-113a	20111	0.0214	0.379
DD6-4		Bulk	3151-113b	20111	0.0428	0.503
DD6-4		Bulk	3151-113c	20111	0.0424	0.403
DD6-4		Bulk	3151-113d	20111	0.0419	0.387
DD6-7		Bulk	3151-114a	20111	0.0216	0.434
DD6-7		Bulk	3151-114b	20111	0.0433	0.418
DD6-7		Bulk	3151-114c	20111	0.0424	0.437
PSNS Pier 7 Drum-M		Grab	3151-234	72911	0.310	0.549
PSNS Pier 7 Drum-N		Grab	3151-235	72911	0.302	1.58
PSNS Pier 7 Drum-E		Grab	3151-236 R1	72911	0.296	1.18
PSNS Pier 7 Drum-W		Grab	3151-237	72911	0.375	0.271
PSNS Pier 7 Drum-S		Grab	3151-238	72911	0.358	0.360
PS03	0-3cm	Squeeze Core	3151-280	72611	0.400	0.836
PS03	3-6cm	Squeeze Core	3151-281	72611	0.406	1.25
PS03	6-9cm	Squeeze Core	3151-282	72611	0.395	1.44
PS03	9-13cm	Squeeze Core	3151-283	72611	0.405	1.71
PS03	13-19cm	Squeeze Core	3151-284	72611	0.404	1.44
PS03	19-25cm	Squeeze Core	3151-285	72611	0.398	2.02
PS09	0-3cm	Squeeze Core	3151-286	72611	0.409	0.800
PS09	3-6cm	Squeeze Core	3151-287	72611	0.422	1.10
PS09	6-9cm	Squeeze Core	3151-288 R1	72611	0.391	1.07
PS09	9-13cm	Squeeze Core	3151-289	72611	0.398	1.06
PS09	13-19cm	Squeeze Core	3151-290	72611	0.405	1.27
PS09	19-25cm	Squeeze Core	3151-291	72611	0.407	1.46
PS03	0-3cm	Clear Core	3151-315	80411	0.314	1.78
PS03	3-6cm	Clear Core	3151-316	80411	0.317	0.913
PS03	6-9cm	Clear Core	3151-317	80411	0.297	1.49
PS03	9-13cm	Clear Core	3151-318	80411	0.306	1.67
PS03	13-19cm	Clear Core	3151-319	80411	0.294	1.71
PS03	19-25cm	Clear Core	3151-320 R1	80411	0.299	1.87
PS09	0-3cm	Clear Core	3151-321	80411	0.308	0.907
PS09	3-6cm	Clear Core	3151-322	80411	0.288	1.79
PS09	6-9cm	Clear Core	3151-323	80411	0.307	1.22
PS09	9-13cm	Clear Core	3151-324	80411	0.312	1.98
PS09	13-19cm	Clear Core	3151-325	80411	0.295	1.88
PS09	19-23cm	Clear Core	3151-326	80411	0.315	2.06
PS10	0-3cm	Clear Core	3151-327	80411	0.293	0.787
PS10	3-6cm	Clear Core	3151-328	80411	0.305	0.810
PS10	6-9cm	Clear Core	3151-329	80411	0.300	0.890
PS10	9-13cm	Clear Core	3151-330	80411	0.301	1.19
PS10	13-19cm	Clear Core	3151-331	80411	0.306	4.70
PS10	19-25cm	Clear Core	3151-332	80411	0.293	10.6
PS10.1	0-3cm	Clear Core	3151-333	80411	0.296	1.24
PS10.1	3-6cm	Clear Core	3151-334	80411	0.308	1.08
PS10.1	6-9cm	Clear Core	3151-335	81011	0.310	1.62
PS10.1	9-13cm	Clear Core	3151-336	81011	0.300	3.90
PS10.1	13-19cm	Clear Core	3151-337	81011	0.298	3.20

Station	Core Segment	Sample Type	MSL Code	Batch ID	Digest Weight (g)	Hg
<i>Instrument:</i>					<i>HYDRA-AA¹</i>	
PS10.1	19-24cm	Clear Core	3151-338	81011	0.305	2.28
PS11	0-3cm	Clear Core	3151-339	81011	0.321	0.819
PS11	3-6cm	Clear Core	3151-340	81011	0.288	0.852
PS11	6-9cm	Clear Core	3151-341 R1	81011	0.298	0.702
PS11	9-13cm	Clear Core	3151-342	81011	0.304	0.741
PS11	13-19cm	Clear Core	3151-343	81011	0.297	0.710
PS11	19-25cm	Clear Core	3151-344	81011	0.296	1.05
PS08	0-3cm	Clear Core	3151-345	81011	0.315	2.71
PS08	3-6cm	Clear Core	3151-346	81011	0.320	0.995
PS08	6-9cm	Clear Core	3151-347	81011	0.302	0.785
PS08	9-13cm	Clear Core	3151-348	81011	0.312	0.909
PS08	13-19cm	Clear Core	3151-349	81011	0.292	0.874
PS08	19-25cm	Clear Core	3151-350	81011	0.300	1.02
PS06	0-3cm	Clear Core	3151-789	81011	0.316	0.705
PS06	3-6cm	Clear Core	3151-790	81011	0.301	0.651
PS06	6-9cm	Clear Core	3151-791	81011	0.317	0.940
PS06	9-13cm	Clear Core	3151-792	81011	0.307	0.739
PS06	13-19cm	Clear Core	3151-793	81611	0.290	1.25
PS06	19-25cm	Clear Core	3151-794	81611	0.310	1.24
PS06DUP	0-3cm	Clear Core	3151-795	81611	0.295	0.699
PS06DUP	3-6cm	Clear Core	3151-796	81611	0.298	0.785
PS07	0-3cm	Clear Core	3151-801	81611	0.292	0.583
PS07	3-6cm	Clear Core	3151-802 R1	81611	0.294	0.584
PS07	6-9cm	Clear Core	3151-803	81611	0.289	0.560
PS07	9-13cm	Clear Core	3151-804	81611	0.299	0.730
PS07	13-19cm	Clear Core	3151-805	81611	0.304	0.738
PS07	19-25cm	Clear Core	3151-806	81611	0.302	0.787
PS03-1	0-6cm	grab	3151-423	72911	0.300	4.57
PS03-2	0-6cm	grab	3151-424	72911	0.312	5.36
PS03-3	0-6cm	grab	3151-425	72911	0.327	3.43
PS03-4	0-6cm	grab	3151-426	72911	0.307	4.72
PS03-5	0-6cm	grab	3151-427	72911	0.291	5.62
PS03-6	0-6cm	grab	3151-428	80111	0.304	1.00
PS09-1	0-6cm	grab	3151-429	80111	0.306	3.41
PS09-2	0-6cm	grab	3151-430	80111	0.284	5.13
PS09-3	0-6cm	grab	3151-431	80111	0.270	7.79
PS09-4	0-6cm	grab	3151-432	80111	0.319	3.52
PS09-5	0-6cm	grab	3151-433 R1	80111	0.302	5.41
PS09-6	0-6cm	grab	3151-434	80111	0.280	5.63
PS10-1	0-6cm	grab	3151-435	80111	0.303	6.73

Sediment Quality Evaluation (SQV)
QC Sample Results for CVAF
ENVVEST 2010-2011
Mercury in Sediment
UNITS: µg/G, dry wt.

Station	Core Segment	Sample Type	Matrix	MSL Code	Hg	Batch ID
Instrument:					HYDRA-AA ¹	
Laboratory Achieved Detection Limits					0.00570	
Reporting Limit (MDL* 3.18)					0.0181	

METHOD BLANKS

MB-1	Sediment	Method Blank	0.0010 U	20111
MB-2	Sediment	BLANK R2	0.0057 U	72611
MB-3	Sediment	Blank 072711	0.0092 J	72911
MB-4	Sediment	Blank 072811	0.0057 U	80111
MB-5	Sediment	Blank 080111	0.0100 J	80411
MB-6	Sediment	Blank 080311	0.0057 U	81011
MB-7	Sediment	Blank 080911	0.0237	81611
MB-8	Sediment	Blank 081111	0.0057 U	81611
MB-9	Sediment	Blank 081511	0.0245	81811
MB-10	Sediment	Blank 081611	0.0150 J	81911

LABORATORY CONTROL SAMPLES

LCS (1)	Sediment	OPR	0.368	20111
		Spike Level	0.372	
		Percent Recovery	99%	20111
LCS (2)	Sediment	BS R2	1.49	72611
		Spike Level	1.55	
		Percent Recovery	96%	72611
LCS (3)	Sediment	LCS-072711	1.96	72911
LCS (4)	Sediment	LCS 072811	1.93	80111
LCS (5)	Sediment	LCS 080111	1.93	80411
LCS (6)	Sediment	LCS 080311	2.01	81011
LCS (7)	Sediment	LCS 081111	1.88	81611
LCS (8)	Sediment	LCS 080911	2.00	81611
LCS (9)	Sediment	LCS 081511	2.03	81811
	Sediment	LCS 081611	2.14	81911
		Spike Level	2.00	
		Percent Recovery	98%	72911
			96%	80111
			97%	80411
			100%	81011
			94%	81611
			100%	81611
			102%	81811
			107%	81911

Sediment Quality Evaluation (SQV)
QC Sample Results for CVAF
ENVVEST 2010-2011
Mercury in Sediment
UNITS: µg/G, dry wt.

Station	Core Segment	Sample Type	Matrix	MSL Code	Hg	Batch ID
Instrument:					HYDRA-AA ¹	

MATRIX SPIKE RESULTS

DD6-1		Bulk	Sediment	3151-112a	0.373	20111
				3151-112MS	2.99	20111
				3151-112MSD	3.19	
				Spiking Level, MS	2.63	
				Spiking Level, MSD	2.82	
				Percent Recovery, MS	100%	
				Percent Recovery, MSD	100%	
RPD				0.4%		
1500-G24		Composite	Sediment	3151-27	0.769	72611
				3151-27 MS	2.17	72611
				3151-27 MSD	2.16	72611
				Spiking Level, MS	1.54	
				Spiking Level, MSD	1.54	
				Percent Recovery, MS	91%	
				Percent Recovery, MSD	90%	
RPD				0.8%		
PS10	0-3cm	Clear Core	Sediment	3151-327	0.787	80411
				3151-327 MS1	5.91	80411
				Spiking Level, MS	5.03	
				Percent Recovery, MS	102%	
PS08	19-25cm	Clear Core	Sediment	3151-350	1.02	81011
				3151-350 MS1	6.30	81011
				Spiking Level, MS	5.10	
				Percent Recovery, MS	103%	
PS10-5	0-6cm	grab	Sediment	3151-439R1	5.98	80111
				3151-439 MS1	7.98	80111
				Spiking Level, MS	2.01	
				Percent Recovery, MS	100%	
PS11-6	0-6cm	grab	Sediment	3151-452	5.67	72911
				3151-452 MS1	7.30	72911
				Spiking Level, MS	1.81	
				Percent Recovery, MS	90%	
PS08-6	0-6cm	grab	Sediment	3151-458	5.77	81611
				3151-458 MS1	10.8	81611
				Spiking Level, MS	4.87	
				Percent Recovery, MS	102%	
P7-T3-3	PIER 7 Transects	grab	Sediment	3151-583	0.734	81811
				3151-583 MS1	5.74	81811
				Spiking Level, MS	4.82	
				Percent Recovery, MS	104%	
P7-T8-2	PIER 7 Transects	grab	Sediment	3151-607	0.166	81911
				3151-607 MS1	5.27	81911
				Spiking Level, MS	4.93	
				Percent Recovery, MS	104%	
PS07-2	0-6cm	grab	Sediment	3151-724	0.453	81611
				3151-724 MS1	5.31	81611
				Spiking Level, MS	4.82	
				Percent Recovery, MS	101%	

Sediment Quality Evaluation (SQV)
QC Sample Results for CVAF
ENVVEST 2010-2011
Mercury in Sediment
UNITS: µg/G, dry wt.

Station	Core Segment	Sample Type	Matrix	MSL Code	Hg	Batch ID
Instrument:					HYDRA-AA ¹	
REPLICATE PRECISION						
PQ1		Fine (<65 µm)		3151-110a	0.993	20111
PQ1		Fine (<65 µm)		3151-110b	1.23	20111
PQ1		Fine (<65 µm)		3151-110c	0.892	20111
				Mean	1.04	
				RSD	17%	
PQ2		Fine (<65 µm)		3151-111a	2.57	20111
PQ2		Fine (<65 µm)		3151-111b	2.22	20111
PQ2		Fine (<65 µm)		3151-111c	2.17	20111
				Mean	2.32	
				RSD	9%	
DD6-1		Bulk		3151-112a	0.373	20111
DD6-1		Bulk		3151-112b	0.371	20111
DD6-1		Bulk		3151-112c	0.381	20111
				Mean	0.375	
				RSD	1%	
DD6-4		Bulk		3151-113a	0.379	20111
DD6-4		Bulk		3151-113b	0.503	20111
DD6-4		Bulk		3151-113c	0.403	20111
DD6-4		Bulk		3151-113d	0.387	20111
				Mean	0.418	
				RSD	14%	
DD6-7		Bulk		3151-114a	0.434	20111
DD6-7		Bulk		3151-114b	0.418	20111
DD6-7		Bulk		3151-114c	0.437	20111
				Mean	0.430	
				RSD	2%	
PSNS Pier 7 Drum-E		Grab		3151-236 R1	1.18	72911
PSNS Pier 7 Drum-E		Grab		3151-236 R2	1.27	72911
				Mean	1.22	
				RPD	7%	
PS03	19-25cm	Clear Core		3151-320 R1	1.87	80411
PS03	19-25cm	Clear Core		3151-320 R2	1.87	80411
				Mean	1.87	
				RPD	0%	
PS09	6-9cm	Squeeze Core		3151-288 R1	1.07	72611
PS09	6-9cm	Squeeze Core		3151-288 R2	0.960	72611
				Mean	1.02	
				RPD	11%	
PS11	6-9cm	Clear Core		3151-341 R1	0.702	81011
PS11	6-9cm	Clear Core		3151-341 R2	0.757	81011
				Mean	0.729	
				RPD	7%	
PS09-5	0-6cm	grab		3151-433 R1	5.41	80111
PS09-5	0-6cm	grab		3151-433 R2	5.38	80111
				Mean	5.40	
				RPD	0%	

Sediment Quality Evaluation (SQV)
QC Sample Results for CVAF
ENVVEST 2010-2011
Mercury in Sediment
UNITS: µg/G, dry wt.

Station	Core Segment	Sample Type	Matrix	MSL Code	Hg	Batch ID
Instrument:					HYDRA-AA ¹	

REPLICATE PRECISION (cont)

P7-T1-5	PIER 7 Transects	grab		3151-576 R1	0.621	81811
P7-T1-5	PIER 7 Transects	grab		3151-576 R2	0.642	81811
				Mean	0.632	
				RPD	3%	
P7-T6-5	PIER 7 Transects	grab		3151-599 R1	0.600	81911
P7-T6-5	PIER 7 Transects	grab		3151-599 R2	0.662	81911
				Mean	0.631	
				RPD	10%	
P7-T10-4	PIER 7 Transects	grab		3151-618 R1	0.812	81611
P7-T10-4	PIER 7 Transects	grab		3151-618 R2	0.184	81611
				Mean	0.498	
				RPD	126% *	
PS07	3-6cm	Clear Core		3151-802 R1	0.584	81611
PS07	3-6cm	Clear Core		3151-802 R2	0.590	81611
				Mean	0.587	
				RPD	1%	

STANDARD REFERENCE MATERIAL

SRM (1)		Sediment	PACS-2	2.85	20111
SRM (2)		Sediment	PACS-2	3.08	72911
SRM (3)		Sediment	PACS-2 072811	3.26	80111
SRM (4)		Sediment	PACS-2 080111	3.02	80411
SRM (5)		Sediment	PACS-2 080311	3.07	81011
SRM (6)		Sediment	PACS-2 080911	3.00	81611
SRM (7)		Sediment	PACS-2 081111	2.88	81611
SRM (8)		Sediment	PACS-2 081511	3.02	81811
SRM (9)		Sediment	PACS-2 081611	3.14	81911
			Certified Value	3.04	
	SRM (1)		PD	6%	
	SRM (2)		PD	1%	
	SRM (3)		PD	7%	
	SRM (4)		PD	1%	
	SRM (5)		PD	1%	
	SRM (6)		PD	1%	
	SRM (7)		PD	5%	
	SRM (8)		PD	1%	
	SRM (9)		PD	3%	
SRM (10)		Sediment	1944 R2	3.39	72611
			Certified Value	3.4	
	SRM (10)		PD	11%	
SRM (11)		Sediment	1646	0.0964	20111
			Certified Value	0.063	
	SRM (11)		PD	97% &	

U Analyte not detected at or above laboratory achieved detection limit, MDL reported
 J Value reported is below the RL, but above the MDL.
 & Accuracy results outside QC criteria of ≤20% PD (SRM).
 * Precision results outside QC criteria of ≤30% RPD.
 N Spiked sample recovery not within the QC limits of 70-130%.
¹ Batch 020111 analyzed by DMA

QAI/QC NARRATIVE

PROJECT:	2011 Sediment Verification Study Partial Report for Mercury Only SQV01 2011 Storm Drain Sediments SQV03 Dry Dock splits SQV04 Pier 7 Drum SQV05 Squeeze Cores, Clear Cores, and Grab Samples April 2011
PARAMETER:	Mercury (Hg)
LABORATORY:	Pacific Northwest National Laboratory (PNNL), Battelle Marine Sciences Laboratory (MSL), Sequim, Washington
MATRIX:	SQV01 grabs SQV03 grabs SQV04 grabs SQV05 Squeeze Core sediment core profiles 0-25 cm, Clear Core profiles 0-25 cm, and surface grabs (0-6 cm)
SAMPLE CUSTODY AND PROCESSING:	<i>SQV01 – 2011 Storm Drain</i> Three sediment samples were collected by Taylor/TEC from three separate storm drain located in the Puget Sound Naval Shipyard and Intermediate Maintenance Facility (PSNS&IMF). This effort was conducted in collaboration with the Non-Dry Dock Stormwater Project (see QAPP Taylor Associates, Inc. and Pacific Northwest National Laboratory 2011). The samples were collected in 8oz precleaned glass jars by scooping available sediment from the storm drain. They were hand delivered by Taylor/TEC to the Navy and then MSL on 04/28/2011. The samples were split for metals, organics, and grain size analyses. The metals splits were archived frozen (<-20°C) until lyophilization. <i>SQV03- Dry Dock Splits</i> Three samples were received from the dry dock # 6 sampling and two from the pier side and quay wall sampling conducted by the Navy on 07/15/10, 07/26/10, and 07/27/10. The samples were hand delivered to MSL on 07/28/10. The samples were only for Hg. The pier side and quay wall samples were full of shell material and were sieved into two fractions: 1) fines or < 65 µm and 2) coarse or > 65 µm. The samples were stored frozen (<-20°C) until lyophilization. <i>SQV04- Pier 7 Drum</i> Five samples were collected from the Pier 7 Drum sampling conducted by the Navy on 03/17/2011. The samples were hand delivered to MSL on 03/24/11. The samples were split for metals, organics, grain size, and screening analyses. The metals splits were archived frozen (<-20°C) until lyophilization. <i>SQV05- Squeeze Cores, Clear Cores, and Grab Samples April 2011</i> The SQV05 sediment samples were collected at PSNS&IMF by the U.S. Navy and MSL on 04/27/11 and 04/29/11 (see QAPP Johnston et al. 2011). Three types of samples were collected by Navy divers: 1) squeeze core for porewater and sediment, 2) clear cores, and 3) surface grabs (0-6cm). The squeeze cores (9 cm I.D.) were collected using specialized polycarbonate core liners fitted with sampling ports at 1-cm intervals. Two sediment cores were collected, porewater extracted, and then the sediment were extruded to provide subsections at the following intervals: 0-3cm, 3-6cm, 6-9cm, 9-13cm, 13-19cm, and 19-25cm. The clear core consisted of a 40 cm cellulose acetate butyrate (CAB) plastic core tube with a 5.5 cm I.D. One clear core was collected at each of the eight sampling locations and one duplicate core was collected. The core was extruded and sub-sectioned at the following intervals: 0-3cm, 3-6cm, 6-9cm, 9-13cm, 13-19cm, and 19-25cm. Six sediment grabs were collected from the eight sampling locations using 16 oz amber glass jars that were precleaned for organics and metals. The samples were split for metals, organics, grain size, and screening analyses. The metals splits were archived frozen (<-20°C) until lyophilization.

QAI/QC NARRATIVE

All samples were assigned a Battelle Central File (CF) identification number (3151) and were entered into Battelle's log-in and custody tracking system.

MEASUREMENT QUALITY OBJECTIVES:

Analyte	Analytical Method	Spike Range of Recovery	SRM Accuracy	Relative Precision	Achieved Detection Limit ⁽¹⁾ (µg/g dry wt.)	Reporting Limit ⁽²⁾ (µg/g dry wt.)
Hg	CVAA	70-130%	≤20% PD	≤30% RPD	0.00570	0.0181

(1) Reported from the annual Sediment MDL summary.

(2) Determined as 3.18 times achieved MDL

METHODS:

Samples were freeze-dried and homogenized using a ball-mill prior to digestion according to Battelle SOP MSL-C-003, *Percent Dry Weight and Homogenizing Dry Sediment, Soil and Tissue*. Sediment samples were digested in accordance with Battelle SOP MSL-I-006, *Mixed Acid Sediment Digestion*. The sediment samples were digested using a total dissolution method followed by boric acid neutralization. Briefly, an approximately 400-mg (dry weight) aliquot of each sample was combined with nitric, hydrochloric, and hydrofluoric acids in a Teflon digestion vessel and heated in an oven at 130°C (±10°C) for a minimum of eight hours. After cooling, boric acid was added to the digestate and reheated to 130°C for an additional four hours to neutralize the hydrofluoric acid; deionized water was added to achieve analysis volume.

Digested samples were analyzed for Hg using cold-vapor atomic absorption spectroscopy (CVAA) according to Battelle SOP MSL-I-016, *Total Mercury in Tissues and Sediments by Cold Vapor Atomic Absorption*. This is a deviation from the proposed method (Direct Mercury Analysis) due to the higher concentrations of Hg. The achieved MDL is slightly higher, but no samples were detected within an order of magnitude of the MDL. Therefore there was no impact to the data quality due to this deviation. All results were reported in units of µg/g on a dry-weight basis.

HOLDING TIMES:

The recommended holding time for the reported analytes in sediment is one year frozen. The sediment samples were digested and analyzed within the one year holding time.

DETECTION LIMITS:

Analytical results were reported to laboratory achieved MDLs derived from the annually verified Sediment MDL Study. The MDL study was conducted in compliance with 40 CFR Part 136 Appendix B Revision 1.11, which entails the analyses of at least seven replicates of the matrix (quartz sand) to calculate the MDL value. Data were evaluated and flagged in accordance to the following criteria:

- U Analyte not detected at or above laboratory achieved detection limit, MDL reported
- J Value reported is below the RL, but above the MDL.
- & Accuracy results outside QC criteria of ≤20% PD (SRM).
- * Precision results outside QC criteria of ≤30% RPD.
- N Spiked sample recovery not within the QC limits of 70-130%.
- B Analyte detected in the method blank above the RL, sample concentration < 10 times detected blank value.

QAI/QC NARRATIVE

METHOD BLANKS:	Ten method blanks were analyzed with the sediment samples. Two blanks were detected above the RL (digestion batch 080911 and 081511). In batch 080911, the sample concentrations were less than 10 times the detected blank and were not qualified. In batch 081511, three samples were lower than 10 times the detected blank and were qualified with a "B" flag. In each batch, all other forms of QA demonstrated the sample quality was not impacted by the detected blanks. Data are not blank corrected.
LABORATORY CONTROL SAMPLE ACCURACY:	Ten laboratory control samples were analyzed with the samples. The LCS recoveries were within the QC acceptance criterion of $\pm 30\%$ recovery for all metals.
STANDARD REFERENCE MATERIAL ACCURACY:	The marine sediment reference materials (SRM) analyzed with the sediment samples included 1646, 1944, and PACS-2. The SRM accuracy was expressed as the percent recovery between the determined concentration and the certified value. The percent recoveries were within the QC acceptance criterion of 80-120% for all replicates.
MATRIX SPIKE ACCURACY:	Ten sediment samples were selected for matrix spike samples. Matrix spike recoveries were within the QC acceptance criterion of 70-130% recovery.
LABORATORY PRECISION:	Laboratory precision was evaluated using nine sets of duplicates and five set of triplicates. Precision was expressed as the relative percent difference (RPD) of replicate results. The RPD values were within the QC criterion of $\leq 30\%$ RPD with the exception of the storm drain samples (see analytical notes below) and one Pier 7 transect sample which appears to be due to heterogeneity. All other measures of precision demonstrated good laboratory reproducibility.
ANALYTICAL NOTES:	The storm drain samples were prepped a second time by going back to the original collection jar and taking out a second aliquot for re-digestion. One sample was digested a third time to evaluate the concentration ranges. The heterogeneity of the storm drain samples was attributed to the potential for elemental Hg in the sample and a very coarse grain size.
REFERENCES:	Johnston, R.K., J. M. Brandenberger, G.A. Gill, J. Guerrero, J. Leather, G. Rosen, B. Beckwith, and J. Young. (2011). Sediment Quality Verification Study and Baseline for Process Improvement for Puget Sound Naval Shipyard & Intermediate Maintenance Facility. Sampling and Analysis Plan prepared for the U.S. Navy. PNNL-15594 Taylor Associates, Inc. and Pacific Northwest National Laboratory 2011. Non-Dry Dock Stormwater Monitoring Conducted at Puget Sound Naval Shipyard Bremerton, WA Project ENVVEST Study Area. Prepared for U.S. Navy, January 2011.

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ENVVEST
Sediment Verification
2011
PAHs in Sediment

Sample Name:	3151-139	3151-142	3151-143	3151-149	3151-150
Station:	1500-G23	1500-G25	1500-G26	1500-G32	500-G1
Sample Type:	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample
Matrix:	Sediment	Sediment	Sediment	Sediment	Sediment
Batch ID:	PAH051211	PAH051711	PAH090211	PAH051711	PAH090211
Sample Weight (g):	10.59	8.92	13.17	8.77	10.35
Collection Date:	5/27/2010	5/27/2010	5/19/2010	5/27/2010	5/11/2010
Extraction Date:	5/12/2011	5/17/2011	9/2/2011	5/17/2011	9/2/2011
Analysis Date:	5/20/2011	5/25/2011	9/8/2011	5/25/2011	9/8/2011
Units (wet wt):	ng/g	ng/g	ng/g	ng/g	ng/g
Naphthalene	14.7	11.3	3.83	25.5	13.7
C1-Naphthalenes	11.3	9.39	0.19 U	21.1	14.3
C2-Naphthalenes	35.1	24.2	0.19 U	64.5	47.8
C3-Naphthalenes	41.1	40.5	0.19 U	78.9	32.8
C4-Naphthalenes	32.8	22.7	0.19 U	47.3	28.5
Biphenyl	4.22	1.76	3.62	4.91	5.57
Acenaphthylene	12.9	5.66	3.76	28.1	8.04
Acenaphthene	1.98	1.50	0.16 U	12.3	3.95
Fluorene	5.20	2.47	2.96	14.4	7.34
C1-Fluorenes	8.96	6.07	3.47	21.7	9.91
C2-Fluorenes	21.5	12.8	5.97	42.3	18.2
C3-Fluorenes	34.5	26.2	0.17 U	54.0	22.5
Anthracene	20.0	13.5	4.88	52.8	13.1
Phenanthrene	28.8	17.3	10.7	150	30.9
C1-Phenanthrenes/Anthracenes	54.0	41.1	8.15	184	44.3
C2-Phenanthrenes/Anthracenes	51.6	49.0	10.7	155	44.8
C3-Phenanthrenes/Anthracenes	33.2	52.3	7.97	94.9	40.3
C4-Phenanthrenes/Anthracenes	45.7	26.3	8.31	90.1	38.9
Dibenzothiophene	4.25	2.21	1.92	8.01	3.91
C1-Dibenzothiophenes	7.20	4.83	0.52 U	14.6	6.29
C2-Dibenzothiophenes	8.22	10.6	0.52 U	18.1	8.18
C3-Dibenzothiophenes	16.1	0.77 U	0.52 U	19.7	21.6
C4-Dibenzothiophenes	0.65 U	0.77 U	0.52 U	12.8	13.0
Fluoranthene	80.7	51.2	27.7	291	59.4
Pyrene	113	72.8	24.3	373	85.2
C1-Fluoranthenes/Pyrenes	66.5	50.9	11.8	203	52.0
C2-Fluoranthenes/Pyrenes	22.9	23.0	8.12	103	65.9
C3-Fluoranthenes/Pyrenes	14.0	12.8	0.18 U	55.2	32.7
Benzo(a)anthracene	78.5	38.6	13.4	202	33.4
Chrysene	118	44.5	15.6	215	40.2
C1-Chrysenes	29.8	19.4	4.04	91.0	25.1
C2-Chrysenes	25.0	17.0	4.27	68.1	46.3
C3-Chrysenes	0.19 U	13.2	0.15 U	43.4	39.1
C4-Chrysenes	0.19 U	8.32	0.15 U	24.2	27.0
Benzo(b)fluoranthene	154	56.1	24.5	291	77.4
Benzo(k)fluoranthene	45.4	21.5	9.28	105	24.3
Benzo(e)pyrene	67.6	36.9	12.4	176	48.5
Benzo(a)pyrene	64.3	46.0	17.7	231	51.8
Perylene	20.3	16.2	7.98	53.6	22.5
Indeno(1,2,3-cd)pyrene	25.3	35.4	12.2	165	36.6

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ENVVEST
 Sediment Verification
 2011
 PAHs in Sediment

Sample Name:	3151-139	3151-142	3151-143	3151-149	3151-150
Station:	1500-G23	1500-G25	1500-G26	1500-G32	500-G1
Sample Type:	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample
Matrix:	Sediment	Sediment	Sediment	Sediment	Sediment
Batch ID:	PAH051211	PAH051711	PAH090211	PAH051711	PAH090211
Sample Weight (g):	10.59	8.92	13.17	8.77	10.35
Collection Date:	5/27/2010	5/27/2010	5/19/2010	5/27/2010	5/11/2010
Extraction Date:	5/12/2011	5/17/2011	9/2/2011	5/17/2011	9/2/2011
Analysis Date:	5/20/2011	5/25/2011	9/8/2011	5/25/2011	9/8/2011
Units (wet wt):	ng/g	ng/g	ng/g	ng/g	ng/g
Dibenz(a,h)anthracene	9.95	6.73	2.41	41.3	7.62
Benzo(g,h,i)perylene	24.8	38.3	9.29	165	35.1
Sum of PAHs Measured	1455	992	285	4112	1288
<u>SURROGATE RECOVERIES (%Rec)</u>					
d8-Naphthalene	44%	55%	71%	50%	45%
d10-Acenaphthene	49%	68%	77%	63%	64%
d10-Phenanthrene	77%	97%	96%	95%	87%
d12-Chrysene	90%	77%	77%	80%	78%
d12-Perylene	79%	77%	96%	86%	83%

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ENVVEST
Sediment Verification
2011
PAHs in Sediment

Sample Name:	3151-166	3151-168	3151-169	3151-176	3151-189
Station:	500-G16	500-G18	500-G19	500-G26	500-G39
Sample Type:	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample
Matrix:	Sediment	Sediment	Sediment	Sediment	Sediment
Batch ID:	PAH051711	PAH051711	PAH051711	PAH052711	PAH052711
Sample Weight (g):	8.05	7.09	7.04	9.43	10.21
Collection Date:	5/18/2010	5/18/2010	5/18/2010	5/13/2010	5/12/2010
Extraction Date:	5/17/2011	5/17/2011	5/17/2011	5/27/2011	5/27/2011
Analysis Date:	5/25/2011	5/25/2011	5/25/2011	6/1/2011	6/1/2011
Units (wet wt):	ng/g	ng/g	ng/g	ng/g	ng/g
Naphthalene	10.2	11.3	23.7	14.0	58.6
C1-Naphthalenes	11.9	7.63	17.6	19.9	32.0
C2-Naphthalenes	31.0	38.8	30.8	36.0	75.9
C3-Naphthalenes	38.3	36.2	31.5	45.6	76.4
C4-Naphthalenes	32.6	20.9	16.8	35.7	58.0
Biphenyl	1.62	2.56	2.88	0.36 U	10.4
Acenaphthylene	8.50	2.86	4.42	5.93	24.4
Acenaphthene	1.34	2.30	1.78	2.45	22.0
Fluorene	4.48	4.43	4.69	3.83	38.4
C1-Fluorenes	15.2	7.58	7.04	9.52	29.5
C2-Fluorenes	11.3	9.83	11.2	31.0	51.2
C3-Fluorenes	22.5	15.6	10.5	0.24 U	160
Anthracene	14.5	13.6	12.6	13.7	112
Phenanthrene	26.0	34.0	25.7	30.7	306
C1-Phenanthrenes/Anthracenes	34.0	38.2	34.4	42.6	241
C2-Phenanthrenes/Anthracenes	42.0	47.8	40.3	64.7	174
C3-Phenanthrenes/Anthracenes	35.7	32.4	37.8	55.3	147
C4-Phenanthrenes/Anthracenes	31.6	31.2	32.1	64.2	293
Dibenzothiophene	3.24	3.89	3.42	3.48	20.7
C1-Dibenzothiophenes	4.76	6.10	5.83	0.73 U	25.5
C2-Dibenzothiophenes	9.68	7.36	6.16	0.73 U	28.8
C3-Dibenzothiophenes	10.8	15.2	9.08	0.73 U	57.4
C4-Dibenzothiophenes	0.86 U	0.97 U	0.98 U	0.73 U	46.1
Fluoranthene	53.8	67.1	44.9	113	1045
Pyrene	68.0	79.0	64.8	128	1266
C1-Fluoranthenes/Pyrenes	57.8	44.7	49.5	68.9	619
C2-Fluoranthenes/Pyrenes	26.8	24.4	24.4	35.4	285
C3-Fluoranthenes/Pyrenes	15.7	17.5	19.3	37.7	150
Benzo(a)anthracene	49.6	40.7	36.9	34.9	400
Chrysene	60.3	36.4	34.3	63.2	532
C1-Chrysenes	21.6	12.7	14.1	20.0	184
C2-Chrysenes	18.8	18.1	23.7	31.9	145
C3-Chrysenes	11.8	20.8	15.8	35.1	98.4
C4-Chrysenes	8.49	13.5	11.4	31.0	53.8
Benzo(b)fluoranthene	92.1	71.1	70.1	87.5	738
Benzo(k)fluoranthene	32.4	22.6	22.4	38.1	261
Benzo(e)pyrene	45.4	36.7	37.7	52.5	388
Benzo(a)pyrene	54.3	41.9	40.4	55.8	404
Perylene	20.7	25.7	24.1	16.2	83.4
Indeno(1,2,3-cd)pyrene	39.8	37.5	34.3	44.8	275

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ENVVEST
 Sediment Verification
 2011
 PAHs in Sediment

Sample Name:	3151-166	3151-168	3151-169	3151-176	3151-189
Station:	500-G16	500-G18	500-G19	500-G26	500-G39
Sample Type:	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample
Matrix:	Sediment	Sediment	Sediment	Sediment	Sediment
Batch ID:	PAH051711	PAH051711	PAH051711	PAH052711	PAH052711
Sample Weight (g):	8.05	7.09	7.04	9.43	10.21
Collection Date:	5/18/2010	5/18/2010	5/18/2010	5/13/2010	5/12/2010
Extraction Date:	5/17/2011	5/17/2011	5/17/2011	5/27/2011	5/27/2011
Analysis Date:	5/25/2011	5/25/2011	5/25/2011	6/1/2011	6/1/2011
Units (wet wt):	ng/g	ng/g	ng/g	ng/g	ng/g
Dibenz(a,h)anthracene	9.67	9.27	8.46	8.52	68.0
Benzo(g,h,i)perylene	35.5	38.2	32.0	44.9	250
Sum of PAHs Measured	1125	1048	980	1430	9333
<u>SURROGATE RECOVERIES (%Rec)</u>					
d8-Naphthalene	48%	57%	53%	40%	59%
d10-Acenaphthene	66%	71%	68%	67%	63%
d10-Phenanthrene	88%	83%	79%	85%	82%
d12-Chrysene	74%	77%	78%	73%	75%
d12-Perylene	77%	81%	79%	81%	76%

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ENVVEST
Sediment Verification
2011
PAHs in Sediment

Sample Name:	3151-190	3151-192	3151-194	3151-196	3151-199
Station:	500-G40	500-G42	500-G43	500-G45	500-G48
Sample Type:	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample
Matrix:	Sediment	Sediment	Sediment	Sediment	Sediment
Batch ID:	PAH052711	PAH052711	PAH052711	PAH052711	PAH052711
Sample Weight (g):	8.77	10.08	11.31	10.09	10.3
Collection Date:	5/10/2010	5/10/2010	5/10/2010	5/10/2010	5/10/2010
Extraction Date:	5/27/2011	5/27/2011	5/27/2011	5/27/2011	5/27/2011
Analysis Date:	6/1/2011	6/1/2011	6/1/2011	6/1/2011	6/1/2011
Units (wet wt):	ng/g	ng/g	ng/g	ng/g	ng/g
Naphthalene	23.2	15.4	14.9	29.5	8.76
C1-Naphthalenes	25.4	18.4	13.1	21.2	7.85
C2-Naphthalenes	69.7	45.0	40.4	32.4	35.4
C3-Naphthalenes	54.7	56.3	49.8	38.3	46.3
C4-Naphthalenes	49.3	57.4	29.6	0.24 U	27.1
Biphenyl	4.95	2.17	3.00	6.61	3.59
Acenaphthylene	11.3	8.61	6.18	12.0	9.77
Acenaphthene	11.9	5.62	7.74	3.82	3.68
Fluorene	16.6	5.07	10.5	7.40	6.93
C1-Fluorenes	14.2	12.2	7.70	12.1	5.71
C2-Fluorenes	34.8	23.3	14.4	28.3	27.4
C3-Fluorenes	33.8	27.4	26.5	25.8	34.9
Anthracene	47.5	16.3	21.7	26.9	14.5
Phenanthrene	101	25.4	58.4	47.0	27.1
C1-Phenanthrenes/Anthracenes	73.1	42.7	63.6	65.3	42.0
C2-Phenanthrenes/Anthracenes	81.3	55.3	59.4	69.4	46.0
C3-Phenanthrenes/Anthracenes	55.5	45.9	49.2	63.8	39.4
C4-Phenanthrenes/Anthracenes	99.3	68.4	60.0	79.8	40.2
Dibenzothiophene	5.18	3.55	4.73	5.11	3.11
C1-Dibenzothiophenes	14.7	9.29	12.4	12.5	6.37
C2-Dibenzothiophenes	12.7	12.4	9.91	13.7	11.6
C3-Dibenzothiophenes	44.5	14.4	0.61 U	23.4	0.67 U
C4-Dibenzothiophenes	0.78 U	13.4	0.61 U	22.2	0.67 U
Fluoranthene	221	89.7	136	183	75.7
Pyrene	249	127	150	203	93.5
C1-Fluoranthenes/Pyrenes	152	85.3	85.8	134	63.5
C2-Fluoranthenes/Pyrenes	60.0	51.7	43.8	52.4	26.7
C3-Fluoranthenes/Pyrenes	42.1	26.9	23.9	31.8	19.8
Benzo(a)anthracene	143	52.7	62.2	131	44.3
Chrysene	187	74.6	78.9	202	63.3
C1-Chrysenes	53.7	21.6	25.8	59.7	22.3
C2-Chrysenes	43.8	24.7	25.5	59.0	18.4
C3-Chrysenes	33.4	23.4	17.1	37.1	15.0
C4-Chrysenes	27.7	24.6	18.9	32.2	10.1
Benzo(b)fluoranthene	230	109	102	254	76.6
Benzo(k)fluoranthene	91.6	42.7	40.8	104	32.4
Benzo(e)pyrene	123	61.7	59.0	141	45.3
Benzo(a)pyrene	146	70.3	69.8	159	57.4
Perylene	31.8	22.4	21.2	33.3	16.3
Indeno(1,2,3-cd)pyrene	99.7	69.0	50.7	141	44.9

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Sample Name:	3151-190	3151-192	3151-194	3151-196	3151-199
Station:	500-G40	500-G42	500-G43	500-G45	500-G48
Sample Type:	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample
Matrix:	Sediment	Sediment	Sediment	Sediment	Sediment
Batch ID:	PAH052711	PAH052711	PAH052711	PAH052711	PAH052711
Sample Weight (g):	8.77	10.08	11.31	10.09	10.3
Collection Date:	5/10/2010	5/10/2010	5/10/2010	5/10/2010	5/10/2010
Extraction Date:	5/27/2011	5/27/2011	5/27/2011	5/27/2011	5/27/2011
Analysis Date:	6/1/2011	6/1/2011	6/1/2011	6/1/2011	6/1/2011
Units (wet wt):	ng/g	ng/g	ng/g	ng/g	ng/g
Dibenz(a,h)anthracene	22.5	11.2	11.1	23.5	8.05
Benzo(g,h,i)perylene	93.7	47.6	47.9	102	39.5
Sum of PAHs Measured	2937	1620	1636	2728	1222
<u>SURROGATE RECOVERIES (%Rec)</u>					
d8-Naphthalene	47%	35% #	86%	43%	58%
d10-Acenaphthene	72%	53%	86%	102%	68%
d10-Phenanthrene	95%	70%	96%	128% #	89%
d12-Chrysene	68%	66%	64%	68%	77%
d12-Perylene	82%	59%	67%	80%	79%

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Sample Name:	3151-200	3151-206	3151-207	3151-208	3151-210
Station:	500-G49	500-G55	500-G56	500-G57	500-G59
Sample Type:	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample
Matrix:	Sediment	Sediment	Sediment	Sediment	Sediment
Batch ID:	PAH052711	PAH082311	PAH082311	PAH082911	PAH082311
Sample Weight (g):	9.66	8.1	9.47	11.34	9.89
Collection Date:	5/10/2010	5/7/2010	5/7/2010	5/7/2010	5/6/2010
Extraction Date:	5/27/2011	8/23/2011	8/23/2011	8/29/2011	8/23/2011
Analysis Date:	6/1/2011	8/25/2011	8/25/2011	9/1/2011	8/25/2011
Units (wet wt):	ng/g	ng/g	ng/g	ng/g	ng/g
Naphthalene	7.67	31.9	24.4	20.6	24.7
C1-Naphthalenes	10.6	30.5	51.0	18.0	17.7
C2-Naphthalenes	37.5	59.7	70.4	36.2	33.8
C3-Naphthalenes	36.4	64.3	58.3	39.6	42.1
C4-Naphthalenes	27.4	33.1	32.9	27.0	30.6
Biphenyl	1.51	8.49	6.61	6.33	6.10
Acenaphthylene	4.93	15.4	14.3	17.3	10.8
Acenaphthene	18.4	21.0	9.09	6.16	5.46
Fluorene	9.74	30.8	13.0	11.4	9.51
C1-Fluorenes	8.68	17.4	13.9	12.5	8.63
C2-Fluorenes	16.2	33.2	26.3	19.4	23.0
C3-Fluorenes	24.8	38.4	31.0	23.3	28.2
Anthracene	38.0	51.6	34.3	42.0	20.6
Phenanthrene	112	113	87.6	54.6	36.4
C1-Phenanthrenes/Anthracenes	80.1	107	83.1	74.8	49.8
C2-Phenanthrenes/Anthracenes	71.0	95.9	77.6	78.3	53.2
C3-Phenanthrenes/Anthracenes	53.7	74.1	70.2	56.8	47.6
C4-Phenanthrenes/Anthracenes	86.0	94.0	141	60.7	40.8
Dibenzothiophene	6.55	10.4	8.92	5.47	4.81
C1-Dibenzothiophenes	13.0	12.8	9.35	8.32	9.45
C2-Dibenzothiophenes	16.2	14.4	16.1	10.7	10.8
C3-Dibenzothiophenes	19.1	29.0	16.7	18.2	14.1
C4-Dibenzothiophenes	0.71 U	17.4	13.1	9.95	8.57
Fluoranthene	248	302	218	181	103
Pyrene	262	318	242	223	141
C1-Fluoranthenes/Pyrenes	135	186	143	136	87.3
C2-Fluoranthenes/Pyrenes	55.0	78.9	78.3	65.8	46.8
C3-Fluoranthenes/Pyrenes	33.7	42.6	41.9	39.8	28.1
Benzo(a)anthracene	125	138	93.2	125	49.9
Chrysene	163	196	180	201	87.3
C1-Chrysenes	36.1	51.0	49.0	50.2	25.2
C2-Chrysenes	40.5	53.3	67.5	50.5	25.7
C3-Chrysenes	40.2	40.0	54.7	44.2	21.0
C4-Chrysenes	28.0	35.2	35.8	31.8	17.6
Benzo(b)fluoranthene	173	206	152	218	107
Benzo(k)fluoranthene	70.1	75.9	57.1	79.3	38.2
Benzo(e)pyrene	91.6	116	88.7	132	61.7
Benzo(a)pyrene	125	136	101	159	68.8
Perylene	29.1	32.2	25.7	33.4	16.9
Indeno(1,2,3-cd)pyrene	96.6	96.0	72.3	108	49.1

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Sample Name:	3151-200	3151-206	3151-207	3151-208	3151-210
Station:	500-G49	500-G55	500-G56	500-G57	500-G59
Sample Type:	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample
Matrix:	Sediment	Sediment	Sediment	Sediment	Sediment
Batch ID:	PAH052711	PAH082311	PAH082311	PAH082911	PAH082311
Sample Weight (g):	9.66	8.1	9.47	11.34	9.89
Collection Date:	5/10/2010	5/7/2010	5/7/2010	5/7/2010	5/6/2010
Extraction Date:	5/27/2011	8/23/2011	8/23/2011	8/29/2011	8/23/2011
Analysis Date:	6/1/2011	8/25/2011	8/25/2011	9/1/2011	8/25/2011
Units (wet wt):	ng/g	ng/g	ng/g	ng/g	ng/g
Dibenz(a,h)anthracene	20.1	24.2	17.8	26.8	11.7
Benzo(g,h,i)perylene	83.6	90.1	71.8	110	47.2
Sum of PAHs Measured	2555	3224	2700	2673	1571
<u>SURROGATE RECOVERIES (%Rec)</u>					
d8-Naphthalene	52%	28% #	40%	32% #	44%
d10-Acenaphthene	87%	52%	80%	64%	67%
d10-Phenanthrene	88%	80%	107%	83%	93%
d12-Chrysene	69%	76%	84%	74%	79%
d12-Perylene	64%	90%	100%	94%	94%

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Sample Name:	3151-211	3151-212	3151-214	3151-218	3151-221
Station:	500-G60	500-G61	500-G63	500-G67	500-G69
Sample Type:	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample
Matrix:	Sediment	Sediment	Sediment	Sediment	Sediment
Batch ID:	PAH082911	PAH082911	PAH082911	PAH082911	PAH082911
Sample Weight (g):	10.97	10.07	9.53	10.48	10.66
Collection Date:	5/6/2010	5/7/2010	5/7/2010	5/6/2010	5/6/2010
Extraction Date:	8/29/2011	8/29/2011	8/29/2011	8/29/2011	8/29/2011
Analysis Date:	9/1/2011	9/8/2011	9/1/2011	9/1/2011	9/1/2011
Units (wet wt):	ng/g	ng/g	ng/g	ng/g	ng/g
Naphthalene	25.6	32.3	16.5	22.5	20.3
C1-Naphthalenes	20.8	33.4	12.8	17.9	14.5
C2-Naphthalenes	46.3	58.2	50.1	50.3	44.2
C3-Naphthalenes	40.5	46.4	41.9	49.4	42.9
C4-Naphthalenes	25.4	29.7	33.7	39.3	22.4
Biphenyl	7.28	9.79	6.77	6.94	7.17
Acenaphthylene	22.8	63.4	20.2	14.1	16.6
Acenaphthene	12.1	31.5	8.54	11.2	15.8
Fluorene	19.2	40.6	17.9	15.8	24.4
C1-Fluorenes	15.4	23.7	16.1	16.9	18.2
C2-Fluorenes	25.6	26.7	38.6	32.2	23.0
C3-Fluorenes	31.1	71.7	27.2	36.7	31.2
Anthracene	86.9	139	55.0	90.2	66.1
Phenanthrene	101	335	66.2	81.7	118
C1-Phenanthrenes/Anthracenes	108	183	83.0	108	100
C2-Phenanthrenes/Anthracenes	98.9	132	76.2	138	83.7
C3-Phenanthrenes/Anthracenes	81.0	99.8	55.2	136	53.6
C4-Phenanthrenes/Anthracenes	101	189	53.0	156	73.8
Dibenzothiophene	9.48	19.0	6.17	8.60	10.3
C1-Dibenzothiophenes	12.7	13.2	9.06	17.3	9.67
C2-Dibenzothiophenes	15.5	18.6	10.3	24.8	11.2
C3-Dibenzothiophenes	23.9	25.1	16.3	45.9	15.9
C4-Dibenzothiophenes	26.3	23.4	11.1	42.2	7.60
Fluoranthene	280	709	142	230	233
Pyrene	367	835	183	356	276
C1-Fluoranthenes/Pyrenes	248	372	134	263	183
C2-Fluoranthenes/Pyrenes	124	187	62.1	187	79.4
C3-Fluoranthenes/Pyrenes	74.4	84.5	34.7	149	40.7
Benzo(a)anthracene	206	273	137	196	174
Chrysene	345	682	212	255	224
C1-Chrysenes	88.5	131	58.3	113	68.6
C2-Chrysenes	111	112	54.6	183	54.8
C3-Chrysenes	88.5	75.2	37.5	157	37.7
C4-Chrysenes	61.1	51.1	21.1	99.9	22.7
Benzo(b)fluoranthene	366	641	238	326	260
Benzo(k)fluoranthene	130	224	83.4	108	92.6
Benzo(e)pyrene	208	340	137	187	144
Benzo(a)pyrene	243	362	162	212	186
Perylene	54.6	60.46	35.4	48.5	41.3
Indeno(1,2,3-cd)pyrene	160	202	108	121	119

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Sample Name:	3151-211	3151-212	3151-214	3151-218	3151-221
Station:	500-G60	500-G61	500-G63	500-G67	500-G59
Sample Type:	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample
Matrix:	Sediment	Sediment	Sediment	Sediment	Sediment
Batch ID:	PAH082911	PAH082911	PAH082911	PAH082911	PAH082911
Sample Weight (g):	10.97	10.07	9.53	10.48	10.66
Collection Date:	5/6/2010	5/7/2010	5/7/2010	5/6/2010	5/6/2010
Extraction Date:	8/29/2011	8/29/2011	8/29/2011	8/29/2011	8/29/2011
Analysis Date:	9/1/2011	9/8/2011	9/1/2011	9/1/2011	9/1/2011
Units (wet wt):	ng/g	ng/g	ng/g	ng/g	ng/g
Dibenz(a,h)anthracene	43.5	57.5	27.7	36.8	33.1
Benzo(g,h,i)perylene	144	160	102	111	114
Sum of PAHs Measured	4299	7204	2700	4501	3215
<u>SURROGATE RECOVERIES (%Rec)</u>					
d8-Naphthalene	41%	41%	39% #	54%	52%
d10-Acenaphthene	83%	75%	61%	93%	71%
d10-Phenanthrene	81%	92%	87%	80%	86%
d12-Chrysene	75%	72%	71%	84%	84%
d12-Perylene	91%	94%	87%	95%	91%

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Sample Name:	3151-223	3151-567	3151-568	3151-569
Station:	500-G71	PSNS096	PSNS015	PSNS008
Sample Type:	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample
Matrix:	Sediment	Sediment	Sediment	Sediment
Batch ID:	PAH082911	PAH090211	PAH090211	PAH091211
Sample Weight (g):	11.87	12.15	12.10	0.44
Collection Date:	5/13/2010	4/20/2011	4/20/2011	4/20/2011
Extraction Date:	8/29/2011	9/2/2011	9/2/2011	9/12/2011
Analysis Date:	9/1/2011	9/7/2011	9/7/2011	9/13/2011
Units (wet wt):	ng/g	ng/g	ng/g	ng/g
Naphthalene	33.2	9.63	80.8	2555
C1-Naphthalenes	32.7	65.3	235	1264
C2-Naphthalenes	51.1	126	802	1173
C3-Naphthalenes	53.3	147	883	1092
C4-Naphthalenes	39.4	80.3	450	680
Biphenyl	8.97	6.21	34.2	284
Acenaphthylene	16.6	3.24	5.03	169
Acenaphthene	21.3	3.27	19.6	4239
Fluorene	30.0	6.64	30.5	3873
C1-Fluorenes	14.9	11.6	82.7	696
C2-Fluorenes	18.7	15.2	158	500
C3-Fluorenes	58.8	0.18 U	169	2188
Anthracene	44.8	4.92	22.4	4149
Phenanthrene	282	12.3	89.1	23579
C1-Phenanthrenes/Anthracenes	116	42.8	176	5889
C2-Phenanthrenes/Anthracenes	76.0	42.3	229	2535
C3-Phenanthrenes/Anthracenes	52.0	50.8	205	1295
C4-Phenanthrenes/Anthracenes	59.5	48.2	149	2189
Dibenzothiophene	12.5	2.71	26.1	1069
C1-Dibenzothiophenes	8.82	5.80	59.4	407
C2-Dibenzothiophenes	7.85	14.7	98.3	339
C3-Dibenzothiophenes	11.0	59.3	140	317
C4-Dibenzothiophenes	7.99	23.2	75.6	302
Fluoranthene	401	22.2	143	24447
Pyrene	301	27.3	133	21566
C1-Fluoranthenes/Pyrenes	109	22.4	77.4	7122
C2-Fluoranthenes/Pyrenes	83.6	28.6	88.1	2241
C3-Fluoranthenes/Pyrenes	33.8	33.7	81.2	1084
Benzo(a)anthracene	72.7	8.45	43.1	8569
Chrysene	150	21.8	98.2	9504
C1-Chrysenes	42.1	25.8	70.4	2272
C2-Chrysenes	39.2	66.3	157	1458
C3-Chrysenes	29.8	63.0	153	649
C4-Chrysenes	13.7	43.4	103	165
Benzo(b)fluoranthene	199	21.8	91.3	10881
Benzo(k)fluoranthene	73.4	4.35	25.2	4268
Benzo(e)pyrene	106	22.5	69.6	5879
Benzo(a)pyrene	130	10.5	45.9	9533
Perylene	26.9	8.72	19.0	1514
Indeno(1,2,3-cd)pyrene	71.1	14.1	35.7	5449

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Sample Name:	3151-223	3151-567	3151-568	3151-569
Station:	500-G71	PSNS096	PSNS015	PSNS008
Sample Type:	Reg_Sample	Reg_Sample	Reg_Sample	Reg_Sample
Matrix:	Sediment	Sediment	Sediment	Sediment
Batch ID:	PAH082911	PAH090211	PAH090211	PAH091211
Sample Weight (g):	11.87	12.15	12.10	0.44
Collection Date:	5/13/2010	4/20/2011	4/20/2011	4/20/2011
Extraction Date:	8/29/2011	9/2/2011	9/2/2011	9/12/2011
Analysis Date:	9/1/2011	9/7/2011	9/7/2011	9/13/2011
Units (wet wt):	ng/g	ng/g	ng/g	ng/g
Dibenz(a,h)anthracene	20.0	3.11	10.3	1360
Benzo(g,h,i)perylene	59.8	26.2	48.1	4527
Sum of PAHs Measured	3020	1256	5712	183270
<u>SURROGATE RECOVERIES (%Rec)</u>				
d8-Naphthalene	50%	52%	51%	67%
d10-Acenaphthene	64%	79%	77%	90%
d10-Phenanthrene	94%	83%	90%	102%
d12-Chrysene	84%	66%	69%	77%
d12-Perylene	92%	79%	85%	86%

	Procedural	Procedural	Procedural	Procedural	Procedural
Sample Name:	Blank	Blank	Blank	Blank	Blank
Sample Type:	MB	MB	MB	MB	MB
	Diatomaceous earth & Sodium Sulfate	Diatomaceous earth & Sodium Sulfate	Diatomaceous earth & Sodium Sulfate	Diatomaceous earth & Sodium Sulfate	Diatomaceous earth & Sodium Sulfate
Matrix:	PAH051211	PAH051711	PAH052711	PAH082311	PAH082911
Batch ID:	divided by 10 g	divided by 10 g	divided by 10 g	divided by 10 g	divided by 10 g
Sample Weight (g):	5/12/2011	5/17/2011	5/27/2011	8/23/2011	8/29/2011
Extraction Date:	5/20/2011	5/25/2011	6/1/2011	8/25/2011	9/1/2011
Analysis Date:	ng/g	ng/g	ng/g	ng/g	ng/g
Units (wet wt):					
Naphthalene	2.03 U	2.03 U	2.03 U	2.03 U	2.03 U
C1-Naphthalenes	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
C2-Naphthalenes	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
C3-Naphthalenes	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
C4-Naphthalenes	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Biphenyl	0.34 U	0.34 U	0.34 U	0.34 U	0.34 U
Acenaphthylene	0.19 U	0.19 U	0.19 U	0.19 U	0.19 U
Acenaphthene	0.21 U	0.21 U	0.21 U	0.21 U	0.21 U
Fluorene	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
C1-Fluorenes	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
C2-Fluorenes	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
C3-Fluorenes	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
Anthracene	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U
Phenanthrene	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
C1-Phenanthrenes/Anthracenes	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
C2-Phenanthrenes/Anthracenes	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
C3-Phenanthrenes/Anthracenes	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
C4-Phenanthrenes/Anthracenes	0.18 U	0.18 U	0.18 U	0.18 U	0.18 U
Dibenzothiophene	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U
C1-Dibenzothiophenes	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U
C2-Dibenzothiophenes	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U
C3-Dibenzothiophenes	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U
C4-Dibenzothiophenes	0.69 U	0.69 U	0.69 U	0.69 U	0.69 U
Fluoranthene	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Pyrene	0.31 U	0.31 U	0.31 U	0.31 U	0.31 U
C1-Fluoranthenes/Pyrenes	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
C2-Fluoranthenes/Pyrenes	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
C3-Fluoranthenes/Pyrenes	0.24 U	0.24 U	0.24 U	0.24 U	0.24 U
Benzo(a)anthracene	0.23 U	0.23 U	0.23 U	0.23 U	0.23 U
Chrysene	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
C1-Chrysenes	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
C2-Chrysenes	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
C3-Chrysenes	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
C4-Chrysenes	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
Benzo(b)fluoranthene	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U
Benzo(k)fluoranthene	0.17 U	0.17 U	0.17 U	0.17 U	0.17 U
Benzo(e)pyrene	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
Benzo(a)pyrene	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U

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	Procedural	Procedural	Procedural	Procedural	Procedural
Sample Name:	Blank	Blank	Blank	Blank	Blank
Sample Type:	MB	MB	MB	MB	MB
Matrix:	Diatomaceous earth & Sodium Sulfate	Diatomaceous earth & Sodium Sulfate	Diatomaceous earth & Sodium Sulfate	Diatomaceous earth & Sodium Sulfate	Diatomaceous earth & Sodium Sulfate
Batch ID:	PAH051211	PAH051711	PAH052711	PAH082311	PAH082911
Sample Weight (g):	divided by 10 g	divided by 10 g	divided by 10 g	divided by 10 g	divided by 10 g
Extraction Date:	5/12/2011	5/17/2011	5/27/2011	8/23/2011	8/29/2011
Analysis Date:	5/20/2011	5/25/2011	6/1/2011	8/25/2011	9/1/2011
Units (wet wt):	ng/g	ng/g	ng/g	ng/g	ng/g
Perylene	0.39 U	0.39 U	0.39 U	0.39 U	0.39 U
Indeno(1,2,3-cd)pyrene	0.29 U	0.29 U	0.29 U	0.29 U	0.29 U
Dibenz(a,h)anthracene	0.22 U	0.22 U	0.22 U	0.22 U	0.22 U
Benzo(g,h,i)perylene	0.32 U	0.32 U	0.32 U	0.32 U	0.32 U
<u>SURROGATE RECOVERIES (%Rec)</u>					
d8-Naphthalene	84%	66%	72%	52%	75%
d10-Acenaphthene	76%	78%	79%	58%	75%
d10-Phenanthrene	69%	80%	71%	67%	64%
d12-Chrysene	90%	90%	81%	86%	82%
d12-Perylene	94%	92%	126% #	85%	100%

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	3151-143	MS (3151-143)	MSD (3151-143)	MS (3151-143)	MSD (3151-143)
Sample Name:	Reg_Sample	MS	MSD	MS	MSD
Sample Type:					
Matrix:	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Batch ID:	PAH090211	PAH082311	PAH082311	PAH090211	PAH090211
Sample Weight (g):	13.17	10.78	12.17	10.23	10.56
Extraction Date:	9/2/2011	8/23/2011	8/23/2011	9/2/2011	9/2/2011
Analysis Date:	9/8/2011	8/25/2011	8/25/2011	9/8/2011	9/8/2011
Units (wet wt):	ng/g	REC	REC	REC	REC
Naphthalene	3.83	110%	111%	110%	109%
C1-Naphthalenes	0.19 U				
C2-Naphthalenes	0.19 U				
C3-Naphthalenes	0.19 U				
C4-Naphthalenes	0.19 U				
Biphenyl	3.62	83%	91%	94%	94%
Acenaphthylene	3.76	80%	78%	94%	94%
Acenaphthene	0.16 U	103%	93%	103%	100%
Fluorene	2.96	104%	90%	106%	100%
C1-Fluorenes	3.47				
C2-Fluorenes	5.97				
C3-Fluorenes	0.17 U				
Anthracene	4.88	78%	83%	90%	89%
Phenanthrene	10.7	98%	73%	82%	94%
C1-Phenanthrenes/Anthracenes	8.15				
C2-Phenanthrenes/Anthracenes	10.7				
C3-Phenanthrenes/Anthracenes	7.97				
C4-Phenanthrenes/Anthracenes	8.31				
Dibenzothiophene	1.92	103%	98%	88%	90%
C1-Dibenzothiophenes	0.52 U				
C2-Dibenzothiophenes	0.52 U				
C3-Dibenzothiophenes	0.52 U				
C4-Dibenzothiophenes	0.52 U				
Fluoranthene	27.7	205% &	75%	90%	113%
Pyrene	24.3	153% &	79%	90%	116%
C1-Fluoranthenes/Pyrenes	11.8				
C2-Fluoranthenes/Pyrenes	8.12				
C3-Fluoranthenes/Pyrenes	0.18 U				
Benzo(a)anthracene	13.4	83%	82%	102%	121% &
Chrysene	15.6	90%	69%	79%	94%
C1-Chrysenes	4.04				
C2-Chrysenes	4.27				
C3-Chrysenes	0.15 U				
C4-Chrysenes	0.15 U				
Benzo(b)fluoranthene	24.5	61%	62%	87%	106%
Benzo(k)fluoranthene	9.28	85%	83%	97%	105%
Benzo(e)pyrene	12.4	59%	59%	66%	78%
Benzo(a)pyrene	17.7	67%	76%	90%	111%

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		MS (3151-143)	MSD (3151-143)	MS (3151-143)	MSD (3151-143)
Sample Name:	3151-143	143)	143)	143)	143)
Sample Type:	Reg_Sample	MS	MSD	MS	MSD
Matrix:	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT	SEDIMENT
Batch ID:	PAH090211	PAH082311	PAH082311	PAH090211	PAH090211
Sample Weight (g):	13.17	10.78	12.17	10.23	10.56
Extraction Date:	9/2/2011	8/23/2011	8/23/2011	9/2/2011	9/2/2011
Analysis Date:	9/8/2011	8/25/2011	8/25/2011	9/8/2011	9/8/2011
Units (wet wt):	ng/g	REC	REC	REC	REC
Perylene	7.98	66%	66%	79%	83%
Indeno(1,2,3-cd)pyrene	12.2	80%	92%	86%	100%
Dibenz(a,h)anthracene	2.41	92%	91%	96%	96%
Benzo(g,h,i)perylene	9.29	85%	96%	72%	82%
<u>SURROGATE RECOVERIES (%)</u>					
d8-Naphthalene	71%	42%	64%	54%	60%
d10-Acenaphthene	77%	49%	80%	63%	72%
d10-Phenanthrene	96%	78%	103%	84%	87%
d12-Chrysene	77%	71%	78%	79%	79%
d12-Perylene	96%	78%	86%	86%	87%

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QC Summary

Sample Name:	DUP (3151-212)		DUP (3151-218)	
Sample Type:	Duplicate		Duplicate	
Matrix:	SEDIMENT		SEDIMENT	
Batch ID:	PAH090211		PAH091211	
Sample Weight (g):	9.32		10.08	
Extraction Date:	9/2/2011		9/12/2011	
Analysis Date:	9/8/2011		9/13/2011	
Units (wet wt):	ng/g	RPD	ng/g	RPD
Naphthalene	19.6	49% &	31.7	34% &
C1-Naphthalenes	15.2		27.5	
C2-Naphthalenes	46.5		50.6	
C3-Naphthalenes	41.4		47.7	
C4-Naphthalenes	39.6		56.6	
Biphenyl	9.48	3%	7.52	8%
Acenaphthylene	39.9	46% &	16.2	14%
Acenaphthene	24.6	25%	8.74	25%
Fluorene	29.8	31% &	13.3	17%
C1-Fluorenes	18.8		19.5	
C2-Fluorenes	27.1		33.8	
C3-Fluorenes	42.9		42.6	
Anthracene	137	2%	48.9	59% &
Phenanthrene	147	78% &	55.0	39% &
C1-Phenanthrenes/Anthracenes	162		82.3	
C2-Phenanthrenes/Anthracenes	140		114	
C3-Phenanthrenes/Anthracenes	111		150	
C4-Phenanthrenes/Anthracenes	188		186	
Dibenzothiophene	11.8	46% &	6.09	34% &
C1-Dibenzothiophenes	13.1		10.5	
C2-Dibenzothiophenes	19.2		18.4	
C3-Dibenzothiophenes	28.1		57.0	
C4-Dibenzothiophenes	22.1		54.3	
Fluoranthene	540	27%	211	9%
Pyrene	820	2%	285	22%
C1-Fluoranthenes/Pyrenes	444		199	
C2-Fluoranthenes/Pyrenes	172		178	
C3-Fluoranthenes/Pyrenes	81.4		205	
Benzo(a)anthracene	333	20%	136	36% &
Chrysene	571	18%	226	12%
C1-Chrysenes	133		139	
C2-Chrysenes	108		383	
C3-Chrysenes	66.0		393	
C4-Chrysenes	41.1		231	
Benzo(b)fluoranthene	577	11%	263	21%
Benzo(k)fluoranthene	202	10%	90.0	18%
Benzo(e)pyrene	303	12%	170	9%
Benzo(a)pyrene	333	8%	176	19%

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 QC Summary

		DUP (3151-218)		
Sample Name:		Duplicate		
Sample Type:		Duplicate		
Matrix:		SEDIMENT		
Batch ID:		PAH090211		
Sample Weight (g):		9.32		
Extraction Date:		9/2/2011		
Analysis Date:		9/8/2011		
Units (wet wt):		ng/g	RPD	ng/g
Perylene		64.8	7%	47.6
Indeno(1,2,3-cd)pyrene		173	15%	89.9
Dibenz(a,h)anthracene		49.3	15%	32.0
Benzo(g,h,i)perylene		139	14%	84.6
27%				
<u>SURROGATE RECOVERIES (%)</u>				
d8-Naphthalene		60%		45%
d10-Acenaphthene		83%		105%
d10-Phenanthrene		83%		117%
d12-Chrysene		76%		59%
d12-Perylene		88%		72%

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Sample Name:	SRM1944			SRM1944		
Sample Type:	SRM			SRM		
		NIST			NIST	
		Certified			Certified	
		Value*			Value*	
Matrix:	SEDIMENT			SEDIMENT		
Batch ID:	PAH051211			PAH090211		
Sample Weight (g):	0.623			0.751		
Extraction Date:	5/12/2011			9/2/2011		
Analysis Date:	5/21/2011			9/9/2011		
Units (wet wt):	ng/g	ng/g	PD	ng/g	ng/g	PD
Naphthalene	1239	1650	25%	1868	1650	13%
C1-Naphthalenes	673			1054		
C2-Naphthalenes	2508			2447		
C3-Naphthalenes	2979			2685		
C4-Naphthalenes	2885			2397		
Biphenyl	198			236		
Acenaphthylene	778			966		
Acenaphthene	298			278		
Fluorene	352			385		
C1-Fluorenes	669			616		
C2-Fluorenes	1637			1514		
C3-Fluorenes	3474			2897		
Anthracene	1174	1770	34% &	1352	1770	24%
Phenanthrene	4180	5270	21%	4887	5270	7%
C1-Phenanthrenes/Anthracenes	6206			7098		
C2-Phenanthrenes/Anthracenes	7156			7983		
C3-Phenanthrenes/Anthracenes	5354			11325		
C4-Phenanthrenes/Anthracenes	3546			4773		
Dibenzothiophene	623			700		
C1-Dibenzothiophenes	1371			1387		
C2-Dibenzothiophenes	2415			2348		
C3-Dibenzothiophenes	2280			2220		
C4-Dibenzothiophenes	1079			123		
Fluoranthene	7013	8920	21%	7900	8920	11%
Pyrene	7024	9700	28%	8289	9700	15%
C1-Fluoranthenes/Pyrenes	5336			6656		
C2-Fluoranthenes/Pyrenes	4012			4622		
C3-Fluoranthenes/Pyrenes	1940			2071		
Benzo(a)anthracene	3361	4720	29%	4795	4720	2%
Chrysene	6031	5900	2%	5558	5900	6%
C1-Chrysenes	3529			3730		
C2-Chrysenes	2471			2618		
C3-Chrysenes	1252			1410		
C4-Chrysenes	499			537		
Benzo(b)fluoranthene	4851	5960	19%	6094	5960	2%
Benzo(k)fluoranthene	1992	2300	13%	2085	2300	9%
Benzo(e)pyrene	3172	3280	3%	3872	3280	18%
Benzo(a)pyrene	3121	4300	27%	4150	4300	3%

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Sample Name:	SRM1944			SRM1944		
Sample Type:	SRM			SRM		
		NIST Certified Value*			NIST Certified Value*	
Matrix:	SEDIMENT			SEDIMENT		
Batch ID:	PAH051211			PAH090211		
Sample Weight (g):	0.623			0.751		
Extraction Date:	5/12/2011			9/2/2011		
Analysis Date:	5/21/2011			9/9/2011		
Units (wet wt):	ng/g	ng/g	PD	ng/g	ng/g	PD
Perylene	906	1170	23%	744	1170	36% &
Indeno(1,2,3-cd)pyrene	2745	2780	1%	2868	2780	3%
Dibenz(a,h)anthracene	876	755	16%	936	755	24%
Benzo(g,h,i)perylene	3477	2840	22%	2587	2840	9%
<u>SURROGATE RECOVERIES (%)</u>						
d8-Naphthalene	84%			64%		
d10-Acenaphthene	75%			84%		
d10-Phenanthrene	105%			93%		
d12-Chrysene	93%			75%		
d12-Perylene	86%			85%		

* For NIST SRM 1944 (NY/NJ Water Way Sediment)
 concentration of chrysene is the sum of chrysene and triphenylene in certificate
 concentration of benzo(b)fluoranthene is the sum of benzo(b)fluoranthene
 and benzo(j)fluoranthene in certificate
 concentration of dibenz(a,h)anthracene is the sum of dibenz(a,h)anthracene
 and dibenz(a,c)anthracene in certificate

PROJECT: Organic Verification: 2011 Sediment Verification Study: SQV01 (partial) Sediments from Storm Drains and SQV02 PAHs Verification for OUB Screening.

PARAMETER: Polycyclic aromatic hydrocarbons (PAH)

LABORATORY: Pacific Northwest National Laboratory (PNNL), Battelle Marine Sciences Laboratory (MSL), Sequim, Washington

MATRIX: SQV01: Surface sediments Storm Drains
SQV02: Surface sediments (0-10 cm grabs) – OUB Marine

SAMPLE CUSTODY AND PROCESSING: *SQV01(partial)*
Three storm drain samples were collected on 04/20/2011 and hand delivered by the U.S. Navy to MSL on 04/28/2011. The samples were split for metals, organics, and screening analyses. The screening splits were sent to SPAWAR, San Diego, CA. The metals and organics splits were archived frozen (<-20°C). All samples were assigned a Battelle Central File (CF) identification number (3151) and were entered into Battelle's log-in and custody tracking system.

SQV02
One hundred and three sediment samples were hand delivered by the U.S. Navy to MSL on 05/17/2010. The samples were split for metals, organics, and screening analyses. The screening splits were sent to SPAWAR, San Diego, CA. The metals and organics splits were archived frozen (<-20°C). All samples were assigned a Battelle Central File (CF) identification number (3151) and were entered into Battelle's log-in and custody tracking system. Twenty-six samples were selected for laboratory confirmation analyses for PAHs. The confirmation selection criteria were provided in the attached memorandum.

The following lists information on sample receipt and processing activities:

Lab Sample IDs:		SQV01: 3151*567-569	
Description:		SQV02: OUB Marine 3151* various	
Sample collection dates		SQV01: 04/20/11 and SQV02: May 2010	
Laboratory arrival date		04/28/2011 and 05/17/2010	
Extraction and analysis dates	<u>Batch</u>	<u>Extraction Date</u>	<u>Analysis Date</u>
	PAH051211	5/12/2011	5/20/2011
	PAH051711	5/17/2011	5/25/2011
	PAH052711	5/27/2011	6/01/2011
	PAH082311	8/23/2011	8/25/2011
	PAH082911	8/29/2011	9/01/2011
	PAH090211	9/02/2011	9/07-08/2011
	PAH091211	9/12/2011	9/13/2011

DATA QUALITY OBJECTIVES:

	Reference Method	Method Blank	Surrogate Recovery	SRM Recovery	MS/MSD Recovery	DUP	Method Detection Limits (ng)
PAH	NOAA Status & Trends	<5 * MDL	40-120%	80% of the measured concentration $\pm 30\%$ of the certified values	40-120% Recovery	$\pm 30\%$ RPD	$\sim 1.04 - 20.26$

METHODS:

Sediment samples were extracted for PAHs following general National Atmospheric and Oceanic Administration (NOAA) National Status and Trends (NS&T) methods. Approximately 10 g of wet sediment was mixed with anhydrous sodium sulfate, spiked with surrogates and extracted with methylene chloride using accelerated solvent extractor (ASE). The extract was concentrated, and processed through an alumina cleanup column, concentrated, and fortified with internal standard (IS), and submitted for analysis. Extracts intended for PAH analyses were analyzed using gas chromatography mass spectrometry (GC/MS), following Battelle SOP O-015. Sample data were quantified by the method of internal standards using the surrogate compounds.

HOLDING TIMES:

The recommended holding time for the sediment extract is 40 days. All samples were analyzed by GC-MS within 40 days holding time.

DETECTION LIMITS:

Analytical results were reported to laboratory achieved detection limits derived from the annually verified Sediment MDL Study. The MDL study was conducted in compliance with 40 CFR Part 136 Appendix B Revision 1.11, which entails the analyses of at least seven replicates of the matrix (quartz sand) to calculate the MDL value. Data were evaluated and flagged in accordance to the following criteria:

- U Analyte not detected at or above laboratory achieved detection limit, MDL reported
- J Value reported is below the RL, but above the MDL.
- & Accuracy results outside QC criteria of $\pm 30\%$ RPD (SRM).
- * Precision results outside QC criteria of $\pm 30\%$ RPD.
- N Spiked sample recovery not within the QC limits of 40-120%.
- # Surrogate recovery is not within the QC limits of 40-120%
- B Analyte detected in the method blank above the RL, sample concentration < 10 times detected blank value.

METHOD BLANKS:

Five method blanks were analyzed with the sediment samples. The blank was analyzed to ensure the sample extraction and analyses methods were free of contamination.
Exceedences – No exceedence. There is no detectable PAHs in all five blanks (<MDL).

**STANDARD
REFERENCE
MATERIAL
ACCURACY:**

The marine sediment reference material (SRM) for PAHs analyzed with the sediment samples was SRM1944. The SRM accuracy was expressed as the relative percent difference (RPD) between the determined concentration and the certified values. Two replicates of SRM 1944 were analyzed with the samples. The RPDs were within the QC acceptance criterion of $\pm 30\%$ for most PAHs with certified values, except for anthracene in one SRM analysis (34%) and perylene in another (36%).

Exceedences – The PAHs with RPD exceedence were flagged with “&”.

Comments – Each SRM 1944 analysis has one PAH with RPD greater than 30%. Since more than 90% of the measured PAHs have RPD within 30% compared to the corresponding certified values, no further corrective action taken.

**MATRIX
SPIKE/SPIKE
DUPLICATE
ACCURACY:**

One sediment sample from SQV02 was selected and spiked in duplicate. The percent recoveries of PAHs were calculated to measure data quality in terms of accuracy.

Exceedences – In four matrix spikes, recoveries were within the QC acceptance criterion of 40-120% recovery, except for two PAHs (fluoranthene, pyrene) in one matrix spike and one PAH (benzo(a)anthracene) in another. These PAHs were flagged with “&”.

Comments – Three PAHs in two of four matrix spikes have recovery >120%. However, the concentrations of these three PAHs (fluoranthene, pyrene, benzo(a)anthracene) are relatively high in the matrix (the selected sediment) compared to other PAHs and the spiking amount was not >5 times the amount of the three PAHs in the matrix. No further corrective action taken.

**DUPLICATE
SAMPLE:**

Two duplicate samples (DUPS) were prepared. The relative percent differences (RPD) of parent PAHs were calculated to measure data quality in terms of precision.

Exceedences – Five RPD exceedences were noted in each duplicate. They were flagged with “&”.

Comments – In two duplicate samples, the observed RPD exceedences (31%-78%) were not within the laboratory control limits ($\leq 30\%$). This may have resulted from the slight heterogeneous matrix (wet sediment).

**RECOVERIES OF
SUROGATES:**

Five surrogate compounds were added prior to extraction, including naphthalene-d8, acenaphthene-d10, phenanthrene-d10, chrysene-d12, and perylene-d12. The recovery of each surrogate compound was calculated to measure data quality in terms of accuracy (extraction efficiency).

Exceedences – In all analyzed samples including QC samples, five exceedences were noted. They were flagged with “#”.

Comments – Four d8-naphthalene (28%-39%) were low; one d10-phenanthrene (128%) and one d12-perylene (126%) slightly exceeded the laboratory control limits (40 – 120%).

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Project: ENVVEST Sediment Quality Validation Study 2011

File #: 3151

SAMPLE ID SPONSOR	Station	Type	SAMPLE ID BATTELLE	% Dry Weight	AVS Batch ID	AVS µmole/g	SEM Cd µg/L	SEM Cd µg/g	SEM Cd µmole/g
SQV05-130	PS03	0-3cm	3151-387	31.7	042911AVS	42.6	1.06	1.41	0.0126
SQV05-131	PS03	3-6cm	3151-388	32.1	042911AVS	49.6	1.08	1.57	0.0140
SQV05-132	PS03	6-9cm	3151-389	33.6	042911AVS	60.9	0.268	1.39	0.0124
SQV05-132	PS03	9-13cm	3151-390	36.7	042911AVS	50.4	0.985	1.52	0.0135
SQV05-133	PS03	13-19cm	3151-391	37.5	042911AVS	48.2	0.654	1.87	0.0166
SQV05-134	PS03	19-25cm	3151-392	35.6	042911AVS	62.6	0.617	1.82	0.0162
SQV05-147	PS09	0-3cm	3151-393	25.7	042911AVS	62.8	1.07	2.08	0.0185
SQV05-148	PS09	3-6cm	3151-394	31.1	042911AVS	104	4.23	7.44	0.0662
SQV05-149	PS09	6-9cm	3151-395	34.3	042911AVS	64.2	0.457	1.62	0.0144
SQV05-150	PS09	9-13cm	3151-396	34.6	042911AVS	98.8	1.18	2.33	0.0207
SQV05-151	PS09	13-19cm	3151-397 R1	43.7	042911AVS	53.9	0.993	1.19	0.0106
SQV05-151DUP	PS09	13-19cm	3151-397 R2	43.7	042911AVS	49.8	0.822	1.22	0.0109
SQV05-152	PS09	19-23cm	3151-398	52.2	042911AVS	48.0	1.11	1.06	0.00941
SQV05-165	PS10	0-3cm	3151-399	21.8	042911AVS	107	0.621	1.71	0.0152
SQV05-166	PS10	3-6cm	3151-400	27.9	042911AVS	74.0	0.736	1.33	0.0118
SQV05-167	PS10	6-9cm	3151-401	29.5	050211AVS	80.7	0.568	1.74	0.0155
SQV05-168	PS10	9-13cm	3151-402	30.9	050211AVS	58.4	0.496	1.42	0.0126
SQV05-169	PS10	13-19cm	3151-403 R1	39.5	050211AVS	62.4	1.05	1.35	0.0120
SQV05-169DUP	PS10	13-19cm	3151-403 R2	39.5	050211AVS	54.1	0.608	1.42	0.0126
SQV05-170	PS10	19-25cm	3151-404	60.3	050211AVS	22.3	1.65	1.75	0.0156
SQV05-183	PS10.1	0-3cm	3151-405	24.9	050211AVS	39.1	0.607	1.51	0.0135
SQV05-184	PS10.1	3-6cm	3151-406	25.2	050211AVS	76.2	0.650	1.42	0.0126
SQV05-185	PS10.1	6-9cm	3151-407	31.2	050211AVS	65.6	0.665	1.22	0.0108
SQV05-186	PS10.1	9-13cm	3151-408	34.7	050211AVS	52.1	0.917	1.36	0.0121
SQV05-187	PS10.1	13-19cm	3151-409	39.3	050211AVS	50.0	1.01	1.52	0.0135
SQV05-188	PS10.1	19-24cm	3151-410	36.9	050211AVS	40.3	0.723	0.802	0.00714
SQV05-201	PS11	0-3cm	3151-411	23.3	050211AVS	56.5	0.343	1.73	0.0154
SQV05-202	PS11	3-6cm	3151-412	23.5	050211AVS	99.6	0.370	1.80	0.0161
SQV05-203	PS11	6-9cm	3151-413	28.4	050211AVS	8.17	0.524	1.26	0.0112
SQV05-204	PS11	9-13cm	3151-414 R1	28.4	050311AVS	78.9	0.635	1.81	0.0161
SQV05-204DUP	PS11	9-13cm	3151-414 R2	28.4	050311AVS	81.4	0.644	1.54	0.0137
SQV05-205	PS11	13-19cm	3151-415	27.0	050311AVS	120	0.371	1.75	0.0156
SQV05-206	PS11	19-25cm	3151-416	33.8	050311AVS	108	0.574	1.66	0.0148
SQV05-219	PS08	0-3cm	3151-417	25.2	050311AVS	24.7	0.471	1.46	0.0130
SQV05-220	PS08	3-6cm	3151-418	34.4	050311AVS	34.8	0.621	1.44	0.0129
SQV05-221	PS08	6-9cm	3151-419	34.8	050311AVS	79.9	1.09	1.60	0.0142
SQV05-222	PS08	9-13cm	3151-420	39.6	050311AVS	62.2	0.590	1.27	0.0113
SQV05-223	PS08	13-19cm	3151-421	42.5	050311AVS	53.0	0.853	1.21	0.0107
SQV05-224	PS08	19-25cm	3151-422	48.8	050311AVS	36.3	0.872	1.30	0.0115
SQV05-1027	PS06	0-3cm	3151-825	42.6	050311AVS	6.10	0.761	0.943	0.00839
SQV05-1028	PS06	3-6cm	3151-826	43.6	050311AVS	25.3	0.704	1.05	0.00936
SQV05-1029	PS06	6-9cm	3151-827	47.9	050311AVS	22.9	1.02	1.23	0.0109
SQV05-1030	PS06	9-13cm	3151-828	50.5	050311AVS	22.5	0.698	0.798	0.00710
SQV05-1031	PS06	13-19cm	3151-829	45.0	050311AVS	38.6	0.656	0.737	0.00656
SQV05-1032	PS06	19-25cm	3151-830 Redo	49.6	050411AVS	112	0.116	0.157	0.00140
SQV05-1037	PS06DUP	0-3cm	3151-831	48.0	050411AVS	3.60	0.817	0.784	0.00697
SQV05-1038	PS06DUP	3-6cm	3151-832	48.6	050411AVS	6.13	0.753	0.852	0.00758
SQV05-1051	PS07	0-3cm	3151-837	19.9	050411AVS	34.5	0.664	2.48	0.0220
SQV05-1052	PS07	3-6cm	3151-838	27.2	050411AVS	85.8	0.652	2.76	0.0246
SQV05-1053	PS07	6-9cm	3151-839	29.7	050411AVS	75.2	0.515	1.97	0.0175
SQV05-1054	PS07	9-13cm	3151-840 R1	27.8	050411AVS	78.6	0.511	1.64	0.0146
SQV05-1054DUP	PS07	9-13cm	3151-840 R2	27.8	050411AVS	75.9	0.627	2.57	0.0229
SQV05-1055	PS07	13-19cm	3151-841	33.8	050411AVS	67.9	0.558	2.56	0.0228
SQV05-1056	PS07	19-25cm	3151-842	34.4	050411AVS	54.9	0.372	1.30	0.0116

Detection Limit (mean used for AVS)

0.358

0.036

0.0676

0.000601

Reporting Limit (RL)

1.1

0.11

0.21

0.0019

BATTELLE MARINE SCIENCES LABORATORY

1529 W. Sequim Bay Road

Sequim, WA 98382

(360) 681-4564

Project: ENVVEST Sediment Quality Validation Study 2011**File #:** 3151

SAMPLE ID SPONSOR	Station	Type	SAMPLE ID BATTELLE	% Dry Weight	AVS Batch ID	SEM Cu µg/L	SEM Cu µg/g	SEM Cu µmole/g
SQV05-130	PS03	0-3cm	3151-387	31.7	042911AVS	36.1	47.8	0.753
SQV05-131	PS03	3-6cm	3151-388	32.1	042911AVS	21.4	30.8	0.484
SQV05-132	PS03	6-9cm	3151-389	33.6	042911AVS	11.1	56.4	0.887
SQV05-132	PS03	9-13cm	3151-390	36.7	042911AVS	17.4	26.5	0.417
SQV05-133	PS03	13-19cm	3151-391	37.5	042911AVS	18.3	51.7	0.813
SQV05-134	PS03	19-25cm	3151-392	35.6	042911AVS	30.0	87.7	1.38
SQV05-147	PS09	0-3cm	3151-393	25.7	042911AVS	33.4	64.6	1.02
SQV05-148	PS09	3-6cm	3151-394	31.1	042911AVS	20.1	34.9	0.550
SQV05-149	PS09	6-9cm	3151-395	34.3	042911AVS	25.7	90.1	1.42
SQV05-150	PS09	9-13cm	3151-396	34.6	042911AVS	25.8	50.5	0.795
SQV05-151	PS09	13-19cm	3151-397 R1	43.7	042911AVS	60.7	72.8	1.15
SQV05-151DUP	PS09	13-19cm	3151-397 R2	43.7	042911AVS	57.6	85.4	1.34
SQV05-152	PS09	19-23cm	3151-398	52.2	042911AVS	40.9	38.7	0.610
SQV05-165	PS10	0-3cm	3151-399	21.8	042911AVS	16.8	45.6	0.718
SQV05-166	PS10	3-6cm	3151-400	27.9	042911AVS	19.3	34.4	0.541
SQV05-167	PS10	6-9cm	3151-401	29.5	050211AVS	16.0	48.4	0.762
SQV05-168	PS10	9-13cm	3151-402	30.9	050211AVS	19.0	53.6	0.844
SQV05-169	PS10	13-19cm	3151-403 R1	39.5	050211AVS	40.2	51.4	0.809
SQV05-169DUP	PS10	13-19cm	3151-403 R2	39.5	050211AVS	36.6	85.0	1.34
SQV05-170	PS10	19-25cm	3151-404	60.3	050211AVS	65.1	69.0	1.09
SQV05-183	PS10.1	0-3cm	3151-405	24.9	050211AVS	33.5	82.9	1.31
SQV05-184	PS10.1	3-6cm	3151-406	25.2	050211AVS	30.8	66.6	1.05
SQV05-185	PS10.1	6-9cm	3151-407	31.2	050211AVS	36.5	66.4	1.04
SQV05-186	PS10.1	9-13cm	3151-408	34.7	050211AVS	42.6	62.7	0.986
SQV05-187	PS10.1	13-19cm	3151-409	39.3	050211AVS	70.3	106	1.66
SQV05-188	PS10.1	19-24cm	3151-410	36.9	050211AVS	73.2	80.9	1.27
SQV05-201	PS11	0-3cm	3151-411	23.3	050211AVS	14.4	71.6	1.13
SQV05-202	PS11	3-6cm	3151-412	23.5	050211AVS	12.2	58.4	0.919
SQV05-203	PS11	6-9cm	3151-413	28.4	050211AVS	33.3	79.7	1.25
SQV05-204	PS11	9-13cm	3151-414 R1	28.4	050311AVS	18.3	51.5	0.811
SQV05-204DUP	PS11	9-13cm	3151-414 R2	28.4	050311AVS	17.2	40.5	0.638
SQV05-205	PS11	13-19cm	3151-415	27.0	050311AVS	10.9	50.5	0.794
SQV05-206	PS11	19-25cm	3151-416	33.8	050311AVS	17.0	48.5	0.763
SQV05-219	PS08	0-3cm	3151-417	25.2	050311AVS	33.3	102	1.61
SQV05-220	PS08	3-6cm	3151-418	34.4	050311AVS	32.3	74.6	1.17
SQV05-221	PS08	6-9cm	3151-419	34.8	050311AVS	36.0	52.5	0.827
SQV05-222	PS08	9-13cm	3151-420	39.6	050311AVS	27.7	59.2	0.931
SQV05-223	PS08	13-19cm	3151-421	42.5	050311AVS	25.3	35.5	0.558
SQV05-224	PS08	19-25cm	3151-422	48.8	050311AVS	30.5	45.0	0.709
SQV05-1027	PS06	0-3cm	3151-825	42.6	050311AVS	48.5	59.8	0.941
SQV05-1028	PS06	3-6cm	3151-826	43.6	050311AVS	30.3	44.9	0.707
SQV05-1029	PS06	6-9cm	3151-827	47.9	050311AVS	40.0	47.9	0.754
SQV05-1030	PS06	9-13cm	3151-828	50.5	050311AVS	42.8	48.7	0.766
SQV05-1031	PS06	13-19cm	3151-829	45.0	050311AVS	64.8	72.6	1.14
SQV05-1032	PS06	19-25cm	3151-830 Redo	49.6	050411AVS	20.8	27.9	0.439
SQV05-1037	PS06DUP	0-3cm	3151-831	48.0	050411AVS	57.3	54.7	0.861
SQV05-1038	PS06DUP	3-6cm	3151-832	48.6	050411AVS	50.9	57.4	0.903
SQV05-1051	PS07	0-3cm	3151-837	19.9	050411AVS	23.0	85.0	1.34
SQV05-1052	PS07	3-6cm	3151-838	27.2	050411AVS	15.4	64.2	1.01
SQV05-1053	PS07	6-9cm	3151-839	29.7	050411AVS	10.9	40.8	0.642
SQV05-1054	PS07	9-13cm	3151-840 R1	27.8	050411AVS	11.8	37.1	0.583
SQV05-1054DUP	PS07	9-13cm	3151-840 R2	27.8	050411AVS	16.5	66.7	1.05
SQV05-1055	PS07	13-19cm	3151-841	33.8	050411AVS	14.5	65.5	1.03
SQV05-1056	PS07	19-25cm	3151-842	34.4	050411AVS	7.75	26.4	0.415

Detection Limit (mean used for AVS)

0.040

0.0751

0.00118

Reporting Limit (RL)

0.13

0.24

0.0038

BATTELLE MARINE SCIENCES LABORATORY

1529 W. Sequim Bay Road

Sequim, WA 98382

(360) 681-4564

Project: ENVVEST Sediment Quality Validation Study 2011**File #:** 3151

SAMPLE ID SPONSOR	Station	Type	SAMPLE ID BATTELLE	% Dry Weight	AVS Batch ID	SEM Fe µg/L	SEM Fe µg/g	SEM Fe µmole/g
SQV05-130	PS03	0-3cm	3151-387	31.7	042911AVS	42.9	57.2	1.02
SQV05-131	PS03	3-6cm	3151-388	32.1	042911AVS	32.2	46.8	0.838
SQV05-132	PS03	6-9cm	3151-389	33.6	042911AVS	13.0	67.4	1.21
SQV05-132	PS03	9-13cm	3151-390	36.7	042911AVS	31.8	49.1	0.879
SQV05-133	PS03	13-19cm	3151-391	37.5	042911AVS	20.0	57.2	1.02
SQV05-134	PS03	19-25cm	3151-392	35.6	042911AVS	22.3	65.7	1.18
SQV05-147	PS09	0-3cm	3151-393	25.7	042911AVS	41.8	81.3	1.46
SQV05-148	PS09	3-6cm	3151-394	31.1	042911AVS	39.2	68.9	1.23
SQV05-149	PS09	6-9cm	3151-395	34.3	042911AVS	23.7	83.8	1.50
SQV05-150	PS09	9-13cm	3151-396	34.6	042911AVS	42.5	83.9	1.50
SQV05-151	PS09	13-19cm	3151-397 R1	43.7	042911AVS	50.1	60.3	1.08
SQV05-151DUP	PS09	13-19cm	3151-397 R2	43.7	042911AVS	42.0	62.5	1.12
SQV05-152	PS09	19-23cm	3151-398	52.2	042911AVS	50.2	47.8	0.856
SQV05-165	PS10	0-3cm	3151-399	21.8	042911AVS	31.2	85.9	1.54
SQV05-166	PS10	3-6cm	3151-400	27.9	042911AVS	36.0	64.9	1.16
SQV05-167	PS10	6-9cm	3151-401	29.5	050211AVS	25.4	78.0	1.40
SQV05-168	PS10	9-13cm	3151-402	30.9	050211AVS	26.5	75.7	1.35
SQV05-169	PS10	13-19cm	3151-403 R1	39.5	050211AVS	39.1	50.3	0.900
SQV05-169DUP	PS10	13-19cm	3151-403 R2	39.5	050211AVS	25.6	59.8	1.07
SQV05-170	PS10	19-25cm	3151-404	60.3	050211AVS	44.8	47.6	0.853
SQV05-183	PS10.1	0-3cm	3151-405	24.9	050211AVS	26.8	66.8	1.20
SQV05-184	PS10.1	3-6cm	3151-406	25.2	050211AVS	39.8	86.7	1.55
SQV05-185	PS10.1	6-9cm	3151-407	31.2	050211AVS	34.3	62.8	1.12
SQV05-186	PS10.1	9-13cm	3151-408	34.7	050211AVS	47.9	70.8	1.27
SQV05-187	PS10.1	13-19cm	3151-409	39.3	050211AVS	218	329	5.88
SQV05-188	PS10.1	19-24cm	3151-410	36.9	050211AVS	59.1	65.6	1.17
SQV05-201	PS11	0-3cm	3151-411	23.3	050211AVS	24.9	126	2.25
SQV05-202	PS11	3-6cm	3151-412	23.5	050211AVS	19.8	96.6	1.73
SQV05-203	PS11	6-9cm	3151-413	28.4	050211AVS	34.3	82.7	1.48
SQV05-204	PS11	9-13cm	3151-414 R1	28.4	050311AVS	27.7	78.9	1.41
SQV05-204DUP	PS11	9-13cm	3151-414 R2	28.4	050311AVS	26.2	62.6	1.12
SQV05-205	PS11	13-19cm	3151-415	27.0	050311AVS	17.9	84.6	1.52
SQV05-206	PS11	19-25cm	3151-416	33.8	050311AVS	22.2	64.1	1.15
SQV05-219	PS08	0-3cm	3151-417	25.2	050311AVS	25.3	78.2	1.40
SQV05-220	PS08	3-6cm	3151-418	34.4	050311AVS	25.4	59.1	1.06
SQV05-221	PS08	6-9cm	3151-419	34.8	050311AVS	41.0	60.2	1.08
SQV05-222	PS08	9-13cm	3151-420	39.6	050311AVS	28.2	60.7	1.09
SQV05-223	PS08	13-19cm	3151-421	42.5	050311AVS	37.6	53.2	0.952
SQV05-224	PS08	19-25cm	3151-422	48.8	050311AVS	33.9	50.4	0.903
SQV05-1027	PS06	0-3cm	3151-825	42.6	050311AVS	74.0	91.7	1.64
SQV05-1028	PS06	3-6cm	3151-826	43.6	050311AVS	45.9	68.6	1.23
SQV05-1029	PS06	6-9cm	3151-827	47.9	050311AVS	146	176	3.15
SQV05-1030	PS06	9-13cm	3151-828	50.5	050311AVS	44.5	50.9	0.911
SQV05-1031	PS06	13-19cm	3151-829	45.0	050311AVS	62.1	69.8	1.25
SQV05-1032	PS06	19-25cm	3151-830 Redo	49.6	050411AVS	43.0	58.3	1.04
SQV05-1037	PS06DUP	0-3cm	3151-831	48.0	050411AVS	49.6	47.6	0.852
SQV05-1038	PS06DUP	3-6cm	3151-832	48.6	050411AVS	42.6	48.2	0.863
SQV05-1051	PS07	0-3cm	3151-837	19.9	050411AVS	27.7	103	1.85
SQV05-1052	PS07	3-6cm	3151-838	27.2	050411AVS	31.7	134	2.40
SQV05-1053	PS07	6-9cm	3151-839	29.7	050411AVS	22.6	86.4	1.55
SQV05-1054	PS07	9-13cm	3151-840 R1	27.8	050411AVS	17.7	56.7	1.01
SQV05-1054DUP	PS07	9-13cm	3151-840 R2	27.8	050411AVS	28.8	118	2.12
SQV05-1055	PS07	13-19cm	3151-841	33.8	050411AVS	44.1	202	3.62
SQV05-1056	PS07	19-25cm	3151-842	34.4	050411AVS	14.2	49.8	0.891

Detection Limit (mean used for AVS)

1.0

1.81

0.0325

Reporting Limit (RL)

3.2

5.8

0.10

BATTELLE MARINE SCIENCES LABORATORY

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Project: ENVVEST Sediment Quality Validation Study 2011**File #:** 3151

SAMPLE ID SPONSOR	Station	Type	SAMPLE ID BATTELLE	% Dry Weight	AVS Batch ID	SEM Mn µg/L	SEM Mn µg/g	SEM Mn µmole/g
SQV05-130	PS03	0-3cm	3151-387	31.7	042911AVS	50.5	67.1	1.22
SQV05-131	PS03	3-6cm	3151-388	32.1	042911AVS	36.6	52.9	0.963
SQV05-132	PS03	6-9cm	3151-389	33.6	042911AVS	12.6	64.3	1.17
SQV05-132	PS03	9-13cm	3151-390	36.7	042911AVS	32.1	49.2	0.896
SQV05-133	PS03	13-19cm	3151-391	37.5	042911AVS	19.7	55.7	1.01
SQV05-134	PS03	19-25cm	3151-392	35.6	042911AVS	19.3	56.2	1.02
SQV05-147	PS09	0-3cm	3151-393	25.7	042911AVS	45.9	88.9	1.62
SQV05-148	PS09	3-6cm	3151-394	31.1	042911AVS	37.5	65.6	1.19
SQV05-149	PS09	6-9cm	3151-395	34.3	042911AVS	24.8	87.0	1.58
SQV05-150	PS09	9-13cm	3151-396	34.6	042911AVS	48.6	95.6	1.74
SQV05-151	PS09	13-19cm	3151-397 R1	43.7	042911AVS	73.3	87.9	1.60
SQV05-151DUP	PS09	13-19cm	3151-397 R2	43.7	042911AVS	69.7	103	1.88
SQV05-152	PS09	19-23cm	3151-398	52.2	042911AVS	77.9	74.0	1.35
SQV05-165	PS10	0-3cm	3151-399	21.8	042911AVS	33.2	90.8	1.65
SQV05-166	PS10	3-6cm	3151-400	27.9	042911AVS	50.1	90.0	1.64
SQV05-167	PS10	6-9cm	3151-401	29.5	050211AVS	34.7	106	1.93
SQV05-168	PS10	9-13cm	3151-402	30.9	050211AVS	37.3	106	1.93
SQV05-169	PS10	13-19cm	3151-403 R1	39.5	050211AVS	62.1	79.5	1.45
SQV05-169DUP	PS10	13-19cm	3151-403 R2	39.5	050211AVS	39.4	91.6	1.67
SQV05-170	PS10	19-25cm	3151-404	60.3	050211AVS	65.3	69.2	1.26
SQV05-183	PS10.1	0-3cm	3151-405	24.9	050211AVS	53.7	133	2.43
SQV05-184	PS10.1	3-6cm	3151-406	25.2	050211AVS	54.8	119	2.16
SQV05-185	PS10.1	6-9cm	3151-407	31.2	050211AVS	45.6	83.1	1.51
SQV05-186	PS10.1	9-13cm	3151-408	34.7	050211AVS	67.4	99.4	1.81
SQV05-187	PS10.1	13-19cm	3151-409	39.3	050211AVS	98.6	148	2.70
SQV05-188	PS10.1	19-24cm	3151-410	36.9	050211AVS	89.6	99.2	1.80
SQV05-201	PS11	0-3cm	3151-411	23.3	050211AVS	33.4	168	3.05
SQV05-202	PS11	3-6cm	3151-412	23.5	050211AVS	23.2	112	2.04
SQV05-203	PS11	6-9cm	3151-413	28.4	050211AVS	115	277	5.04
SQV05-204	PS11	9-13cm	3151-414 R1	28.4	050311AVS	40.3	114	2.08
SQV05-204DUP	PS11	9-13cm	3151-414 R2	28.4	050311AVS	39.9	94.8	1.73
SQV05-205	PS11	13-19cm	3151-415	27.0	050311AVS	17.3	80.8	1.47
SQV05-206	PS11	19-25cm	3151-416	33.8	050311AVS	21.6	61.8	1.13
SQV05-219	PS08	0-3cm	3151-417	25.2	050311AVS	59.5	183	3.34
SQV05-220	PS08	3-6cm	3151-418	34.4	050311AVS	51.8	120	2.18
SQV05-221	PS08	6-9cm	3151-419	34.8	050311AVS	79.2	116	2.11
SQV05-222	PS08	9-13cm	3151-420	39.6	050311AVS	43.3	92.8	1.69
SQV05-223	PS08	13-19cm	3151-421	42.5	050311AVS	65.3	92.1	1.68
SQV05-224	PS08	19-25cm	3151-422	48.8	050311AVS	54.2	80.3	1.46
SQV05-1027	PS06	0-3cm	3151-825	42.6	050311AVS	133	164	2.99
SQV05-1028	PS06	3-6cm	3151-826	43.6	050311AVS	70.6	105	1.91
SQV05-1029	PS06	6-9cm	3151-827	47.9	050311AVS	137	165	3.00
SQV05-1030	PS06	9-13cm	3151-828	50.5	050311AVS	101	115	2.10
SQV05-1031	PS06	13-19cm	3151-829	45.0	050311AVS	213	239	4.35
SQV05-1032	PS06	19-25cm	3151-830 Redo	49.6	050411AVS	98.6	133	2.43
SQV05-1037	PS06DUP	0-3cm	3151-831	48.0	050411AVS	149	143	2.60
SQV05-1038	PS06DUP	3-6cm	3151-832	48.6	050411AVS	117	132	2.41
SQV05-1051	PS07	0-3cm	3151-837	19.9	050411AVS	38.2	142	2.58
SQV05-1052	PS07	3-6cm	3151-838	27.2	050411AVS	32.2	135	2.47
SQV05-1053	PS07	6-9cm	3151-839	29.7	050411AVS	23.6	89.5	1.63
SQV05-1054	PS07	9-13cm	3151-840 R1	27.8	050411AVS	17.7	56.0	1.02
SQV05-1054DUP	PS07	9-13cm	3151-840 R2	27.8	050411AVS	24.9	101	1.84
SQV05-1055	PS07	13-19cm	3151-841	33.8	050411AVS	24.7	112	2.05
SQV05-1056	PS07	19-25cm	3151-842	34.4	050411AVS	15.9	55.0	1.00

Detection Limit (mean used for AVS)

0.038

0.0689

0.00125

Reporting Limit (RL)

0.12

0.22

0.0040

BATTELLE MARINE SCIENCES LABORATORY

1529 W. Sequim Bay Road

Sequim, WA 98382

(360) 681-4564

Project: ENVVEST Sediment Quality Validation Study 2011

File #: 3151

SAMPLE ID SPONSOR	Station	Type	SAMPLE ID BATTELLE	% Dry Weight	AVS Batch ID	SEM Ni µg/L	SEM Ni µg/g	SEM Ni µmole/g
SQV05-130	PS03	0-3cm	3151-387	31.7	042911AVS	6.45	8.28	0.141
SQV05-131	PS03	3-6cm	3151-388	32.1	042911AVS	5.59	7.78	0.132
SQV05-132	PS03	6-9cm	3151-389	33.6	042911AVS	2.25	10.4	0.177
SQV05-132	PS03	9-13cm	3151-390	36.7	042911AVS	4.43	6.47	0.110
SQV05-133	PS03	13-19cm	3151-391	37.5	042911AVS	3.12	8.23	0.140
SQV05-134	PS03	19-25cm	3151-392	35.6	042911AVS	4.54	12.7	0.216
SQV05-147	PS09	0-3cm	3151-393	25.7	042911AVS	9.38	17.8	0.303
SQV05-148	PS09	3-6cm	3151-394	31.1	042911AVS	6.25	10.6	0.180
SQV05-149	PS09	6-9cm	3151-395	34.3	042911AVS	4.35	14.5	0.248
SQV05-150	PS09	9-13cm	3151-396	34.6	042911AVS	7.11	13.6	0.231
SQV05-151	PS09	13-19cm	3151-397 R1	43.7	042911AVS	9.30	10.9	0.186
SQV05-151DUP	PS09	13-19cm	3151-397 R2	43.7	042911AVS	7.41	10.7	0.182
SQV05-152	PS09	19-23cm	3151-398	52.2	042911AVS	8.28	7.66	0.130
SQV05-165	PS10	0-3cm	3151-399	21.8	042911AVS	4.51	11.8	0.200
SQV05-166	PS10	3-6cm	3151-400	27.9	042911AVS	5.17	8.89	0.151
SQV05-167	PS10	6-9cm	3151-401	29.5	050211AVS	3.49	9.98	0.170
SQV05-168	PS10	9-13cm	3151-402	30.9	050211AVS	3.66	9.76	0.166
SQV05-169	PS10	13-19cm	3151-403 R1	39.5	050211AVS	6.29	7.78	0.132
SQV05-169DUP	PS10	13-19cm	3151-403 R2	39.5	050211AVS	3.84	8.41	0.143
SQV05-170	PS10	19-25cm	3151-404	60.3	050211AVS	17.5	18.4	0.313
SQV05-183	PS10.1	0-3cm	3151-405	24.9	050211AVS	3.91	9.15	0.156
SQV05-184	PS10.1	3-6cm	3151-406	25.2	050211AVS	6.15	12.9	0.219
SQV05-185	PS10.1	6-9cm	3151-407	31.2	050211AVS	4.79	8.32	0.142
SQV05-186	PS10.1	9-13cm	3151-408	34.7	050211AVS	8.70	12.5	0.213
SQV05-187	PS10.1	13-19cm	3151-409	39.3	050211AVS	171	257	4.38
SQV05-188	PS10.1	19-24cm	3151-410	36.9	050211AVS	17.9	19.6	0.334
SQV05-201	PS11	0-3cm	3151-411	23.3	050211AVS	9.23	45.4	0.774
SQV05-202	PS11	3-6cm	3151-412	23.5	050211AVS	3.11	14.0	0.238
SQV05-203	PS11	6-9cm	3151-413	28.4	050211AVS	4.09	9.28	0.158
SQV05-204	PS11	9-13cm	3151-414 R1	28.4	050311AVS	6.39	17.5	0.298
SQV05-204DUP	PS11	9-13cm	3151-414 R2	28.4	050311AVS	4.44	10.0	0.171
SQV05-205	PS11	13-19cm	3151-415	27.0	050311AVS	2.87	12.4	0.212
SQV05-206	PS11	19-25cm	3151-416	33.8	050311AVS	4.00	10.9	0.185
SQV05-219	PS08	0-3cm	3151-417	25.2	050311AVS	6.28	18.7	0.318
SQV05-220	PS08	3-6cm	3151-418	34.4	050311AVS	4.32	9.49	0.162
SQV05-221	PS08	6-9cm	3151-419	34.8	050311AVS	7.74	11.0	0.188
SQV05-222	PS08	9-13cm	3151-420	39.6	050311AVS	5.75	11.9	0.202
SQV05-223	PS08	13-19cm	3151-421	42.5	050311AVS	7.79	10.7	0.182
SQV05-224	PS08	19-25cm	3151-422	48.8	050311AVS	5.80	8.27	0.141
SQV05-1027	PS06	0-3cm	3151-825	42.6	050311AVS	34.8	42.8	0.729
SQV05-1028	PS06	3-6cm	3151-826	43.6	050311AVS	14.5	21.3	0.363
SQV05-1029	PS06	6-9cm	3151-827	47.9	050311AVS	105	126	2.15
SQV05-1030	PS06	9-13cm	3151-828	50.5	050311AVS	8.62	9.58	0.163
SQV05-1031	PS06	13-19cm	3151-829	45.0	050311AVS	14.1	15.6	0.265
SQV05-1032	PS06	19-25cm	3151-830 Redo	49.6	050411AVS	4.23	5.41	0.092
SQV05-1037	PS06DUP	0-3cm	3151-831	48.0	050411AVS	8.88	8.29	0.141
SQV05-1038	PS06DUP	3-6cm	3151-832	48.6	050411AVS	7.18	7.86	0.134
SQV05-1051	PS07	0-3cm	3151-837	19.9	050411AVS	11.0	40.2	0.684
SQV05-1052	PS07	3-6cm	3151-838	27.2	050411AVS	12.2	50.6	0.862
SQV05-1053	PS07	6-9cm	3151-839	29.7	050411AVS	4.06	14.6	0.249
SQV05-1054	PS07	9-13cm	3151-840 R1	27.8	050411AVS	5.40	16.5	0.281
SQV05-1054DUP	PS07	9-13cm	3151-840 R2	27.8	050411AVS	9.35	37.4	0.636
SQV05-1055	PS07	13-19cm	3151-841	33.8	050411AVS	28.5	130	2.21
SQV05-1056	PS07	19-25cm	3151-842	34.4	050411AVS	2.61	8.30	0.141

Detection Limit (mean used for AVS)

0.073

0.0100

0.000170

Reporting Limit (RL)

0.23

0.03

0.00054

BATTELLE MARINE SCIENCES LABORATORY

1529 W. Sequim Bay Road

Sequim, WA 98382

(360) 681-4564

Project: ENVVEST Sediment Quality Validation Study 2011**File #:** 3151

SAMPLE ID SPONSOR	Station	Type	SAMPLE ID BATTELLE	% Dry Weight	AVS Batch ID	SEM Pb µg/L	SEM Pb µg/g	SEM Pb µmole/g
SQV05-130	PS03	0-3cm	3151-387	31.7	042911AVS	46.3	61.7	0.298
SQV05-131	PS03	3-6cm	3151-388	32.1	042911AVS	39.0	56.6	0.273
SQV05-132	PS03	6-9cm	3151-389	33.6	042911AVS	13.6	70.3	0.339
SQV05-132	PS03	9-13cm	3151-390	36.7	042911AVS	51.8	79.9	0.386
SQV05-133	PS03	13-19cm	3151-391	37.5	042911AVS	37.8	107.9	0.521
SQV05-134	PS03	19-25cm	3151-392	35.6	042911AVS	37.4	110.0	0.531
SQV05-147	PS09	0-3cm	3151-393	25.7	042911AVS	29.6	57.5	0.278
SQV05-148	PS09	3-6cm	3151-394	31.1	042911AVS	36.3	63.8	0.308
SQV05-149	PS09	6-9cm	3151-395	34.3	042911AVS	20.2	71.3	0.344
SQV05-150	PS09	9-13cm	3151-396	34.6	042911AVS	31.7	62.5	0.302
SQV05-151	PS09	13-19cm	3151-397 R1	43.7	042911AVS	69.6	83.7	0.404
SQV05-151DUP	PS09	13-19cm	3151-397 R2	43.7	042911AVS	54.0	80.3	0.388
SQV05-152	PS09	19-23cm	3151-398	52.2	042911AVS	69.0	65.7	0.317
SQV05-165	PS10	0-3cm	3151-399	21.8	042911AVS	19.9	54.7	0.264
SQV05-166	PS10	3-6cm	3151-400	27.9	042911AVS	35.0	63.1	0.304
SQV05-167	PS10	6-9cm	3151-401	29.5	050211AVS	21.2	65.0	0.314
SQV05-168	PS10	9-13cm	3151-402	30.9	050211AVS	29.9	85.3	0.412
SQV05-169	PS10	13-19cm	3151-403 R1	39.5	050211AVS	112	143.9	0.695
SQV05-169DUP	PS10	13-19cm	3151-403 R2	39.5	050211AVS	57.4	134.1	0.647
SQV05-170	PS10	19-25cm	3151-404	60.3	050211AVS	168	178.6	0.862
SQV05-183	PS10.1	0-3cm	3151-405	24.9	050211AVS	40.4	100.6	0.486
SQV05-184	PS10.1	3-6cm	3151-406	25.2	050211AVS	39.1	85.1	0.411
SQV05-185	PS10.1	6-9cm	3151-407	31.2	050211AVS	48.5	88.7	0.428
SQV05-186	PS10.1	9-13cm	3151-408	34.7	050211AVS	70.9	104.8	0.506
SQV05-187	PS10.1	13-19cm	3151-409	39.3	050211AVS	78.5	118.3	0.571
SQV05-188	PS10.1	19-24cm	3151-410	36.9	050211AVS	87.4	96.9	0.468
SQV05-201	PS11	0-3cm	3151-411	23.3	050211AVS	11.4	57.4	0.277
SQV05-202	PS11	3-6cm	3151-412	23.5	050211AVS	12.1	58.9	0.284
SQV05-203	PS11	6-9cm	3151-413	28.4	050211AVS	22.8	54.9	0.265
SQV05-204	PS11	9-13cm	3151-414 R1	28.4	050311AVS	20.1	57.2	0.276
SQV05-204DUP	PS11	9-13cm	3151-414 R2	28.4	050311AVS	24.0	57.3	0.276
SQV05-205	PS11	13-19cm	3151-415	27.0	050311AVS	11.9	56.1	0.271
SQV05-206	PS11	19-25cm	3151-416	33.8	050311AVS	20.5	59.1	0.285
SQV05-219	PS08	0-3cm	3151-417	25.2	050311AVS	23.3	71.9	0.347
SQV05-220	PS08	3-6cm	3151-418	34.4	050311AVS	26.9	62.5	0.302
SQV05-221	PS08	6-9cm	3151-419	34.8	050311AVS	42.8	62.8	0.303
SQV05-222	PS08	9-13cm	3151-420	39.6	050311AVS	28.0	60.2	0.291
SQV05-223	PS08	13-19cm	3151-421	42.5	050311AVS	44.9	63.5	0.306
SQV05-224	PS08	19-25cm	3151-422	48.8	050311AVS	49.7	73.9	0.357
SQV05-1027	PS06	0-3cm	3151-825	42.6	050311AVS	51.1	63.3	0.305
SQV05-1028	PS06	3-6cm	3151-826	43.6	050311AVS	33.3	49.7	0.240
SQV05-1029	PS06	6-9cm	3151-827	47.9	050311AVS	43.4	52.2	0.252
SQV05-1030	PS06	9-13cm	3151-828	50.5	050311AVS	44.4	50.7	0.245
SQV05-1031	PS06	13-19cm	3151-829	45.0	050311AVS	96.8	108.7	0.525
SQV05-1032	PS06	19-25cm	3151-830 Redo	49.6	050411AVS	38.9	52.7	0.254
SQV05-1037	PS06DUP	0-3cm	3151-831	48.0	050411AVS	46.3	44.4	0.214
SQV05-1038	PS06DUP	3-6cm	3151-832	48.6	050411AVS	43.6	49.3	0.238
SQV05-1051	PS07	0-3cm	3151-837	19.9	050411AVS	17.5	65.2	0.315
SQV05-1052	PS07	3-6cm	3151-838	27.2	050411AVS	16.1	68.0	0.328
SQV05-1053	PS07	6-9cm	3151-839	29.7	050411AVS	12.8	48.8	0.236
SQV05-1054	PS07	9-13cm	3151-840 R1	27.8	050411AVS	14.8	47.3	0.228
SQV05-1054DUP	PS07	9-13cm	3151-840 R2	27.8	050411AVS	17.8	72.9	0.352
SQV05-1055	PS07	13-19cm	3151-841	33.8	050411AVS	14.7	67.3	0.325
SQV05-1056	PS07	19-25cm	3151-842	34.4	050411AVS	14.7	51.4	0.248

Detection Limit (mean used for AVS)

0.03

0.0563

0.000272

Reporting Limit (RL)

0.10

0.18

0.00086

BATTELLE MARINE SCIENCES LABORATORY

1529 W. Sequim Bay Road

Sequim, WA 98382

(360) 681-4564

Project: ENVVEST Sediment Quality Validation Study 2011**File #:** 3151

SAMPLE ID SPONSOR	Station	Type	SAMPLE ID BATTELLE	% Dry Weight	AVS Batch ID	SEM Ag µg/L	SEM Ag µg/g	SEM Ag µmole/g
SQV05-130	PS03	0-3cm	3151-387	31.7	042911AVS	0.275	0.367	0.00340
SQV05-131	PS03	3-6cm	3151-388	32.1	042911AVS	0.155	0.225	0.00209
SQV05-132	PS03	6-9cm	3151-389	33.6	042911AVS	0.0830	0.430	0.00399
SQV05-132	PS03	9-13cm	3151-390	36.7	042911AVS	0.180	0.278	0.00258
SQV05-133	PS03	13-19cm	3151-391	37.5	042911AVS	0.163	0.466	0.00432
SQV05-134	PS03	19-25cm	3151-392	35.6	042911AVS	0.194	0.571	0.00530
SQV05-147	PS09	0-3cm	3151-393	25.7	042911AVS	0.121	0.235	0.00218
SQV05-148	PS09	3-6cm	3151-394	31.1	042911AVS	0.140	0.246	0.00228
SQV05-149	PS09	6-9cm	3151-395	34.3	042911AVS	0.128	0.453	0.00420
SQV05-150	PS09	9-13cm	3151-396	34.6	042911AVS	0.107	0.211	0.00196
SQV05-151	PS09	13-19cm	3151-397 R1	43.7	042911AVS	0.176	0.212	0.00196
SQV05-151DUP	PS09	13-19cm	3151-397 R2	43.7	042911AVS	0.153	0.228	0.00211
SQV05-152	PS09	19-23cm	3151-398	52.2	042911AVS	0.173	0.165	0.00153
SQV05-165	PS10	0-3cm	3151-399	21.8	042911AVS	0.129	0.355	0.00329
SQV05-166	PS10	3-6cm	3151-400	27.9	042911AVS	0.144	0.260	0.00241
SQV05-167	PS10	6-9cm	3151-401	29.5	050211AVS	0.134	0.411	0.00381
SQV05-168	PS10	9-13cm	3151-402	30.9	050211AVS	0.108	0.308	0.00286
SQV05-169	PS10	13-19cm	3151-403 R1	39.5	050211AVS	0.167	0.215	0.00199
SQV05-169DUP	PS10	13-19cm	3151-403 R2	39.5	050211AVS	0.144	0.337	0.00312
SQV05-170	PS10	19-25cm	3151-404	60.3	050211AVS	0.238	0.253	0.00235
SQV05-183	PS10.1	0-3cm	3151-405	24.9	050211AVS	0.129	0.322	0.00298
SQV05-184	PS10.1	3-6cm	3151-406	25.2	050211AVS	0.144	0.314	0.00291
SQV05-185	PS10.1	6-9cm	3151-407	31.2	050211AVS	0.146	0.267	0.00248
SQV05-186	PS10.1	9-13cm	3151-408	34.7	050211AVS	0.225	0.333	0.00308
SQV05-187	PS10.1	13-19cm	3151-409	39.3	050211AVS	0.313	0.472	0.00437
SQV05-188	PS10.1	19-24cm	3151-410	36.9	050211AVS	0.333	0.369	0.00342
SQV05-201	PS11	0-3cm	3151-411	23.3	050211AVS	0.102	0.515	0.00478
SQV05-202	PS11	3-6cm	3151-412	23.5	050211AVS	0.0660	0.322	0.00298
SQV05-203	PS11	6-9cm	3151-413	28.4	050211AVS	0.105	0.253	0.00235
SQV05-204	PS11	9-13cm	3151-414 R1	28.4	050311AVS	0.158	0.450	0.00417
SQV05-204DUP	PS11	9-13cm	3151-414 R2	28.4	050311AVS	0.104	0.248	0.00230
SQV05-205	PS11	13-19cm	3151-415	27.0	050311AVS	0.0698	0.330	0.00306
SQV05-206	PS11	19-25cm	3151-416	33.8	050311AVS	0.0735	0.212	0.00197
SQV05-219	PS08	0-3cm	3151-417	25.2	050311AVS	0.0953	0.295	0.00273
SQV05-220	PS08	3-6cm	3151-418	34.4	050311AVS	0.105	0.244	0.00226
SQV05-221	PS08	6-9cm	3151-419	34.8	050311AVS	0.131	0.192	0.00178
SQV05-222	PS08	9-13cm	3151-420	39.6	050311AVS	0.131	0.282	0.00262
SQV05-223	PS08	13-19cm	3151-421	42.5	050311AVS	0.133	0.188	0.00174
SQV05-224	PS08	19-25cm	3151-422	48.8	050311AVS	0.154	0.229	0.00212
SQV05-1027	PS06	0-3cm	3151-825	42.6	050311AVS	0.169	0.209	0.00194
SQV05-1028	PS06	3-6cm	3151-826	43.6	050311AVS	0.112	0.167	0.00155
SQV05-1029	PS06	6-9cm	3151-827	47.9	050311AVS	0.207	0.249	0.00231
SQV05-1030	PS06	9-13cm	3151-828	50.5	050311AVS	0.224	0.256	0.00237
SQV05-1031	PS06	13-19cm	3151-829	45.0	050311AVS	0.443	0.498	0.00461
SQV05-1032	PS06	19-25cm	3151-830 Redo	49.6	050411AVS	0.123	0.167	0.00154
SQV05-1037	PS06DUP	0-3cm	3151-831	48.0	050411AVS	0.192	0.184	0.00171
SQV05-1038	PS06DUP	3-6cm	3151-832	48.6	050411AVS	0.162	0.183	0.00170
SQV05-1051	PS07	0-3cm	3151-837	19.9	050411AVS	0.102	0.381	0.00353
SQV05-1052	PS07	3-6cm	3151-838	27.2	050411AVS	0.0749	0.317	0.00294
SQV05-1053	PS07	6-9cm	3151-839	29.7	050411AVS	0.0774	0.296	0.00274
SQV05-1054	PS07	9-13cm	3151-840 R1	27.8	050411AVS	0.0864	0.277	0.00256
SQV05-1054DUP	PS07	9-13cm	3151-840 R2	27.8	050411AVS	0.106	0.435	0.00403
SQV05-1055	PS07	13-19cm	3151-841	33.8	050411AVS	0.0886	0.407	0.00377
SQV05-1056	PS07	19-25cm	3151-842	34.4	050411AVS	0.032U	0.0601	0.000557 U

Detection Limit (mean used for AVS)

0.032

0.0601

0.000557

Reporting Limit (RL)

0.10

0.19

0.0018

BATTELLE MARINE SCIENCES LABORATORY

1529 W. Sequim Bay Road

Sequim, WA 98382

(360) 681-4564

Project: ENVVEST Sediment Quality Validation Study 2011**File #:** 3151

SAMPLE ID SPONSOR	Station	Type	SAMPLE ID BATTELLE	% Dry Weight	AVS Batch ID	SEM Zn µg/L	SEM Zn µg/g	SEM Zn µmole/g
SQV05-130	PS03	0-3cm	3151-387	31.7	042911AVS	113	150	2.29
SQV05-131	PS03	3-6cm	3151-388	32.1	042911AVS	110	159	2.43
SQV05-132	PS03	6-9cm	3151-389	33.6	042911AVS	28.4	143	2.19
SQV05-132	PS03	9-13cm	3151-390	36.7	042911AVS	118	181	2.77
SQV05-133	PS03	13-19cm	3151-391	37.5	042911AVS	75.0	212	3.24
SQV05-134	PS03	19-25cm	3151-392	35.6	042911AVS	71.3	208	3.18
SQV05-147	PS09	0-3cm	3151-393	25.7	042911AVS	113	218	3.34
SQV05-148	PS09	3-6cm	3151-394	31.1	042911AVS	1050	1845	28.2
SQV05-149	PS09	6-9cm	3151-395	34.3	042911AVS	74.7	261	4.00
SQV05-150	PS09	9-13cm	3151-396	34.6	042911AVS	138	271	4.14
SQV05-151	PS09	13-19cm	3151-397 R1	43.7	042911AVS	194	232	3.56
SQV05-151DUP	PS09	13-19cm	3151-397 R2	43.7	042911AVS	184	273	4.17
SQV05-152	PS09	19-23cm	3151-398	52.2	042911AVS	239	227	3.47
SQV05-165	PS10	0-3cm	3151-399	21.8	042911AVS	61.1	166	2.54
SQV05-166	PS10	3-6cm	3151-400	27.9	042911AVS	97.0	174	2.65
SQV05-167	PS10	6-9cm	3151-401	29.5	050211AVS	61.0	185	2.83
SQV05-168	PS10	9-13cm	3151-402	30.9	050211AVS	71.5	202	3.09
SQV05-169	PS10	13-19cm	3151-403 R1	39.5	050211AVS	194	248	3.80
SQV05-169DUP	PS10	13-19cm	3151-403 R2	39.5	050211AVS	116	269	4.12
SQV05-170	PS10	19-25cm	3151-404	60.3	050211AVS	277	294	4.49
SQV05-183	PS10.1	0-3cm	3151-405	24.9	050211AVS	82.1	203	3.10
SQV05-184	PS10.1	3-6cm	3151-406	25.2	050211AVS	112	242	3.71
SQV05-185	PS10.1	6-9cm	3151-407	31.2	050211AVS	111	202	3.08
SQV05-186	PS10.1	9-13cm	3151-408	34.7	050211AVS	157	231	3.53
SQV05-187	PS10.1	13-19cm	3151-409	39.3	050211AVS	187	281	4.29
SQV05-188	PS10.1	19-24cm	3151-410	36.9	050211AVS	192	212	3.24
SQV05-201	PS11	0-3cm	3151-411	23.3	050211AVS	32.2	159	2.43
SQV05-202	PS11	3-6cm	3151-412	23.5	050211AVS	34.3	163	2.50
SQV05-203	PS11	6-9cm	3151-413	28.4	050211AVS	63.4	151	2.31
SQV05-204	PS11	9-13cm	3151-414 R1	28.4	050311AVS	52.6	148	2.26
SQV05-204DUP	PS11	9-13cm	3151-414 R2	28.4	050311AVS	57.1	135	2.06
SQV05-205	PS11	13-19cm	3151-415	27.0	050311AVS	30.7	141	2.16
SQV05-206	PS11	19-25cm	3151-416	33.8	050311AVS	54.1	154	2.36
SQV05-219	PS08	0-3cm	3151-417	25.2	050311AVS	65.2	199	3.05
SQV05-220	PS08	3-6cm	3151-418	34.4	050311AVS	87.9	203	3.10
SQV05-221	PS08	6-9cm	3151-419	34.8	050311AVS	179	262	4.00
SQV05-222	PS08	9-13cm	3151-420	39.6	050311AVS	100	214	3.27
SQV05-223	PS08	13-19cm	3151-421	42.5	050311AVS	146	205	3.14
SQV05-224	PS08	19-25cm	3151-422	48.8	050311AVS	154	228	3.49
SQV05-1027	PS06	0-3cm	3151-825	42.6	050311AVS	170	210	3.21
SQV05-1028	PS06	3-6cm	3151-826	43.6	050311AVS	102	151	2.31
SQV05-1029	PS06	6-9cm	3151-827	47.9	050311AVS	159	191	2.91
SQV05-1030	PS06	9-13cm	3151-828	50.5	050311AVS	161	183	2.80
SQV05-1031	PS06	13-19cm	3151-829	45.0	050311AVS	310	347	5.32
SQV05-1032	PS06	19-25cm	3151-830 Redo	49.6	050411AVS	143	193	2.95
SQV05-1037	PS06DUP	0-3cm	3151-831	48.0	050411AVS	162	155	2.37
SQV05-1038	PS06DUP	3-6cm	3151-832	48.6	050411AVS	191	215	3.29
SQV05-1051	PS07	0-3cm	3151-837	19.9	050411AVS	44.8	164	2.51
SQV05-1052	PS07	3-6cm	3151-838	27.2	050411AVS	43.1	179	2.74
SQV05-1053	PS07	6-9cm	3151-839	29.7	050411AVS	34.4	129	1.97
SQV05-1054	PS07	9-13cm	3151-840 R1	27.8	050411AVS	32.6	102	1.56
SQV05-1054DUP	PS07	9-13cm	3151-840 R2	27.8	050411AVS	52.1	210	3.22
SQV05-1055	PS07	13-19cm	3151-841	33.8	050411AVS	44.9	202	3.10
SQV05-1056	PS07	19-25cm	3151-842	34.4	050411AVS	32.7	112	1.71

Detection Limit (mean used for AVS)

0.31

0.582

0.00890

Reporting Limit (RL)

0.99

1.9

0.028

BATTELLE MARINE SCIENCES LABORATORY

1529 W. Sequim Bay Road

Sequim, WA 98382

(360) 681-4564

Project: ENVVEST Sediment Quality Validation Study 2011

File #: 3151

SAMPLE ID SPONSOR	Station	Type	SAMPLE ID BATTELLE	% Dry Weight	AVS Batch ID	SEM Hg µg/L	SEM Hg µg/g	SEM Hg µmole/g
SQV05-130	PS03	0-3cm	3151-387	31.7	042911AVS	0.101	0.135	0.000673
SQV05-131	PS03	3-6cm	3151-388	32.1	042911AVS	0.0177	0.0258	0.000128
SQV05-132	PS03	6-9cm	3151-389	33.6	042911AVS	0.00884	0.0458	0.000229
SQV05-132	PS03	9-13cm	3151-390	36.7	042911AVS	0.00920	0.0142	0.0000708
SQV05-133	PS03	13-19cm	3151-391	37.5	042911AVS	0.0143	0.0410	0.000204
SQV05-134	PS03	19-25cm	3151-392	35.6	042911AVS	0.00924	0.0272	0.000136
SQV05-147	PS09	0-3cm	3151-393	25.7	042911AVS	0.0235	0.0456	0.000227
SQV05-148	PS09	3-6cm	3151-394	31.1	042911AVS	0.00438	0.0077	0.0000384
SQV05-149	PS09	6-9cm	3151-395	34.3	042911AVS	0.00805	0.0285	0.000142
SQV05-150	PS09	9-13cm	3151-396	34.6	042911AVS	0.0143	0.0282	0.000140
SQV05-151	PS09	13-19cm	3151-397 R1	43.7	042911AVS	0.0208	0.0250	0.000125
SQV05-151DUP	PS09	13-19cm	3151-397 R2	43.7	042911AVS	0.0308	0.0459	0.000229
SQV05-152	PS09	19-23cm	3151-398	52.2	042911AVS	0.0176	0.0167	0.0000834
SQV05-165	PS10	0-3cm	3151-399	21.8	042911AVS	0.0120	0.0331	0.000165
SQV05-166	PS10	3-6cm	3151-400	27.9	042911AVS	0.00631	0.0114	0.0000567
SQV05-167	PS10	6-9cm	3151-401	29.5	050211AVS	0.00691	0.0212	0.000106
SQV05-168	PS10	9-13cm	3151-402	30.9	050211AVS	0.0221	0.0630	0.000314
SQV05-169	PS10	13-19cm	3151-403 R1	39.5	050211AVS	0.03180	0.0409	0.000204
SQV05-169DUP	PS10	13-19cm	3151-403 R2	39.5	050211AVS	0.03387	0.0791	0.000395
SQV05-170	PS10	19-25cm	3151-404	60.3	050211AVS	0.02	0.0186	0.0000929
SQV05-183	PS10.1	0-3cm	3151-405	24.9	050211AVS	0.01	0.0327	0.000163
SQV05-184	PS10.1	3-6cm	3151-406	25.2	050211AVS	0.00726	0.0158	0.0000789
SQV05-185	PS10.1	6-9cm	3151-407	31.2	050211AVS	0.01624	0.0297	0.000148
SQV05-186	PS10.1	9-13cm	3151-408	34.7	050211AVS	0.01308	0.0193	0.0000964
SQV05-187	PS10.1	13-19cm	3151-409	39.3	050211AVS	0.04562	0.0688	0.000343
SQV05-188	PS10.1	19-24cm	3151-410	36.9	050211AVS	0.02874	0.0319	0.000159
SQV05-201	PS11	0-3cm	3151-411	23.3	050211AVS	0.00586	0.0296	0.000147
SQV05-202	PS11	3-6cm	3151-412	23.5	050211AVS	0.00958	0.0467	0.000233
SQV05-203	PS11	6-9cm	3151-413	28.4	050211AVS	0.00935	0.0225	0.000112
SQV05-204	PS11	9-13cm	3151-414 R1	28.4	050311AVS	0.00323	0.00919	0.0000458
SQV05-204DUP	PS11	9-13cm	3151-414 R2	28.4	050311AVS	0.00472	0.0113	0.0000562
SQV05-205	PS11	13-19cm	3151-415	27.0	050311AVS	0.00227	0.0107	0.0000536
SQV05-206	PS11	19-25cm	3151-416	33.8	050311AVS	0.00213	0.0062	0.0000307
SQV05-219	PS08	0-3cm	3151-417	25.2	050311AVS	0.0252	0.0781	0.000389
SQV05-220	PS08	3-6cm	3151-418	34.4	050311AVS	0.00759	0.0177	0.0000880
SQV05-221	PS08	6-9cm	3151-419	34.8	050311AVS	0.0140	0.0205	0.000102
SQV05-222	PS08	9-13cm	3151-420	39.6	050311AVS	0.0231	0.0498	0.000249
SQV05-223	PS08	13-19cm	3151-421	42.5	050311AVS	0.00764	0.0108	0.0000539
SQV05-224	PS08	19-25cm	3151-422	48.8	050311AVS	0.00826	0.0123	0.0000613
SQV05-1027	PS06	0-3cm	3151-825	42.6	050311AVS	0.0245	0.0303	0.000151
SQV05-1028	PS06	3-6cm	3151-826	43.6	050311AVS	0.0136	0.0204	0.000102
SQV05-1029	PS06	6-9cm	3151-827	47.9	050311AVS	0.00816	0.00982	0.0000490
SQV05-1030	PS06	9-13cm	3151-828	50.5	050311AVS	0.00856	0.00979	0.0000488
SQV05-1031	PS06	13-19cm	3151-829	45.0	050311AVS	0.00867	0.00974	0.0000486
SQV05-1032	PS06	19-25cm	3151-830 Redo	49.6	050411AVS	0.0118	0.0160	0.0000798
SQV05-1037	PS06DUP	0-3cm	3151-831	48.0	050411AVS	0.0137	0.0132	0.0000657
SQV05-1038	PS06DUP	3-6cm	3151-832	48.6	050411AVS	0.00656	0.00742	0.0000370
SQV05-1051	PS07	0-3cm	3151-837	19.9	050411AVS	0.00207	0.00774	0.0000386
SQV05-1052	PS07	3-6cm	3151-838	27.2	050411AVS	0.00553	0.0234	0.000117
SQV05-1053	PS07	6-9cm	3151-839	29.7	050411AVS	0.00233	0.00890	0.0000444
SQV05-1054	PS07	9-13cm	3151-840 R1	27.8	050411AVS	0.001U	0.00188	0.0000167 U
SQV05-1054DUP	PS07	9-13cm	3151-840 R2	27.8	050411AVS	0.001U	0.00188	0.0000167 U
SQV05-1055	PS07	13-19cm	3151-841	33.8	050411AVS	0.00157	0.00721	0.0000036
SQV05-1056	PS07	19-25cm	3151-842	34.4	050411AVS	0.001U	0.00188	0.0000167 U
Detection Limit (mean used for AVS)						0.00100	0.00188	0.0000167
Reporting Limit (RL)						0.0032	0.0060	0.000053

BATTELLE MARINE SCIENCES LABORATORY

1529 W. Sequim Bay Road

Sequim, WA 98382

(360) 681-4564

Molar Ratios of AVS to Total SEM Metals
Project: ENVVEST Sediment Quality Validation Study 2011

File #: 3151

			Does not include Fe, Mn					
SAMPLE ID	Station	Type	SAMPLE ID	% Dry	AVS	AVS	ΣSEM Metals	Excess Metals
SPONSOR			BATTELLE	Weight	Batch ID	μmole/g	μmole/g	Present (Y or N)
SQV05-130	PS03	0-3cm	3151-387	31.7	042911AVS	42.6	3.50	N
SQV05-131	PS03	3-6cm	3151-388	32.1	042911AVS	49.6	3.33	N
SQV05-132	PS03	6-9cm	3151-389	33.6	042911AVS	60.9	3.61	N
SQV05-132	PS03	9-13cm	3151-390	36.7	042911AVS	50.4	3.70	N
SQV05-133	PS03	13-19cm	3151-391	37.5	042911AVS	48.2	4.74	N
SQV05-134	PS03	19-25cm	3151-392	35.6	042911AVS	62.6	5.32	N
SQV05-147	PS09	0-3cm	3151-393	25.7	042911AVS	62.8	4.96	N
SQV05-148	PS09	3-6cm	3151-394	31.1	042911AVS	104	29.3	N
SQV05-149	PS09	6-9cm	3151-395	34.3	042911AVS	64.2	6.03	N
SQV05-150	PS09	9-13cm	3151-396	34.6	042911AVS	98.8	5.49	N
SQV05-151	PS09	13-19cm	3151-397 R1	43.7	042911AVS	53.9	5.30	N
SQV05-151DUP	PS09	13-19cm	3151-397 R2	43.7	042911AVS	49.8	6.10	N
SQV05-152	PS09	19-23cm	3151-398	52.2	042911AVS	48.0	4.54	N
SQV05-165	PS10	0-3cm	3151-399	21.8	042911AVS	107	3.74	N
SQV05-166	PS10	3-6cm	3151-400	27.9	042911AVS	74.0	3.66	N
SQV05-167	PS10	6-9cm	3151-401	29.5	050211AVS	80.7	4.09	N
SQV05-168	PS10	9-13cm	3151-402	30.9	050211AVS	58.4	4.52	N
SQV05-169	PS10	13-19cm	3151-403 R1	39.5	050211AVS	62.4	5.45	N
SQV05-169DUP	PS10	13-19cm	3151-403 R2	39.5	050211AVS	54.1	6.26	N
SQV05-170	PS10	19-25cm	3151-404	60.3	050211AVS	22.3	6.77	N
SQV05-183	PS10.1	0-3cm	3151-405	24.9	050211AVS	39.1	5.06	N
SQV05-184	PS10.1	3-6cm	3151-406	25.2	050211AVS	76.2	5.40	N
SQV05-185	PS10.1	6-9cm	3151-407	31.2	050211AVS	65.6	4.71	N
SQV05-186	PS10.1	9-13cm	3151-408	34.7	050211AVS	52.1	5.25	N
SQV05-187	PS10.1	13-19cm	3151-409	39.3	050211AVS	50.0	10.9	N
SQV05-188	PS10.1	19-24cm	3151-410	36.9	050211AVS	40.3	5.33	N
SQV05-201	PS11	0-3cm	3151-411	23.3	050211AVS	56.5	4.62	N
SQV05-202	PS11	3-6cm	3151-412	23.5	050211AVS	99.6	3.96	N
SQV05-203	PS11	6-9cm	3151-413	28.4	050211AVS	8.17	4.00	N
SQV05-204	PS11	9-13cm	3151-414 R1	28.4	050311AVS	78.9	3.66	N
SQV05-204DUP	PS11	9-13cm	3151-414 R2	28.4	050311AVS	81.4	3.16	N
SQV05-205	PS11	13-19cm	3151-415	27.0	050311AVS	120	3.46	N
SQV05-206	PS11	19-25cm	3151-416	33.8	050311AVS	108	3.61	N
SQV05-219	PS08	0-3cm	3151-417	25.2	050311AVS	24.7	5.34	N
SQV05-220	PS08	3-6cm	3151-418	34.4	050311AVS	34.8	4.75	N
SQV05-221	PS08	6-9cm	3151-419	34.8	050311AVS	79.9	5.34	N
SQV05-222	PS08	9-13cm	3151-420	39.6	050311AVS	62.2	4.71	N
SQV05-223	PS08	13-19cm	3151-421	42.5	050311AVS	53.0	4.20	N
SQV05-224	PS08	19-25cm	3151-422	48.8	050311AVS	36.3	4.71	N
SQV05-1027	PS06	0-3cm	3151-825	42.6	050311AVS	6.10	5.19	N
SQV05-1028	PS06	3-6cm	3151-826	43.6	050311AVS	25.3	3.63	N
SQV05-1029	PS06	6-9cm	3151-827	47.9	050311AVS	22.9	6.08	N
SQV05-1030	PS06	9-13cm	3151-828	50.5	050311AVS	22.5	3.99	N
SQV05-1031	PS06	13-19cm	3151-829	45.0	050311AVS	38.6	7.26	N
SQV05-1032	PS06	19-25cm	3151-830 Redo	49.6	050411AVS	112	3.73	N
SQV05-1037	PS06DUP	0-3cm	3151-831	48.0	050411AVS	3.60	3.59	N
SQV05-1038	PS06DUP	3-6cm	3151-832	48.6	050411AVS	6.13	4.58	N
SQV05-1051	PS07	0-3cm	3151-837	19.9	050411AVS	34.5	4.87	N
SQV05-1052	PS07	3-6cm	3151-838	27.2	050411AVS	85.8	4.97	N
SQV05-1053	PS07	6-9cm	3151-839	29.7	050411AVS	75.2	3.11	N
SQV05-1054	PS07	9-13cm	3151-840 R1	27.8	050411AVS	78.6	2.67	N
SQV05-1054DUP	PS07	9-13cm	3151-840 R2	27.8	050411AVS	75.9	5.28	N
SQV05-1055	PS07	13-19cm	3151-841	33.8	050411AVS	67.9	6.68	N
SQV05-1056	PS07	19-25cm	3151-842	34.4	050411AVS	54.9	2.53	N

Detection Limit (mean used for AVS)

Reporting Limit (RL)

BATTELLE MARINE SCIENCES LABORATORY

1529 W. Sequim Bay Road

Sequim, WA 98382

(360) 681-3650

Project: ENVVEST Sediment Quality Validation Study 2011

File #: 3151

SAMPLE ID SPONSOR	SAMPLE ID BATTELLE	% Dry Weight	AVS Batch ID	SEM Hg Batch ID	SEM ICPMS Batch ID	AVS (μmole/g)	AVS MDL (μmole/g)	SEM RATIO (g/ml)
	Blank R1 042911	34.8	042911AVS	050311HGA	051211-6100	0.000529 U	0.269	0.000554
	Blank R2 042911	34.8	042911AVS	050311HGA	051211-6100	0.0958 U	0.269	0.000554
	Blank R1 050211	33.8	050211AVS	050411HGA	051211-6100	0.0000 U	0.277	0.000538
	Blank R2 050211	33.8	050211AVS	050411HGA	051211-6100	0.0000 U	0.277	0.000538
	Blank R1 050311	38.2	050311AVS	050511HGA	051611-6100	0.0000 U	0.258	0.000578
	Blank R2 050311	38.2	050311AVS	050511HGA	051611-6100	0.0000 U	0.258	0.000578
	Blank R1 050411	36.1	050411AVS	050511HGA	051611-6100	0.0000 U	0.340	0.000439
	Blank R2 050411	36.1	050411AVS	050511HGA	051611-6100	0.0000 U	0.340	0.000439
	<i>Average</i>	35.7					0.286	0.000527
SQV05-130	3151*387	31.7	042911AVS	050311HGA	051211-6100	42.6	0.199	0.000750
SQV05-131	3151*388	32.1	042911AVS	050311HGA	051211-6100	49.6	0.217	0.000688
SQV05-132	3151*389	33.6	042911AVS	050311HGA	051211-6100	60.9	0.773	0.000193
SQV05-132	3151*390	36.7	042911AVS	050311HGA	051211-6100	50.4	0.230	0.000648
SQV05-133	3151*391	37.5	042911AVS	050311HGA	051211-6100	48.2	0.426	0.000350
SQV05-134	3151*392	35.6	042911AVS	050311HGA	051211-6100	62.6	0.439	0.000340
SQV05-147	3151*393	25.7	042911AVS	050311HGA	051211-6100	62.8	0.290	0.000514
SQV05-148	3151*394	31.1	042911AVS	050311HGA	051211-6100	104	0.262	0.000569
SQV05-149	3151*395	34.3	042911AVS	050311HGA	051211-6100	64.2	0.528	0.000283
SQV05-150	3151*396	34.6	042911AVS	050311HGA	051211-6100	98.8	0.295	0.000506
SQV05-151	3151*397 r1	43.7	042911AVS	050311HGA	051211-6100	53.9	0.179	0.000831
SQV05-151DUP	3151*397 r2	43.7	042911AVS	050311HGA	051211-6100	49.8	0.222	0.000672
SQV05-152	3151*398	52.2	042911AVS	050311HGA	051211-6100	48.0	0.142	0.001050
SQV05-165	3151*399	21.8	042911AVS	050311HGA	051211-6100	107	0.411	0.000363
SQV05-166	3151*400	27.9	042911AVS	050311HGA	051211-6100	74.0	0.269	0.000555
SQV05-167	3151*401	29.5	050211AVS	050311HGA	051211-6100	80.7	0.458	0.000326
SQV05-168	3151*402	30.9	050211AVS	050311HGA	051211-6100	58.4	0.426	0.000350
SQV05-169	3151*403 r1	39.5	050211AVS	050411HGA	051211-6100	62.4	0.192	0.000778
SQV05-169DUP	3151*403 r2	39.5	050211AVS	050411HGA	051211-6100	54.1	0.349	0.000428
SQV05-170	3151*404	60.3	050211AVS	050311HGA	051211-6100	22.3	0.159	0.000941
SQV05-183	3151*405	24.9	050211AVS	050311HGA	051211-6100	39.1	0.372	0.000401
SQV05-184	3151*406	25.2	050211AVS	050411HGA	051211-6100	76.2	0.325	0.000459
SQV05-185	3151*407	31.2	050211AVS	050411HGA	051211-6100	65.6	0.273	0.000547
SQV05-186	3151*408	34.7	050211AVS	050411HGA	051211-6100	52.1	0.221	0.000676
SQV05-187	3151*409	39.3	050211AVS	050411HGA	051211-6100	50.0	0.225	0.000663
SQV05-188	3151*410	36.9	050211AVS	050411HGA	051211-6100	40.3	0.165	0.000901
SQV05-201	3151*411	23.3	050211AVS	050411HGA	051211-6100	56.5	0.754	0.000198
SQV05-202	3151*412	23.5	050211AVS	050411HGA	051211-6100	99.6	0.728	0.000205
SQV05-203	3151*413	28.4	050211AVS	050411HGA	051211-6100	8.17	0.360	0.000415
SQV05-204	3151*414 r1	28.4	050311AVS	050511HGA	051611-6100	78.9	0.425	0.000351
SQV05-204DUP	3151*414 r2	28.4	050311AVS	050511HGA	051611-6100	81.4	0.356	0.000419
SQV05-205	3151*415	27.0	050311AVS	050411HGA	051611-6100	120	0.705	0.000212
SQV05-206	3151*416	33.8	050311AVS	050411HGA	051611-6100	108	0.431	0.000346
SQV05-219	3151*417	25.2	050311AVS	050411HGA	051611-6100	24.7	0.461	0.000323
SQV05-220	3151*418	34.4	050311AVS	050411HGA	051611-6100	34.8	0.347	0.000430
SQV05-221	3151*419	34.8	050311AVS	050411HGA	051611-6100	79.9	0.219	0.000681
SQV05-222	3151*420	39.6	050311AVS	050411HGA	051611-6100	62.2	0.321	0.000464
SQV05-223	3151*421	42.5	050311AVS	050411HGA	051611-6100	53.0	0.211	0.000707
SQV05-224	3151*422	48.8	050311AVS	050411HGA	051611-6100	36.3	0.222	0.000672
SQV05-1027	3151*825	42.6	050311AVS	050511HGA	051611-6100	6.10	0.185	0.000807
SQV05-1028	3151*826	43.6	050311AVS	050511HGA	051611-6100	25.3	0.223	0.000669
SQV05-1029	3151*827	47.9	050311AVS	050511HGA	051611-6100	22.9	0.180	0.000830
SQV05-1030	3151*828	50.5	050311AVS	050511HGA	051611-6100	22.5	0.171	0.000874
SQV05-1031	3151*829	45.0	050311AVS	050511HGA	051611-6100	38.6	0.168	0.000890
SQV05-1032	3151*830 redo	49.6	050411AVS	050511HGA	051611-6100	112	0.523	0.000738
SQV05-1037	3151*831	48.0	050411AVS	050511HGA	051611-6100	3.60	0.143	0.00104
SQV05-1038	3151*832	48.6	050411AVS	050511HGA	051611-6100	6.13	0.169	0.000883

BATTELLE MARINE SCIENCES LABORATORY

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Sequim, WA 98382

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Project: ENVVEST Sediment Quality Validation Study 2011**File #:** 3151

SAMPLE ID SPONSOR	SAMPLE ID BATTELLE	% Dry Weight	AVS Batch ID	SEM Hg Batch ID	SEM ICPMS Batch ID	AVS (μ mole/g)	AVS MDL (μ mole/g)	SEM RATIO (g/ml)
SQV05-1051	3151*837	19.9	050411AVS	050511HGA	051611-6100	34.5	0.438	0.000268
SQV05-1052	3151*838	27.2	050411AVS	050511HGA	051611-6100	85.8	0.557	0.000236
SQV05-1053	3151*839	29.7	050411AVS	050511HGA	051611-6100	75.2	0.631	0.000262
SQV05-1054	3151*840 r1	27.8	050411AVS	050511HGA	051611-6100	78.6	0.570	0.000312
SQV05-1054DUP	3151*840 r2	27.8	050411AVS	050511HGA	051611-6100	75.9	0.478	0.000244
SQV05-1055	3151*841	33.8	050411AVS	050511HGA	051611-6100	67.9	0.612	0.000218
SQV05-1056	3151*842	34.4	050411AVS	050511HGA	051611-6100	54.9	0.684	0.000285

Detection Limit (mean used for AVS)

0.358 0.00053

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SAMPLE ID SPONSOR	SAMPLE ID BATTELLE	Cd (µg/l)	Cd µg/ml	Cd blk corr (µg/ml)	SEM Cd (µg/g)	SEM Cd (µmole/g)
	Blank R1 042911	0.036U	0.0000000	0.000036U	0.0676U	0.000601 U
	Blank R2 042911	0.036U	0.0000000	0.000036U	0.0676U	0.000601 U
	Blank R1 050211	0.036U	0.0000000	0.000036U	0.0676U	0.000601 U
	Blank R2 050211	0.036U	0.0000000	0.000036U	0.0676U	0.000601 U
	Blank R1 050311	0.0369	0.0000369	0.0000369	0.0638	0.000568 U
	Blank R2 050311	0.0398	0.0000398	0.0000398	0.0688	0.000612
	Blank R1 050411	0.036U	0.0000000	0.000036U	0.0676	0.000601 U
	Blank R2 050411	0.036U	0.0000000	0.000036U	0.0676	0.000601 U
	Average		0.000036U			
SQV05-130	3151*387	1.06	0.00106	0.00106	1.413	0.0126
SQV05-131	3151*388	1.08	0.00108	0.00108	1.570	0.0140
SQV05-132	3151*389	0.268	0.000268	0.000268	1.39	0.0124
SQV05-132	3151*390	0.985	0.000985	0.000985	1.52	0.0135
SQV05-133	3151*391	0.654	0.000654	0.000654	1.869	0.0166
SQV05-134	3151*392	0.617	0.000617	0.000617	1.817	0.0162
SQV05-147	3151*393	1.07	0.00107	0.00107	2.082	0.0185
SQV05-148	3151*394	4.23	0.00423	0.00423	7.436	0.0662
SQV05-149	3151*395	0.457	0.00046	0.00046	1.617	0.0144
SQV05-150	3151*396	1.18	0.00118	0.00118	2.33	0.0207
SQV05-151	3151*397 r1	0.993	0.00099	0.000993	1.1947	0.0106
SQV05-151DUP	3151*397 r2	0.822	0.00082	0.00082	1.224	0.0109
SQV05-152	3151*398	1.11	0.00111	0.00111	1.057	0.00941
SQV05-165	3151*399	0.621	0.000621	0.00062	1.710	0.0152
SQV05-166	3151*400	0.736	0.000736	0.00074	1.327	0.0118
SQV05-167	3151*401	0.568	0.000568	0.00057	1.744	0.0155
SQV05-168	3151*402	0.496	0.000496	0.00050	1.416	0.0126
SQV05-169	3151*403 r1	1.05	0.00105	0.00105	1.349	0.0120
SQV05-169DUP	3151*403 r2	0.608	0.000608	0.00061	1.421	0.0126
SQV05-170	3151*404	1.65	0.00165	0.00165	1.754	0.0156
SQV05-183	3151*405	0.607	0.00061	0.00061	1.513	0.0135
SQV05-184	3151*406	0.650	0.00065	0.00065	1.416	0.0126
SQV05-185	3151*407	0.665	0.00067	0.00067	1.217	0.0108
SQV05-186	3151*408	0.917	0.00092	0.00092	1.356	0.0121
SQV05-187	3151*409	1.01	0.00101	0.00101	1.522	0.0135
SQV05-188	3151*410	0.723	0.00072	0.00072	0.802	0.00714
SQV05-201	3151*411	0.343	0.00034	0.00034	1.733	0.0154
SQV05-202	3151*412	0.370	0.00037	0.00037	1.805	0.0161
SQV05-203	3151*413	0.524	0.00052	0.00052	1.263	0.0112
SQV05-204	3151*414 r1	0.635	0.00064	0.00064	1.810	0.0161
SQV05-204DUP	3151*414 r2	0.644	0.00064	0.00064	1.539	0.0137
SQV05-205	3151*415	0.371	0.00037	0.00037	1.754	0.0156
SQV05-206	3151*416	0.574	0.00057	0.00057	1.659	0.0148
SQV05-219	3151*417	0.471	0.00047	0.00047	1.456	0.0130
SQV05-220	3151*418	0.621	0.00062	0.00062	1.445	0.0129
SQV05-221	3151*419	1.09	0.00109	0.00109	1.601	0.0142
SQV05-222	3151*420	0.590	0.00059	0.00059	1.271	0.0113
SQV05-223	3151*421	0.853	0.00085	0.00085	1.207	0.0107
SQV05-224	3151*422	0.872	0.00087	0.00087	1.297	0.0115
SQV05-1027	3151*825	0.761	0.00076	0.00076	0.943	0.00839
SQV05-1028	3151*826	0.704	0.00070	0.00070	1.052	0.00936
SQV05-1029	3151*827	1.02	0.001020	0.001020	1.2283	0.0109
SQV05-1030	3151*828	0.698	0.000698	0.000698	0.7983	0.00710
SQV05-1031	3151*829	0.656	0.00066	0.00066	0.7371	0.00656
SQV05-1032	3151*830 redo	0.116	0.00012	0.00012	0.1572	0.00140
SQV05-1037	3151*831	0.817	0.00082	0.00082	0.7836	0.00697
SQV05-1038	3151*832	0.753	0.00075	0.00075	0.8524	0.00758

BATTELLE MARINE SCIENCES LABORATORY

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Project: ENVVEST Sediment Quality Validation Study 2011**File #:** 3151

SAMPLE ID SPONSOR	SAMPLE ID BATTELLE	Cd (µg/l)	Cd µg/ml	Cd blk corr (µg/ml)	SEM Cd (µg/g)	SEM Cd (µmole/g)
SQV05-1051	3151*837	0.664	0.00066	0.00066	2.4780	0.0220
SQV05-1052	3151*838	0.652	0.00065	0.00065	2.7602	0.0246
SQV05-1053	3151*839	0.515	0.00052	0.00052	1.9693	0.0175
SQV05-1054	3151*840 r1	0.511	0.00051	0.00051	1.6361	0.0146
SQV05-1054DUP	3151*840 r2	0.627	0.00063	0.00063	2.5720	0.0229
SQV05-1055	3151*841	0.558	0.00056	0.00056	2.5603	0.0228
SQV05-1056	3151*842	0.372	0.00037	0.00037	1.3036	0.0116
Detection Limit		0.036	0.0000360	0.0000360	0.0676	0.000601

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Project: ENVVEST Sediment Quality Validation Study 2011

File #: 3151

SAMPLE ID SPONSOR	SAMPLE ID BATTELLE	Cu (µg/l)	Cu (µg/ml)	Cu blk corr (µg/ml)	SEM Cu (µg/g)	SEM Cu (µmole/g)
	Blank R1 042911	0.0763	0.000076	0.000076	0.138	0.00217
	Blank R2 042911	0.04U	0.000000	0.00004U	0.0751U	0.00118 U
	Blank R1 050211	0.140	0.000140	0.000140	0.260	0.00410
	Blank R2 050211	0.304	0.000304	0.000304	0.565	0.00890
	Blank R1 050311	0.215	0.000215	0.000215	0.372	0.00585
	Blank R2 050311	0.227	0.000227	0.000227	0.392	0.00618
	Blank R1 050411	0.286	0.000286	0.000286	0.651	0.0103
	Blank R2 050411	0.575	0.000575	0.000575	1.31	0.0206
	Average		0.000228			
SQV05-130	3151*387	36.1	0.0361	0.0359	47.83	0.753
SQV05-131	3151*388	21.4	0.0214	0.0212	30.78	0.484
SQV05-132	3151*389	11.1	0.0111	0.0109	56.4	0.887
SQV05-132	3151*390	17.4	0.0174	0.0172	26.51	0.417
SQV05-133	3151*391	18.3	0.0183	0.0181	51.65	0.813
SQV05-134	3151*392	30.0	0.0300	0.0298	87.68	1.38
SQV05-147	3151*393	33.4	0.0334	0.0332	64.55	1.02
SQV05-148	3151*394	20.1	0.0201	0.0199	34.94	0.550
SQV05-149	3151*395	25.7	0.0257	0.0255	90.11	1.42
SQV05-150	3151*396	25.8	0.0258	0.0256	50.50	0.795
SQV05-151	3151*397 r1	60.7	0.0607	0.0605	72.76	1.15
SQV05-151DUP	3151*397 r2	57.6	0.0576	0.0574	85.40	1.34
SQV05-152	3151*398	40.9	0.0409	0.0407	38.74	0.610
SQV05-165	3151*399	16.8	0.0168	0.0166	45.62	0.718
SQV05-166	3151*400	19.3	0.0193	0.0191	34.39	0.541
SQV05-167	3151*401	16.0	0.0160	0.0158	48.43	0.762
SQV05-168	3151*402	19.0	0.0190	0.0188	53.60	0.844
SQV05-169	3151*403 r1	40.2	0.0402	0.0400	51.37	0.809
SQV05-169DUP	3151*403 r2	36.6	0.0366	0.0364	85.00	1.34
SQV05-170	3151*404	65.1	0.0651	0.0649	68.97	1.09
SQV05-183	3151*405	33.5	0.0335	0.0333	82.92	1.31
SQV05-184	3151*406	30.8	0.0308	0.0306	66.60	1.05
SQV05-185	3151*407	36.5	0.0365	0.0363	66.36	1.04
SQV05-186	3151*408	42.6	0.0426	0.0424	62.66	0.986
SQV05-187	3151*409	70.3	0.0703	0.0701	105.61	1.66
SQV05-188	3151*410	73.2	0.0732	0.0730	80.95	1.27
SQV05-201	3151*411	14.4	0.0144	0.0142	71.59	1.13
SQV05-202	3151*412	12.2	0.0122	0.0120	58.39	0.919
SQV05-203	3151*413	33.3	0.0333	0.0331	79.73	1.25
SQV05-204	3151*414 r1	18.3	0.0183	0.0181	51.50	0.811
SQV05-204DUP	3151*414 r2	17.2	0.0172	0.0170	40.55	0.638
SQV05-205	3151*415	10.9	0.0109	0.0107	50.45	0.794
SQV05-206	3151*416	17.0	0.0170	0.0168	48.46	0.763
SQV05-219	3151*417	33.3	0.0333	0.0331	102.25	1.61
SQV05-220	3151*418	32.3	0.0323	0.0321	74.60	1.17
SQV05-221	3151*419	36.0	0.0360	0.0358	52.54	0.827
SQV05-222	3151*420	27.7	0.0277	0.0275	59.18	0.931
SQV05-223	3151*421	25.3	0.0253	0.0251	35.46	0.558
SQV05-224	3151*422	30.5	0.0305	0.0303	45.03	0.709
SQV05-1027	3151*825	48.5	0.0485	0.0483	59.79	0.941
SQV05-1028	3151*826	30.3	0.0303	0.0301	44.95	0.707
SQV05-1029	3151*827	40.0	0.0400	0.0398	47.89	0.754
SQV05-1030	3151*828	42.8	0.043	0.0426	48.69	0.766
SQV05-1031	3151*829	64.8	0.0648	0.0646	72.56	1.14
SQV05-1032	3151*830 redo	20.8	0.0208	0.0206	27.87	0.439
SQV05-1037	3151*831	57.3	0.0573	0.0571	54.74	0.861
SQV05-1038	3151*832	50.9	0.0509	0.0507	57.36	0.903

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(360) 681-3650

Project: ENVVEST Sediment Quality Validation Study 2011**File #:** 3151

SAMPLE ID SPONSOR	SAMPLE ID BATTELLE	Cu (µg/l)	Cu (µg/ml)	Cu blk corr (µg/ml)	SEM Cu (µg/g)	SEM Cu (µmole/g)
SQV05-1051	3151*837	23.0	0.0230	0.0228	84.98	1.34
SQV05-1052	3151*838	15.4	0.0154	0.0152	64.23	1.01
SQV05-1053	3151*839	10.9	0.0109	0.0107	40.81	0.642
SQV05-1054	3151*840 r1	11.8	0.0118	0.0116	37.05	0.583
SQV05-1054DUP	3151*840 r2	16.5	0.0165	0.0163	66.75	1.05
SQV05-1055	3151*841	14.5	0.0145	0.0143	65.48	1.03
SQV05-1056	3151*842	7.75	0.0078	0.0075	26.36	0.415
Detection Limit		0.040	0.000040	0.000040	0.0751	0.00118

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Project: ENVVEST Sediment Quality Validation Study 2011

File #: 3151

SAMPLE ID SPONSOR	SAMPLE ID BATTELLE	Fe (µg/l)	Fe µg/ml	Fe blk corr (µg/ml)	SEM Fe (µg/g)	SEM Fe (µmole/g)
	Blank R1 042911	1.0U	0.00000	0.00100U	1.81U	0.0325 U
	Blank R2 042911	1.0U	0.00000	0.00100U	1.81U	0.0325 U
	Blank R1 050211	1.0U	0.00000	0.00100U	1.81U	0.0325 U
	Blank R2 050211	1.20	0.00120	0.00120	2.23	0.0400
	Blank R1 050311	1.0U	0.00000	0.00100U	1.81U	0.0325 U
	Blank R2 050311	1.0U	0.00000	0.00100U	1.81U	0.0325 U
	Blank R1 050411	1.60	0.00160	0.00160	3.64	0.0652
	Blank R2 050411	1.71	0.00171	0.0017	3.89	0.0697
	Average		0.0010U			
SQV05-130	3151*387	42.9	0.0429	0.0429	57.2	1.02
SQV05-131	3151*388	32.2	0.0322	0.0322	46.8	0.838
SQV05-132	3151*389	13.0	0.0130	0.0130	67.4	1.21
SQV05-132	3151*390	31.8	0.0318	0.0318	49.1	0.879
SQV05-133	3151*391	20.0	0.0200	0.0200	57.2	1.02
SQV05-134	3151*392	22.3	0.0223	0.0223	65.7	1.18
SQV05-147	3151*393	41.8	0.0418	0.0418	81.3	1.46
SQV05-148	3151*394	39.2	0.0392	0.0392	68.9	1.23
SQV05-149	3151*395	23.7	0.0237	0.0237	83.8	1.50
SQV05-150	3151*396	42.5	0.0425	0.0425	83.9	1.50
SQV05-151	3151*397 r1	50.1	0.0501	0.0501	60.28	1.08
SQV05-151DUP	3151*397 r2	42.0	0.0420	0.0420	62.5	1.12
SQV05-152	3151*398	50.2	0.0502	0.0502	47.8	0.856
SQV05-165	3151*399	31.2	0.0312	0.0312	85.9	1.54
SQV05-166	3151*400	36.0	0.0360	0.0360	64.9	1.16
SQV05-167	3151*401	25.4	0.0254	0.0254	78.0	1.40
SQV05-168	3151*402	26.5	0.0265	0.0265	75.7	1.35
SQV05-169	3151*403 r1	39.1	0.0391	0.0391	50.3	0.900
SQV05-169DUP	3151*403 r2	25.6	0.0256	0.0256	59.8	1.07
SQV05-170	3151*404	44.8	0.0448	0.0448	47.6	0.853
SQV05-183	3151*405	26.8	0.0268	0.0268	66.8	1.20
SQV05-184	3151*406	39.8	0.0398	0.0398	86.7	1.55
SQV05-185	3151*407	34.3	0.0343	0.0343	62.8	1.12
SQV05-186	3151*408	47.9	0.0479	0.0479	70.8	1.27
SQV05-187	3151*409	218	0.2180	0.2180	328.6	5.88
SQV05-188	3151*410	59.1	0.0591	0.0591	65.6	1.17
SQV05-201	3151*411	24.9	0.0249	0.0249	125.8	2.25
SQV05-202	3151*412	19.8	0.0198	0.0198	96.6	1.73
SQV05-203	3151*413	34.3	0.0343	0.0343	82.7	1.48
SQV05-204	3151*414 r1	27.7	0.0277	0.0277	78.9	1.41
SQV05-204DUP	3151*414 r2	26.2	0.0262	0.0262	62.6	1.12
SQV05-205	3151*415	17.9	0.0179	0.0179	84.6	1.52
SQV05-206	3151*416	22.2	0.0222	0.0222	64.1	1.15
SQV05-219	3151*417	25.3	0.0253	0.0253	78.2	1.40
SQV05-220	3151*418	25.4	0.0254	0.0254	59.1	1.06
SQV05-221	3151*419	41.0	0.0410	0.0410	60.2	1.08
SQV05-222	3151*420	28.2	0.0282	0.0282	60.7	1.09
SQV05-223	3151*421	37.6	0.0376	0.0376	53.2	0.952
SQV05-224	3151*422	33.9	0.0339	0.0339	50.4	0.903
SQV05-1027	3151*825	74.0	0.0740	0.0740	91.7	1.64
SQV05-1028	3151*826	45.9	0.0459	0.0459	68.6	1.23
SQV05-1029	3151*827	146	0.1460	0.1460	175.82	3.15
SQV05-1030	3151*828	44.5	0.0445	0.0445	50.89	0.911
SQV05-1031	3151*829	62.1	0.0621	0.0621	69.8	1.25
SQV05-1032	3151*830 redo	43.0	0.0430	0.0430	58.3	1.04
SQV05-1037	3151*831	49.6	0.0496	0.0496	47.6	0.852
SQV05-1038	3151*832	42.6	0.0426	0.0426	48.2	0.863

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SAMPLE ID SPONSOR	SAMPLE ID BATTELLE	Fe (µg/l)	Fe µg/ml	Fe blk corr (µg/ml)	SEM Fe (µg/g)	SEM Fe (µmole/g)
SQV05-1051	3151*837	27.7	0.0277	0.0277	103.4	1.85
SQV05-1052	3151*838	31.7	0.0317	0.0317	134.2	2.40
SQV05-1053	3151*839	22.6	0.0226	0.0226	86.4	1.55
SQV05-1054	3151*840 r1	17.7	0.0177	0.0177	56.7	1.01
SQV05-1054DUP	3151*840 r2	28.8	0.0288	0.0288	118.1	2.12
SQV05-1055	3151*841	44.1	0.0441	0.0441	202.3	3.62
SQV05-1056	3151*842	14.2	0.0142	0.0142	49.8	0.891
Detection Limit		1.0	0.001000	0.001000	1.8774	0.03361

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SAMPLE ID SPONSOR	SAMPLE ID BATTELLE	Mn (µg/l)	Mn µg/ml	Mn blk corr (µg/ml)	SEM Mn (µg/g)	SEM Mn (µmole/g)
	Blank R1 042911	0.0866	0.0000866	0.0000866	0.156	0.00285
	Blank R2 042911	0.0920	0.0000920	0.0000920	0.166	0.00302
	Blank R1 050211	0.0850	0.0000850	0.0000850	0.158	0.00288
	Blank R2 050211	0.259	0.000259	0.000259	0.482	0.00877
	Blank R1 050311	0.137	0.000137	0.000137	0.237	0.00431
	Blank R2 050311	0.156	0.000156	0.000156	0.270	0.00491
	Blank R1 050411	0.362	0.000362	0.000362	0.825	0.0150
	Blank R2 050411	0.472	0.000472	0.000472	1.08	0.0196
	<i>Average</i>		<i>0.000206</i>			
SQV05-130	3151*387	50.5	0.0505	0.0503	67.1	1.22
SQV05-131	3151*388	36.6	0.0366	0.0364	52.9	0.963
SQV05-132	3151*389	12.6	0.0126	0.0124	64.3	1.17
SQV05-132	3151*390	32.1	0.0321	0.0319	49.2	0.896
SQV05-133	3151*391	19.7	0.0197	0.0195	55.7	1.01
SQV05-134	3151*392	19.3	0.0193	0.0191	56.2	1.02
SQV05-147	3151*393	45.9	0.0459	0.0457	88.9	1.62
SQV05-148	3151*394	37.5	0.0375	0.0373	65.6	1.19
SQV05-149	3151*395	24.8	0.0248	0.0246	87.0	1.58
SQV05-150	3151*396	48.6	0.0486	0.0484	95.6	1.74
SQV05-151	3151*397 r1	73.3	0.0733	0.0731	87.9	1.60
SQV05-151DUP	3151*397 r2	69.7	0.0697	0.0695	103	1.88
SQV05-152	3151*398	77.9	0.0779	0.0777	74.0	1.35
SQV05-165	3151*399	33.2	0.0332	0.0330	90.8	1.65
SQV05-166	3151*400	50.1	0.0501	0.0499	90.0	1.64
SQV05-167	3151*401	34.7	0.0347	0.0345	106	1.93
SQV05-168	3151*402	37.3	0.0373	0.0371	106	1.93
SQV05-169	3151*403 r1	62.1	0.0621	0.0619	79.5	1.45
SQV05-169DUP	3151*403 r2	39.4	0.0394	0.0392	91.6	1.67
SQV05-170	3151*404	65.3	0.0653	0.0651	69.2	1.26
SQV05-183	3151*405	53.7	0.0537	0.0535	133	2.43
SQV05-184	3151*406	54.8	0.0548	0.0546	119	2.16
SQV05-185	3151*407	45.6	0.0456	0.0454	83.1	1.51
SQV05-186	3151*408	67.4	0.0674	0.0672	99.4	1.81
SQV05-187	3151*409	98.6	0.0986	0.0984	148	2.70
SQV05-188	3151*410	89.6	0.0896	0.0894	99.2	1.80
SQV05-201	3151*411	33.4	0.0334	0.0332	168	3.05
SQV05-202	3151*412	23.2	0.0232	0.0230	112	2.04
SQV05-203	3151*413	115	0.115	0.115	277	5.04
SQV05-204	3151*414 r1	40.3	0.0403	0.0401	114	2.08
SQV05-204DUP	3151*414 r2	39.9	0.0399	0.0397	94.8	1.73
SQV05-205	3151*415	17.3	0.0173	0.0171	80.8	1.47
SQV05-206	3151*416	21.6	0.0216	0.0214	61.8	1.13
SQV05-219	3151*417	59.5	0.0595	0.0593	183	3.34
SQV05-220	3151*418	51.8	0.0518	0.0516	120	2.18
SQV05-221	3151*419	79.2	0.0792	0.0790	116	2.11
SQV05-222	3151*420	43.3	0.0433	0.0431	92.8	1.69
SQV05-223	3151*421	65.3	0.0653	0.0651	92.1	1.68
SQV05-224	3151*422	54.2	0.0542	0.0540	80.3	1.46
SQV05-1027	3151*825	133	0.133	0.133	164	2.99
SQV05-1028	3151*826	70.6	0.0706	0.0704	105	1.91
SQV05-1029	3151*827	137	0.137	0.137	165	3.00
SQV05-1030	3151*828	101	0.101	0.101	115	2.10
SQV05-1031	3151*829	213	0.213	0.213	239	4.35
SQV05-1032	3151*830 redo	98.6	0.0986	0.0984	133	2.43
SQV05-1037	3151*831	149	0.149	0.149	143	2.60
SQV05-1038	3151*832	117	0.117	0.117	132	2.41

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SAMPLE ID SPONSOR	SAMPLE ID BATTELLE	Mn (µg/l)	Mn µg/ml	Mn blk corr (µg/ml)	SEM Mn (µg/g)	SEM Mn (µmole/g)
SQV05-1051	3151*837	38.2	0.0382	0.0380	142	2.58
SQV05-1052	3151*838	32.2	0.0322	0.0320	135	2.47
SQV05-1053	3151*839	23.6	0.0236	0.0234	89.5	1.63
SQV05-1054	3151*840 r1	17.7	0.0177	0.0175	56.0	1.02
SQV05-1054DUP	3151*840 r2	24.9	0.0249	0.0247	101	1.84
SQV05-1055	3151*841	24.7	0.0247	0.0245	112	2.05
SQV05-1056	3151*842	15.9	0.0159	0.0157	55.0	1.00
Detection Limit		0.0380	0.000038	0.000038	0.0713	0.00130

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SAMPLE ID SPONSOR	SAMPLE ID BATTELLE	Ni (µg/l)	Ni (µg/ml)	Ni blk corr (µg/ml)	SEM Ni (µg/g)	SEM Ni (µmole/g)
	Blank R1 042911	0.073U	0.000000	0.000000	0.0100U	0.000170 U
	Blank R2 042911	0.126	0.000126	0.000126	0.227	0.00387
	Blank R1 050211	0.172	0.000172	0.000172	0.320	0.00545
	Blank R2 050211	0.852	0.000852	0.000852	1.58	0.0270
	Blank R1 050311	0.183	0.000183	0.000183	0.316	0.00539
	Blank R2 050311	0.111	0.000111	0.000111	0.192	0.00327
	Blank R1 050411	0.170	0.000170	0.000170	0.387	0.00660
	Blank R2 050411	0.309	0.000309	0.000309	0.704	0.0120
	<i>Average</i>		<i>0.000240</i>			
SQV05-130	3151*387	6.45	0.00645	0.00621	8.28	0.141
SQV05-131	3151*388	5.59	0.00559	0.00535	7.78	0.132
SQV05-132	3151*389	2.25	0.00225	0.00201	10.4	0.177
SQV05-132	3151*390	4.43	0.00443	0.00419	6.47	0.110
SQV05-133	3151*391	3.12	0.00312	0.00288	8.23	0.140
SQV05-134	3151*392	4.54	0.00454	0.00430	12.7	0.216
SQV05-147	3151*393	9.38	0.00938	0.00914	17.8	0.303
SQV05-148	3151*394	6.25	0.00625	0.00601	10.6	0.180
SQV05-149	3151*395	4.35	0.00435	0.00411	14.5	0.248
SQV05-150	3151*396	7.11	0.00711	0.00687	13.6	0.231
SQV05-151	3151*397 r1	9.30	0.00930	0.00906	10.9	0.186
SQV05-151DUP	3151*397 r2	7.41	0.00741	0.00717	10.7	0.182
SQV05-152	3151*398	8.28	0.00828	0.00804	7.66	0.130
SQV05-165	3151*399	4.51	0.00451	0.00427	11.8	0.200
SQV05-166	3151*400	5.17	0.00517	0.00493	8.89	0.151
SQV05-167	3151*401	3.49	0.00349	0.00325	9.98	0.170
SQV05-168	3151*402	3.66	0.00366	0.00342	9.76	0.166
SQV05-169	3151*403 r1	6.29	0.00629	0.00605	7.78	0.132
SQV05-169DUP	3151*403 r2	3.84	0.00384	0.00360	8.41	0.143
SQV05-170	3151*404	17.5	0.0175	0.0173	18.4	0.313
SQV05-183	3151*405	3.91	0.00391	0.00367	9.15	0.156
SQV05-184	3151*406	6.15	0.00615	0.00591	12.9	0.219
SQV05-185	3151*407	4.79	0.00479	0.00455	8.32	0.142
SQV05-186	3151*408	8.70	0.00870	0.00846	12.5	0.213
SQV05-187	3151*409	171	0.171	0.171	257	4.38
SQV05-188	3151*410	17.9	0.0179	0.0177	19.6	0.334
SQV05-201	3151*411	9.23	0.00923	0.00899	45.4	0.774
SQV05-202	3151*412	3.11	0.00311	0.00287	14.0	0.238
SQV05-203	3151*413	4.09	0.00409	0.00385	9.28	0.158
SQV05-204	3151*414 r1	6.39	0.00639	0.00615	17.5	0.298
SQV05-204DUP	3151*414 r2	4.44	0.00444	0.00420	10.0	0.171
SQV05-205	3151*415	2.87	0.00287	0.00263	12.4	0.212
SQV05-206	3151*416	4.00	0.00400	0.00376	10.9	0.185
SQV05-219	3151*417	6.28	0.00628	0.00604	18.7	0.318
SQV05-220	3151*418	4.32	0.00432	0.00408	9.49	0.162
SQV05-221	3151*419	7.74	0.00774	0.00750	11.0	0.188
SQV05-222	3151*420	5.75	0.00575	0.00551	11.9	0.202
SQV05-223	3151*421	7.79	0.00779	0.00755	10.7	0.182
SQV05-224	3151*422	5.80	0.00580	0.00556	8.27	0.141
SQV05-1027	3151*825	34.8	0.0348	0.0346	42.8	0.729
SQV05-1028	3151*826	14.5	0.0145	0.0143	21.3	0.363
SQV05-1029	3151*827	105	0.105	0.105	126	2.15
SQV05-1030	3151*828	8.62	0.00862	0.00838	9.58	0.163
SQV05-1031	3151*829	14.1	0.0141	0.0139	15.6	0.265
SQV05-1032	3151*830 redo	4.23	0.00423	0.00399	5.41	0.092
SQV05-1037	3151*831	8.88	0.00888	0.00864	8.29	0.141
SQV05-1038	3151*832	7.18	0.00718	0.00694	7.86	0.134

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SAMPLE ID SPONSOR	SAMPLE ID BATTELLE	Ni ($\mu\text{g/l}$)	Ni ($\mu\text{g/ml}$)	Ni blk corr ($\mu\text{g/ml}$)	SEM Ni ($\mu\text{g/g}$)	SEM Ni ($\mu\text{mole/g}$)
SQV05-1051	3151*837	11.0	0.0110	0.0108	40.2	0.684
SQV05-1052	3151*838	12.2	0.0122	0.0120	50.6	0.862
SQV05-1053	3151*839	4.06	0.00406	0.00382	14.6	0.249
SQV05-1054	3151*840 r1	5.40	0.00540	0.00516	16.5	0.281
SQV05-1054DUP	3151*840 r2	9.35	0.00935	0.00911	37.4	0.636
SQV05-1055	3151*841	28.5	0.0285	0.0283	130	2.21
SQV05-1056	3151*842	2.61	0.00261	0.00237	8.30	0.141
Detection Limit		0.073	0.0000730	0.0000730	0.0100	0.000170

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SAMPLE ID SPONSOR	SAMPLE ID BATTELLE	Pb (µg/l)	Pb µg/ml	Pb blk corr (µg/ml)	SEM Pb (µg/g)	SEM Pb (µmole/g)
	Blank R1 042911	0.03U	0.000000	0.000030U	0.0544U	0.000262 U
	Blank R2 042911	0.03U	0.000000	0.000030U	0.0544U	0.000262 U
	Blank R1 050211	0.03U	0.000000	0.000030U	0.0544U	0.000262 U
	Blank R2 050211	0.0620	0.0000620	0.0000620	0.115	0.000556
	Blank R1 050311	0.0696	0.0000696	0.0000696	0.120	0.000581
	Blank R2 050311	0.0819	0.0000819	0.0000819	0.142	0.000683
	Blank R1 050411	0.03U	0.000000	0.000030U	0.0544U	0.000262 U
	Blank R2 050411	0.0586	0.0000586	0.0000586	0.133	0.000644
	Average		0.0000340			
SQV05-130	3151*387	46.3	0.0463	0.0463	61.7	0.298
SQV05-131	3151*388	39.0	0.0390	0.0390	56.6	0.273
SQV05-132	3151*389	13.6	0.0136	0.0136	70.3	0.339
SQV05-132	3151*390	51.8	0.0518	0.0518	79.9	0.386
SQV05-133	3151*391	37.8	0.0378	0.0378	108	0.521
SQV05-134	3151*392	37.4	0.0374	0.0374	110	0.531
SQV05-147	3151*393	29.6	0.0296	0.0296	57.5	0.278
SQV05-148	3151*394	36.3	0.0363	0.0363	63.8	0.308
SQV05-149	3151*395	20.2	0.0202	0.0202	71.3	0.344
SQV05-150	3151*396	31.7	0.0317	0.0317	62.5	0.302
SQV05-151	3151*397 r1	69.6	0.0696	0.0696	83.7	0.404
SQV05-151DUP	3151*397 r2	54.0	0.0540	0.0540	80.3	0.388
SQV05-152	3151*398	69.0	0.0690	0.0690	65.7	0.317
SQV05-165	3151*399	19.9	0.0199	0.0199	54.7	0.264
SQV05-166	3151*400	35.0	0.0350	0.0350	63.1	0.304
SQV05-167	3151*401	21.2	0.0212	0.0212	65.0	0.314
SQV05-168	3151*402	29.9	0.0299	0.0299	85.3	0.412
SQV05-169	3151*403 r1	112	0.112	0.112	144	0.695
SQV05-169DUP	3151*403 r2	57.4	0.0574	0.0574	134	0.647
SQV05-170	3151*404	168	0.168	0.168	179	0.862
SQV05-183	3151*405	40.4	0.0404	0.0404	101	0.486
SQV05-184	3151*406	39.1	0.0391	0.0391	85.1	0.411
SQV05-185	3151*407	48.5	0.0485	0.0485	88.7	0.428
SQV05-186	3151*408	70.9	0.0709	0.0709	105	0.506
SQV05-187	3151*409	78.5	0.0785	0.0785	118	0.571
SQV05-188	3151*410	87.4	0.0874	0.0874	96.9	0.468
SQV05-201	3151*411	11.4	0.0114	0.0114	57.4	0.277
SQV05-202	3151*412	12.1	0.0121	0.0121	58.9	0.284
SQV05-203	3151*413	22.8	0.0228	0.0228	54.9	0.265
SQV05-204	3151*414 r1	20.1	0.0201	0.0201	57.2	0.276
SQV05-204DUP	3151*414 r2	24.0	0.0240	0.0240	57.3	0.276
SQV05-205	3151*415	11.9	0.0119	0.0119	56.1	0.271
SQV05-206	3151*416	20.5	0.0205	0.0205	59.1	0.285
SQV05-219	3151*417	23.3	0.0233	0.0233	71.9	0.347
SQV05-220	3151*418	26.9	0.0269	0.0269	62.5	0.302
SQV05-221	3151*419	42.8	0.0428	0.0428	62.8	0.303
SQV05-222	3151*420	28.0	0.0280	0.0280	60.2	0.291
SQV05-223	3151*421	44.9	0.0449	0.0449	63.5	0.306
SQV05-224	3151*422	49.7	0.0497	0.0497	73.9	0.357
SQV05-1027	3151*825	51.1	0.0511	0.0511	63.3	0.305
SQV05-1028	3151*826	33.3	0.0333	0.0333	49.7	0.240
SQV05-1029	3151*827	43.4	0.0434	0.0434	52.2	0.252
SQV05-1030	3151*828	44.4	0.0444	0.0444	50.7	0.245
SQV05-1031	3151*829	96.8	0.0968	0.0968	109	0.525
SQV05-1032	3151*830 redo	38.9	0.0389	0.0389	52.7	0.254
SQV05-1037	3151*831	46.3	0.0463	0.0463	44.4	0.214
SQV05-1038	3151*832	43.6	0.0436	0.0436	49.3	0.238

BATTELLE MARINE SCIENCES LABORATORY

1529 W. Sequim Bay Road

Sequim, WA 98382

(360) 681-3650

Project: ENVVEST Sediment Quality Validation Study 2011**File #:** 3151

SAMPLE ID SPONSOR	SAMPLE ID BATTELLE	Pb ($\mu\text{g/l}$)	Pb $\mu\text{g/ml}$	Pb blk corr ($\mu\text{g/ml}$)	SEM Pb ($\mu\text{g/g}$)	SEM Pb ($\mu\text{mole/g}$)
SQV05-1051	3151*837	17.5	0.0175	0.0175	65.2	0.315
SQV05-1052	3151*838	16.1	0.0161	0.0161	68.0	0.328
SQV05-1053	3151*839	12.8	0.0128	0.0128	48.8	0.236
SQV05-1054	3151*840 r1	14.8	0.0148	0.0148	47.3	0.228
SQV05-1054DUP	3151*840 r2	17.8	0.0178	0.0178	72.9	0.352
SQV05-1055	3151*841	14.7	0.0147	0.0147	67.3	0.325
SQV05-1056	3151*842	14.7	0.0147	0.0147	51.4	0.248
Detection Limit		0.03	0.0000300	0.0000300	0.0563	0.000272

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Project: ENVVEST Sediment Quality Validation Study 2011

File #: 3151

SAMPLE ID SPONSOR	SAMPLE ID BATTELLE	Ag (µg/l)	Ag µg/ml	Ag blk corr (µg/ml)	SEM Ag (µg/g)	SEM Ag (µmole/g)
	Blank R1 042911	0.032U	0.00000	0.0000000	0.0601U	0.000557 U
	Blank R2 042911	0.032U	0.00000	0.000032U	0.0601U	0.000557 U
	Blank R1 050211	0.032U	0.00000	0.000032U	0.0601U	0.000557 U
	Blank R2 050211	0.032U	0.00000	0.000032U	0.0601U	0.000557 U
	Blank R1 050311	0.032U	0.00000	0.000032U	0.0601U	0.000557 U
	Blank R2 050311	0.032U	0.00000	0.000032U	0.0601U	0.000557 U
	Blank R1 050411	0.032U	0.00000	0.000032U	0.0601U	0.000557 U
	Blank R2 050411	0.032U	0.00000	0.000032U	0.0601U	0.000557 U
	Average		0.000032U			
SQV05-130	3151*387	0.275	0.000275	0.000275	0.367	0.00340
SQV05-131	3151*388	0.155	0.000155	0.000155	0.225	0.00209
SQV05-132	3151*389	0.0830	0.0000830	0.0000830	0.43	0.00399
SQV05-132	3151*390	0.180	0.000180	0.000180	0.28	0.00258
SQV05-133	3151*391	0.163	0.000163	0.000163	0.466	0.00432
SQV05-134	3151*392	0.194	0.000194	0.000194	0.571	0.00530
SQV05-147	3151*393	0.121	0.000121	0.000121	0.235	0.00218
SQV05-148	3151*394	0.140	0.000140	0.000140	0.246	0.00228
SQV05-149	3151*395	0.128	0.000128	0.000128	0.453	0.00420
SQV05-150	3151*396	0.107	0.000107	0.000107	0.21	0.00196
SQV05-151	3151*397 r1	0.176	0.000176	0.000176	0.2118	0.00196
SQV05-151DUP	3151*397 r2	0.153	0.000153	0.000153	0.228	0.00211
SQV05-152	3151*398	0.173	0.000173	0.000173	0.165	0.00153
SQV05-165	3151*399	0.129	0.000129	0.000129	0.355	0.00329
SQV05-166	3151*400	0.144	0.000144	0.000144	0.260	0.00241
SQV05-167	3151*401	0.134	0.000134	0.000134	0.411	0.00381
SQV05-168	3151*402	0.108	0.000108	0.000108	0.308	0.00286
SQV05-169	3151*403 r1	0.167	0.000167	0.000167	0.215	0.00199
SQV05-169DUP	3151*403 r2	0.144	0.000144	0.000144	0.337	0.00312
SQV05-170	3151*404	0.238	0.000238	0.000238	0.253	0.00235
SQV05-183	3151*405	0.129	0.000129	0.000129	0.322	0.00298
SQV05-184	3151*406	0.144	0.000144	0.000144	0.314	0.00291
SQV05-185	3151*407	0.146	0.000146	0.000146	0.267	0.00248
SQV05-186	3151*408	0.225	0.000225	0.000225	0.333	0.00308
SQV05-187	3151*409	0.313	0.000313	0.000313	0.472	0.00437
SQV05-188	3151*410	0.333	0.000333	0.000333	0.369	0.00342
SQV05-201	3151*411	0.102	0.000102	0.000102	0.515	0.00478
SQV05-202	3151*412	0.0660	0.0000660	0.0000660	0.322	0.00298
SQV05-203	3151*413	0.105	0.000105	0.000105	0.253	0.00235
SQV05-204	3151*414 r1	0.158	0.000158	0.000158	0.450	0.00417
SQV05-204DUP	3151*414 r2	0.104	0.000104	0.000104	0.248	0.00230
SQV05-205	3151*415	0.0698	0.000070	0.0000698	0.330	0.00306
SQV05-206	3151*416	0.0735	0.000074	0.0000735	0.212	0.00197
SQV05-219	3151*417	0.0953	0.000095	0.0000953	0.295	0.00273
SQV05-220	3151*418	0.105	0.000105	0.000105	0.244	0.00226
SQV05-221	3151*419	0.131	0.000131	0.000131	0.192	0.00178
SQV05-222	3151*420	0.131	0.000131	0.000131	0.282	0.00262
SQV05-223	3151*421	0.133	0.000133	0.000133	0.188	0.00174
SQV05-224	3151*422	0.154	0.000154	0.000154	0.229	0.00212
SQV05-1027	3151*825	0.169	0.000169	0.000169	0.209	0.00194
SQV05-1028	3151*826	0.112	0.000112	0.000112	0.167	0.00155
SQV05-1029	3151*827	0.207	0.000207	0.000207	0.249	0.00231
SQV05-1030	3151*828	0.224	0.000224	0.000224	0.256	0.00237
SQV05-1031	3151*829	0.443	0.000443	0.000443	0.498	0.00461
SQV05-1032	3151*830 redo	0.123	0.000123	0.000123	0.167	0.00154
SQV05-1037	3151*831	0.192	0.000192	0.000192	0.184	0.00171
SQV05-1038	3151*832	0.162	0.000162	0.000162	0.183	0.00170

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Project: ENVVEST Sediment Quality Validation Study 2011**File #:** 3151

SAMPLE ID SPONSOR	SAMPLE ID BATTELLE	Ag (µg/l)	Ag µg/ml	Ag blk corr (µg/ml)	SEM Ag (µg/g)	SEM Ag (µmole/g)
SQV05-1051	3151*837	0.102	0.000102	0.000102	0.381	0.00353
SQV05-1052	3151*838	0.0749	0.000075	0.0000749	0.317	0.00294
SQV05-1053	3151*839	0.0774	0.000077	0.0000774	0.296	0.00274
SQV05-1054	3151*840 r1	0.0864	0.000086	0.0000864	0.277	0.00256
SQV05-1054DUP	3151*840 r2	0.106	0.000106	0.000106	0.435	0.00403
SQV05-1055	3151*841	0.0886	0.000089	0.0000886	0.407	0.00377
SQV05-1056	3151*842	0.032U	0.000000	0.000000	0.0601U	0.000557 U
Detection Limit		0.032	0.0000320	0.0000320	0.0601	0.000557

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File #: 3151

SAMPLE ID SPONSOR	SAMPLE ID BATTELLE	Zn (µg/l)	Zn µg/ml	Zn blk corr (µg/ml)	SEM Zn (µg/g)	SEM Zn (µmole/g)
	Blank R1 042911	1.19	0.00119	0.00119	2.148	0.0329
	Blank R2 042911	0.407	0.00041	0.000407	0.735	0.0112
	Blank R1 050211	1.26	0.00126	0.00126	2.34	0.0358
	Blank R2 050211	2.19	0.00219	0.00219	4.07	0.0623
	Blank R1 050311	0.499	0.00050	0.000499	0.863	0.0132
	Blank R2 050311	0.765	0.00077	0.000765	1.32	0.0202
	Blank R1 050411	0.31U	0.00000	0.00031U	0.562U	0.00860 U
	Blank R2 050411	0.31U	0.00000	0.00031U	0.562U	0.00860 U
	Average		0.000789			
SQV05-130	3151*387	113	0.113	0.112	150	2.29
SQV05-131	3151*388	110	0.110	0.109	159	2.43
SQV05-132	3151*389	28.4	0.0284	0.0276	143	2.19
SQV05-132	3151*390	118	0.118	0.117	181	2.77
SQV05-133	3151*391	75.0	0.0750	0.0742	212	3.24
SQV05-134	3151*392	71.3	0.0713	0.0705	208	3.18
SQV05-147	3151*393	113	0.113	0.112	218	3.34
SQV05-148	3151*394	1050	1.05	1.05	1845	28.2
SQV05-149	3151*395	74.7	0.0747	0.0739	261	4.00
SQV05-150	3151*396	138	0.138	0.137	271	4.14
SQV05-151	3151*397 r1	194	0.194	0.193	232	3.56
SQV05-151DUP	3151*397 r2	184	0.184	0.183	273	4.17
SQV05-152	3151*398	239	0.239	0.238	227	3.47
SQV05-165	3151*399	61.1	0.0611	0.0603	166	2.54
SQV05-166	3151*400	97.0	0.0970	0.0962	174	2.65
SQV05-167	3151*401	61.0	0.0610	0.0602	185	2.83
SQV05-168	3151*402	71.5	0.0715	0.0707	202	3.09
SQV05-169	3151*403 r1	194	0.194	0.193	248	3.80
SQV05-169DUP	3151*403 r2	116	0.116	0.115	269	4.12
SQV05-170	3151*404	277	0.277	0.276	294	4.49
SQV05-183	3151*405	82.1	0.0821	0.0813	203	3.10
SQV05-184	3151*406	112	0.112	0.111	242	3.71
SQV05-185	3151*407	111	0.111	0.110	202	3.08
SQV05-186	3151*408	157	0.157	0.156	231	3.53
SQV05-187	3151*409	187	0.187	0.186	281	4.29
SQV05-188	3151*410	192	0.192	0.191	212	3.24
SQV05-201	3151*411	32.2	0.0322	0.0314	159	2.43
SQV05-202	3151*412	34.3	0.0343	0.0335	163	2.50
SQV05-203	3151*413	63.4	0.0634	0.0626	151	2.31
SQV05-204	3151*414 r1	52.6	0.0526	0.0518	148	2.26
SQV05-204DUP	3151*414 r2	57.1	0.0571	0.0563	135	2.06
SQV05-205	3151*415	30.7	0.0307	0.0299	141	2.16
SQV05-206	3151*416	54.1	0.0541	0.0533	154	2.36
SQV05-219	3151*417	65.2	0.0652	0.0644	199	3.05
SQV05-220	3151*418	87.9	0.0879	0.0871	203	3.10
SQV05-221	3151*419	179	0.179	0.178	262	4.00
SQV05-222	3151*420	100	0.100	0.0992	214	3.27
SQV05-223	3151*421	146	0.146	0.145	205	3.14
SQV05-224	3151*422	154	0.154	0.153	228	3.49
SQV05-1027	3151*825	170	0.170	0.169	210	3.21
SQV05-1028	3151*826	102	0.102	0.101	151	2.31
SQV05-1029	3151*827	159	0.159	0.158	191	2.91
SQV05-1030	3151*828	161	0.161	0.160	183	2.80
SQV05-1031	3151*829	310	0.310	0.309	347	5.32
SQV05-1032	3151*830 redo	143	0.143	0.142	193	2.95
SQV05-1037	3151*831	162	0.162	0.161	155	2.37
SQV05-1038	3151*832	191	0.191	0.190	215	3.29

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SAMPLE ID SPONSOR	SAMPLE ID BATTELLE	Zn (µg/l)	Zn µg/ml	Zn blk corr (µg/ml)	SEM Zn (µg/g)	SEM Zn (µmole/g)
SQV05-1051	3151*837	44.8	0.0448	0.0440	164	2.51
SQV05-1052	3151*838	43.1	0.0431	0.0423	179	2.74
SQV05-1053	3151*839	34.4	0.0344	0.0336	129	1.97
SQV05-1054	3151*840 r1	32.6	0.0326	0.0318	102	1.56
SQV05-1054DUP	3151*840 r2	52.1	0.0521	0.0513	210	3.22
SQV05-1055	3151*841	44.9	0.0449	0.0441	202	3.10
SQV05-1056	3151*842	32.7	0.0327	0.0319	112	1.71
Detection Limit		0.310	0.000310	0.000310	0.582	0.00890

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SAMPLE ID SPONSOR	SAMPLE ID BATTELLE	Hg (µg/l)	Hg µg/ml	Hg blk corr (µg/ml)	SEM Hg (µg/g)	SEM Hg (µmole/g)
	Blank R1 042911	0.001U	0.00000	0.0000000	0.00188U	0.0000167 U
	Blank R2 042911	0.001U	0.00000	0.0000000	0.00188U	0.0000167 U
	Blank R1 050211	0.00133	0.00000133	0.0000013	0.00248	0.0000124 U
	Blank R2 050211	0.00323	0.00000323	0.0000032	0.00601	0.0000300
	Blank R1 050311	0.00221	0.00000221	0.0000022	0.00382	0.0000190
	Blank R2 050311	0.001U	0.00000	0.0000000	0.00188U	0.0000167 U
	Blank R1 050411	0.001U	0.00000	0.0000000	0.00188U	0.0000167 U
	Blank R2 050411	0.001U	0.00000	0.0000000	0.00188U	0.0000167 U
	<i>Average</i>		<i>0.000001U</i>			
SQV05-130	3151*387	0.101	0.000101	0.000101	0.135	0.000673
SQV05-131	3151*388	0.0177	0.0000177	0.0000177	0.0258	0.000128
SQV05-132	3151*389	0.00884	0.00000884	0.00000884	0.0458	0.000229
SQV05-132	3151*390	0.00920	0.00000920	0.00000920	0.0142	0.0000708
SQV05-133	3151*391	0.0143	0.0000143	0.0000143	0.0410	0.000204
SQV05-134	3151*392	0.00924	0.00000924	0.00000924	0.0272	0.000136
SQV05-147	3151*393	0.0235	0.0000235	0.0000235	0.0456	0.000227
SQV05-148	3151*394	0.00438	0.00000438	0.00000438	0.0077	0.0000384
SQV05-149	3151*395	0.00805	0.00000805	0.00000805	0.0285	0.000142
SQV05-150	3151*396	0.0143	0.0000143	0.0000143	0.0282	0.000140
SQV05-151	3151*397 r1	0.0208	0.0000208	0.0000208	0.0250	0.000125
SQV05-151DUP	3151*397 r2	0.0308	0.0000308	0.0000308	0.0459	0.000229
SQV05-152	3151*398	0.0176	0.0000176	0.0000176	0.0167	0.0000834
SQV05-165	3151*399	0.0120	0.0000120	0.0000120	0.0331	0.000165
SQV05-166	3151*400	0.00631	0.00000631	0.00000631	0.0114	0.0000567
SQV05-167	3151*401	0.00691	0.00000691	0.00000691	0.0212	0.000106
SQV05-168	3151*402	0.0221	0.0000221	0.0000221	0.0630	0.000314
SQV05-169	3151*403 r1	0.03180	0.0000318	0.0000318	0.0409	0.000204
SQV05-169DUP	3151*403 r2	0.03387	0.0000339	0.0000339	0.0791	0.000395
SQV05-170	3151*404	0.0175	0.0000175	0.0000175	0.0186	0.0000929
SQV05-183	3151*405	0.0131	0.0000131	0.0000131	0.0327	0.000163
SQV05-184	3151*406	0.00726	0.00000726	0.00000726	0.0158	0.0000789
SQV05-185	3151*407	0.01624	0.0000162	0.0000162	0.0297	0.000148
SQV05-186	3151*408	0.01308	0.0000131	0.0000131	0.0193	0.0000964
SQV05-187	3151*409	0.04562	0.0000456	0.0000456	0.0688	0.000343
SQV05-188	3151*410	0.02874	0.0000287	0.0000287	0.0319	0.000159
SQV05-201	3151*411	0.00586	0.00000586	0.00000586	0.0296	0.000147
SQV05-202	3151*412	0.00958	0.00000958	0.00000958	0.0467	0.000233
SQV05-203	3151*413	0.00935	0.00000935	0.00000935	0.0225	0.000112
SQV05-204	3151*414 r1	0.00323	0.00000323	0.00000323	0.00919	0.0000458
SQV05-204DUP	3151*414 r2	0.00472	0.00000472	0.00000472	0.0113	0.0000562
SQV05-205	3151*415	0.00227	0.00000227	0.00000227	0.0107	0.0000536
SQV05-206	3151*416	0.00213	0.00000213	0.00000213	0.0062	0.0000307
SQV05-219	3151*417	0.0252	0.0000252	0.0000252	0.0781	0.000389
SQV05-220	3151*418	0.00759	0.00000759	0.00000759	0.0177	0.0000880
SQV05-221	3151*419	0.0140	0.0000140	0.0000140	0.0205	0.000102
SQV05-222	3151*420	0.0231	0.0000231	0.0000231	0.0498	0.000249
SQV05-223	3151*421	0.00764	0.00000764	0.00000764	0.0108	0.0000539
SQV05-224	3151*422	0.00826	0.00000826	0.00000826	0.0123	0.0000613
SQV05-1027	3151*825	0.0245	0.0000245	0.0000245	0.0303	0.000151
SQV05-1028	3151*826	0.0136	0.0000136	0.0000136	0.0204	0.000102
SQV05-1029	3151*827	0.00816	0.00000816	0.00000816	0.00982	0.0000490
SQV05-1030	3151*828	0.00856	0.00000856	0.00000856	0.00979	0.0000488
SQV05-1031	3151*829	0.00867	0.00000867	0.00000867	0.00974	0.0000486
SQV05-1032	3151*830 redo	0.0118	0.0000118	0.0000118	0.0160	0.0000798
SQV05-1037	3151*831	0.0137	0.0000137	0.0000137	0.0132	0.0000657
SQV05-1038	3151*832	0.00656	0.00000656	0.00000656	0.00742	0.0000370

BATTELLE MARINE SCIENCES LABORATORY

1529 W. Sequim Bay Road

Sequim, WA 98382

(360) 681-3650

Project: ENVVEST Sediment Quality Validation Study 2011**File #:** 3151

SAMPLE ID SPONSOR	SAMPLE ID BATTELLE	Hg (µg/l)	Hg µg/ml	Hg blk corr (µg/ml)	SEM Hg (µg/g)	SEM Hg (µmole/g)
SQV05-1051	3151*837	0.00207	0.00000207	0.00000207	0.00774	0.0000386
SQV05-1052	3151*838	0.00553	0.00000553	0.00000553	0.0234	0.000117
SQV05-1053	3151*839	0.00233	0.00000233	0.00000233	0.00890	0.0000444
SQV05-1054	3151*840 r1	0.001U	0.0000000	0.000001U	0.00188U	0.0000167 U
SQV05-1054DUP	3151*840 r2	0.001U	0.0000000	0.000001U	0.00188U	0.0000167 U
SQV05-1055	3151*841	0.00157	0.00000157	0.00000157	0.00721	0.000036
SQV05-1056	3151*842	0.001U	0.0000000	0.000001U	0.00188U	0.0000167 U
Detection Limit		0.001	0.0000010	0.0000010	0.00188	0.0000167

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Project: ENVVEST Sediment Quality Validation Study 2011**File #:** 3151

SAMPLE ID SPONSOR	Station	Type	SAMPLE ID BATTELLE	% Dry Weight	AVS Batch ID	AVS μmole/g
Detection Limit (batch mean used for AVS)						0.358
<u>AVS/SEM Blanks</u>						
			Method Blank R1 042911		042911AVS	0.269 U
			Method Blank R2 042911		042911AVS	0.269 U
			Method Blank R1 050211		050211AVS	0.277 U
			Method Blank R2 050211		050211AVS	0.277 U
			Method Blank R1 050311		050311AVS	0.258 U
			Method Blank R2 050311		050311AVS	0.258 U
			Method Blank R1 050411		050411AVS	0.340 U
			Method Blank R2 050411		050411AVS	0.340 U
			Mean AVS/SEM Blank			< MDL
<u>Replicate Analysis Results</u>						
SQV05-151	PS09	13-19cm	3151-397 R1	43.7	042911AVS	53.9
SQV05-151DUP	PS09	13-19cm	3151-397 R2	43.7	042911AVS	49.8
			RPD			8%
SQV05-169	PS10	13-19cm	3151-403 R1	39.5	050211AVS	62.4
SQV05-169DUP	PS10	13-19cm	3151-403 R2	39.5	050211AVS	54.1
			RPD			14%
SQV05-204	PS11	9-13cm	3151-414 R1	28.4	050311AVS	78.9
SQV05-204DUP	PS11	9-13cm	3151-414 R2	28.4	050311AVS	81.4
			RPD			3%
SQV05-1054	PS07	9-13cm	3151-840 R1	27.8	050411AVS	78.6
SQV05-1054DUP	PS07	9-13cm	3151-840 R2	27.8	050411AVS	75.9
			RPD			3%
<u>Laboratory Control Sample Results</u>						
LCS r1					042911AVS	0.437
LCS r2					042911AVS	0.369
LCS r3					042911AVS	0.429
Mean BLANK						0.358 U
			Spike Concentration			0.495
			Percent Recovery			88%
						74%
						87%
LCS r1					050211AVS	0.422
LCS r2					050211AVS	0.436
LCS r3					050211AVS	0.449
Mean BLANK						0.358 U
			Spike Concentration			0.483
			Percent Recovery			87%
			Percent Recovery			90%
			Percent Recovery			93%
<u>Laboratory Control Sample Results (cont)</u>						
LCS r1					050311AVS	0.396
LCS r2					050311AVS	0.434
LCS r3					050311AVS	0.506
Mean BLANK						0.358 U
			Spike Concentration			0.483
			Percent Recovery			82%
			Percent Recovery			90%
			Percent Recovery			105%
LCS r1					050411AVS	0.527
LCS r2					050411AVS	0.486
LCS r3					050411AVS	0.488

BATTELLE MARINE SCIENCES LABORATORY

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Sequim, WA 98382

(360) 681-4564

Project: ENVVEST Sediment Quality Validation Study 2011**File #:** 3151

SAMPLE ID	Station	Type	SAMPLE ID	% Dry	AVS	AVS
SPONSOR			BATTELLE	Weight	Batch ID	μmole/g
Detection Limit (batch mean used for AVS)						0.358
Mean BLANK						0.358 U
Spike Concentration						0.495
Percent Recovery						107%
Percent Recovery						98%
Percent Recovery						99%

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Project: ENVVEST Sediment Quality Validation Study 2011

File #: 3151

SAMPLE ID SPONSOR	Station	Type	SAMPLE ID BATTELLE	% Dry Weight	AVS Batch ID	Hg Batch ID	SEM Hg µg/L	SEM Hg µg/g	SEM Hg µmole/g
Detection Limit (batch mean used for AVS)							0.001	0.00188	0.0000167
<u>AVS/SEM Blanks</u>									
			Method Blank R1 042911		042911AVS	050311HGA	0.001U	0.00188	0.0000167 U
			Method Blank R2 042911		042911AVS	050311HGA	0.001U	0.00188	0.0000167 U
			Method Blank R1 050211		050211AVS	050411HGA	0.00133	0.00248	0.0000124 U
			Method Blank R2 050211		050211AVS	050411HGA	0.00323	0.00601	0.0000300
			Method Blank R1 050311		050311AVS	050511HGA	0.00221	0.00382	0.0000190
			Method Blank R2 050311		050311AVS	050511HGA	0.001U	0.00188	0.0000167 U
			Method Blank R1 050411		050411AVS	050511HGA	0.001U	0.00188	0.0000167 U
			Method Blank R2 050411		050411AVS	050511HGA	0.001U	0.00188	0.0000167 U
			Mean AVS/SEM Blank				0.00226		
<u>Replicate (SEM) Analysis Results</u>									
SQV05-151	PS09	13-19cm	3151-397 R1	43.7	042911AVS	050311HGA	0.0208	0.0250	0.000125
SQV05-151DUP	PS09	13-19cm	3151-397 R2	43.7	042911AVS	050311HGA	0.0308	0.0459	0.000229
RPD									59% *
SQV05-169	PS10	13-19cm	3151-403 R1	39.5	050211AVS	050411HGA	0.0318	0.0409	0.000204
SQV05-169DUP	PS10	13-19cm	3151-403 R2	39.5	050211AVS	050411HGA	0.0339	0.0791	0.000395
RPD									64% *
SQV05-204	PS11	9-13cm	3151-414 R1	28.4	050311AVS	050511HGA	0.00323	0.00919	0.0000458
SQV05-204DUP	PS11	9-13cm	3151-414 R2	28.4	050311AVS	050511HGA	0.00472	0.0113	0.0000562
RPD									20%
SQV05-1054	PS07	9-13cm	3151-840 R1	27.8	050411AVS	050511HGA	0.001U	0.00188	0.0000167 U
SQV05-1054DUP	PS07	9-13cm	3151-840 R2	27.8	050411AVS	050511HGA	0.001U	0.00188	0.0000167 U
RPD									NA
<u>Laboratory Duplicates</u>									
SQV05-147	PS09	0-3cm	3151-393 r1	25.7		050311HGA	0.0235		--
SQV05-147	PS09	0-3cm	3151-393 r2	25.7		050311HGA	0.0254		--
RPD							8%		--
SQV05-1037	PS06DUP	0-3cm	3151-831 r1	48.0		050511HGA	0.0137		--
SQV05-1037	PS06DUP	0-3cm	3151-831 r2	48.0		050511HGA	0.0160		--
RPD							15%		--
<u>Laboratory Control Sample Results</u>									
LCS r1						050311HGA	0.0100		
LCS r2						050311HGA	0.0102		
Mean Blank						050311HGA	0.001U		
			Spike Concentration				0.0100		
			Percent Recovery				100%		
			Percent Recovery				102%		
LCS r3						050411HGA	0.0110		
LCS r4						050411HGA	0.0125		
Mean Blank						050411HGA	0.00228		
			Spike Concentration				0.0100		
			Percent Recovery				87%		
			Percent Recovery				102%		
LCS r5						050511HGA	0.0130		
LCS r6						050511HGA	0.0125		
Mean Blank						050511HGA	0.00112		
			Spike Concentration				0.0100		
			Percent Recovery				119%		
			Percent Recovery				114%		

BATTELLE MARINE SCIENCES LABORATORY

1529 W. Sequim Bay Road

Sequim, WA 98382

(360) 681-4564

Project: ENVVEST Sediment Quality Validation Study 2011**File #:** 3151

SAMPLE ID SPONSOR	Station	Type	SAMPLE ID BATTELLE	% Dry Weight	AVS Batch ID	Hg Batch ID	SEM Hg µg/L	SEM Hg µg/g	SEM Hg µmole/g
Detection Limit (batch mean used for AVS)							0.001	0.00188	0.0000167
<u>Standard Reference Material Data</u>									
			1640 Direct / Hg = 1641			050311HGA	1523		
			1640 Direct / Hg = 1641			050411HGA	1528		
			1640 Direct / Hg = 1641			050511HGA	1534		
			Certified/Reference Value				1590		
			Percent Recovery				96%		
							96%		
							96%		
<u>SEM Matrix Spike Recovery</u>									
SQV05-131	PS03	3-6cm	3151-388	32.1		050311HGA	0.0177		
SQV05-131MS	PS03	3-6cm	3151-388 MS	32.1		050311HGA	0.0585		
SQV05-131MSD	PS03	3-6cm	3151-388 MSD	32.1		050311HGA	0.0590		
Amount Spiked							0.0477		
% Recovery, MS							85%		
% Recovery, MSD							86%		
RPD							1%		
SQV05-166	PS10	3-6cm	3151-400	27.9		050311HGA	0.00631		
SQV05-166MS	PS10	3-6cm	3151-400 MS	27.9		050311HGA	0.0243		
SQV05-166MSD	PS10	3-6cm	3151-400 MSD	27.9		050311HGA	0.0249		
Amount Spiked							0.0199		
% Recovery, MS							90%		
% Recovery, MSD							93%		
RPD							3%		
SQV05-184	PS10.1	3-6cm	3151-406	25.2		050411HGA	0.00726		
SQV05-184MS	PS10.1	3-6cm	3151-406 MS	25.2		050411HGA	0.0271		
SQV05-184MSD	PS10.1	3-6cm	3151-406 MSD	25.2		050411HGA	0.0277		
Amount Spiked							0.0199		
% Recovery, MS							99%		
% Recovery, MSD							103%		
RPD							3%		
SQV05-202	PS11	3-6cm	3151-412	23.5		050411HGA	0.00958		
SQV05-202MS	PS11	3-6cm	3151-412 MS	23.5		050411HGA	0.0395		
SQV05-202MSD	PS11	3-6cm	3151-412 MSD	23.5		050411HGA	0.0437		
Amount Spiked							0.0318		
% Recovery, MS							94%		
% Recovery, MSD							107%		
RPD							13%		
SQV05-1031	PS06	13-19cm	3151-829	45.0		050511HGA	0.00867		
SQV05-1031MS	PS06	13-19cm	3151-829 MS	45.0		050511HGA	0.0282		
SQV05-1031MSD	PS06	13-19cm	3151-829 MSD	45.0		050511HGA	0.0287		
Amount Spiked							0.0199		
% Recovery, MS							98%		
% Recovery, MSD							101%		
RPD							2%		
SQV05-1032	PS06	19-25cm	3151-830 Redo	49.6		050511HGA	0.0118		
SQV05-1032MS	PS06	19-25cm	3151-830 MS	49.6		050511HGA	0.0753		
SQV05-1032MSD	PS06	19-25cm	3151-830 MSD	49.6		050511HGA	0.0743		
Amount Spiked							0.0596		
% Recovery, MS							106%		
% Recovery, MSD							105%		
RPD									

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File #: 3151

SAMPLE ID SPONSOR	Station	Type	SAMPLE ID BATTELLE	% Dry Weight	AVS Batch ID	ICP MS Batch ID	SEM Cd µg/L	SEM Cd µg/g	SEM Cd µmole/g	SEM Cu µg/L	SEM Cu µg/g	SEM Cu µmole/g
Detection Limit (batch mean used for AVS)							0.036	0.0676	0.00060	0.040	0.0751	0.00118
<u>Instrument Blanks</u>												
			Acid Blank R1			051211-6100	0.036U			0.04U		
			Acid Blank R2			051211-6100	0.036U			0.04U		
			Acid Blank R3			051611-6100	0.036U			0.04U		
			Acid Blank R4			051611-6100	0.036U			0.04U		
<u>AVS/SEM Blanks</u>												
			Method Blank R1 042911		042911AVS		0.036U	0.0676	0.00060 U	0.076	0.138	0.00217
			Method Blank R2 042911		042911AVS		0.036U	0.0676	0.00060 U	0.04U	0.0725	0.00118 U
			Method Blank R1 050211		050211AVS		0.036U	0.0676	0.00060 U	0.140	0.260	0.00410
			Method Blank R2 050211		050211AVS		0.036U	0.0676	0.00060 U	0.304	0.565	0.00890
			Method Blank R1 050311		050311AVS		0.0369	0.0638	0.00060 U	0.215	0.372	0.00585
			Method Blank R2 050311		050311AVS		0.0398	0.0688	0.000612	0.227	0.392	0.00618
			Method Blank R1 050411		050411AVS		0.036U	0.0676	0.00060 U	0.286	0.651	0.0103
			Method Blank R2 050411		050411AVS		0.036U	0.0676	0.00060 U	0.575	1.31	0.0206
			Mean AVS/SEM Blank				0.0384			0.260		
<u>Replicate (SEM) Analysis Results</u>												
SQV05-151	PS09	13-19cm	3151-397 R1	43.7	042911AVS	051211-6100	0.993	1.19	0.0106	60.7	72.8	1.15
SQV05-151DUP	PS09	13-19cm	3151-397 R2	43.7	042911AVS	051211-6100	0.822	1.22	0.0109	57.6	85.4	1.34
			RPD						2%			16%
SQV05-169	PS10	13-19cm	3151-403 R1	39.5	050211AVS	051211-6100	1.05	1.35	0.0120	40.2	51.4	0.809
SQV05-169DUP	PS10	13-19cm	3151-403 R2	39.5	050211AVS	051211-6100	0.608	1.42	0.0126	36.6	85.0	1.34
			RPD						5%			49% *
SQV05-204	PS11	9-13cm	3151-414 R1	28.4	050311AVS	051611-6100	0.635	1.81	0.0161	18.3	51.5	0.811
SQV05-204DUP	PS11	9-13cm	3151-414 R2	28.4	050311AVS	051611-6100	0.644	1.54	0.0137	17.2	40.5	0.638
			RPD						16%			24%
SQV05-1054	PS07	9-13cm	3151-840 R1	27.8	050411AVS	051611-6100	0.511	1.64	0.0146	11.8	37.1	0.583
SQV05-1054DUP	PS07	9-13cm	3151-840 R2	27.8	050411AVS	051611-6100	0.627	2.57	0.0229	16.5	66.7	1.05
			RPD						44% *			57% *
<u>Standard Reference Material Data</u>												
			1640 Direct / Hg = 1641			051211-6100	23.1			88.9		
			1640 Direct / Hg = 1641			051611-6100	22.1			83.5		
			Certified/Reference Value				22.79			85.2		
			Percent Recovery				101%			104%		
							97%			98%		

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Project: ENVVEST Sediment Quality Validation Study 2011

File #: 3151

SAMPLE ID SPONSOR	Station	Type	SAMPLE ID BATTELLE	% Dry Weight	AVS Batch ID	ICP MS Batch ID	SEM Cd µg/L	SEM Cd µg/g	SEM Cd µmole/g	SEM Cu µg/L	SEM Cu µg/g	SEM Cu µmole/g
Detection Limit (batch mean used for AVS)							0.036	0.0676	0.00060	0.040	0.0751	0.00118
<u>Laboratory Control Sample Results</u>												
LCS r1						051211-6100	2.08			2.13		
LCS r2						051211-6100	2.08			1.91		
LCS r3						051611-6100	2.08			2.13		
LCS r4						051611-6100	2.08			1.91		
Mean Blank							0.036U			0.04U		
			Spike Concentration				2			2		
			Percent Recovery, LCS r1				104%			107%		
			Percent Recovery, LCS r2				104%			96%		
			Percent Recovery, LCS r3				104%			107%		
			Percent Recovery, LCS r4				104%			96%		
<u>SEM Matrix Spike Recovery</u>												
SQV05-132	PS03	6-9cm	3151-389	33.6		051211-6100	0.268			11.1		
SQV05-132MS	PS03	6-9cm	3151-389 MS	33.6		051211-6100	21.2			31.0		
SQV05-132MSD	PS03	6-9cm	3151-389 MSD	33.6		051211-6100	21.1			29.1		
Amount Spiked							20.0			20.0		
% Recovery, MS							105%			100%		
% Recovery, MSD							104%			90%		
RPD							0%			10%		
SQV05-168	PS10	9-13cm	3151-402	30.9		051211-6100	0.496			19.0		
SQV05-168MS	PS10	9-13cm	3151-402 MS	30.9		051211-6100	22.4			42.9		
SQV05-168MSD	PS10	9-13cm	3151-402 MSD	30.9		051211-6100	22.4			42.2		
Amount Spiked							20			20		
% Recovery, MS							110%			120%		
% Recovery, MSD							110%			116%		
RPD							0%			3%		
SQV05-205	PS11	13-19cm	3151-415	27.0		051611-6100	0.371			10.9		
SQV05-205MS	PS11	13-19cm	3151-415 MS	27.0		051611-6100	21.3			30.4		
SQV05-205MSD	PS11	13-19cm	3151-415 MSD	27.0		051611-6100	21.3			30.7		
Amount Spiked							20.0			20.0		
% Recovery, MS							105%			98%		
% Recovery, MSD							105%			99%		
RPD							0%			2%		
SQV05-1051	PS07	0-3cm	3151-837	19.9		051611-6100	0.664			23.0		
SQV05-1051MS	PS07	0-3cm	3151-837 MS	19.9		051611-6100	22.5			219		
SQV05-1051MSD	PS07	0-3cm	3151-837 MSD	19.9		051611-6100	21.9			231		
Amount Spiked							20.0			200		
% Recovery, MS							109%			98%		
% Recovery, MSD							106%			104%		
RPD							3%			6%		

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SAMPLE ID SPONSOR	Station	Type	SAMPLE ID BATTELLE	% Dry Weight	SEM Fe µg/L	SEM Fe µg/g	SEM Fe µmole/g	SEM Mn µg/L	SEM Mn µg/g	SEM Mn µmole/g	SEM Ni µg/L	SEM Ni µg/g	SEM Ni µmole/g
Detection Limit (batch mean used for AVS)					1.0	1.81	0.0325	0.038	0.0689	0.00125	0.073	0.0100	0.000170
<u>Instrument Blanks</u>													
			Acid Blank R1		1.0U			0.00534			0.073U		
			Acid Blank R2		1.0U			0.00427			0.073U		
			Acid Blank R3		1.0U			0.038U			0.073U		
			Acid Blank R4		1.0U			0.038U			0.073U		
<u>AVS/SEM Blanks</u>													
			Method Blank R1 042911		1.0U	1.81	0.0325 U	0.0866	0.156	0.00285	0.073U	0.0100	0.000170 U
			Method Blank R2 042911		1.0U	1.81	0.0325 U	0.0920	0.166	0.00302	0.126	0.227	0.00387
			Method Blank R1 050211		1.0U	1.81	0.0325 U	0.0850	0.158	0.00288	0.172	0.320	0.00545
			Method Blank R2 050211		1.20	2.23	0.0400	0.259	0.482	0.00877	0.852	1.58	0.0270
			Method Blank R1 050311		1.0U	1.81	0.0325 U	0.137	0.237	0.00431	0.183	0.316	0.00539
			Method Blank R2 050311		1.0U	1.81	0.0325 U	0.156	0.270	0.00491	0.111	0.192	0.00327
			Method Blank R1 050411		1.60	3.64	0.0652	0.362	0.825	0.0150	0.170	0.387	0.00660
			Method Blank R2 050411		1.71	3.89	0.0697	0.472	1.08	0.0196	0.309	0.704	0.0120
			Mean AVS/SEM Blank		1.50			0.206			0.275		
<u>Replicate (SEM) Analysis Results</u>													
SQV05-151	PS09	13-19cm	3151-397 R1	43.7	50.1	60.3	1.08	73.3	87.9	1.60	9.30	10.9	0.186
SQV05-151DUP	PS09	13-19cm	3151-397 R2	43.7	42.0	62.5	1.12	69.7	103	1.88	7.41	10.7	0.182
			RPD				4%			16%			2%
SQV05-169	PS10	13-19cm	3151-403 R1	39.5	39.1	50.3	0.900	62.1	79.5	1.45	6.29	7.78	0.132
SQV05-169DUP	PS10	13-19cm	3151-403 R2	39.5	25.6	59.8	1.07	39.4	91.6	1.67	3.84	8.41	0.143
			RPD				17%			14%			8%
SQV05-204	PS11	9-13cm	3151-414 R1	28.4	27.7	78.9	1.41	40.3	114	2.08	6.39	17.5	0.298
SQV05-204DUP	PS11	9-13cm	3151-414 R2	28.4	26.2	62.6	1.12	39.9	94.8	1.73	4.44	10.0	0.171
			RPD				23%			19%			54% *
SQV05-1054	PS07	9-13cm	3151-840 R1	27.8	17.7	56.7	1.01	17.7	56.0	1.02	5.40	16.5	0.281
SQV05-1054DUP	PS07	9-13cm	3151-840 R2	27.8	28.8	118	2.12	24.9	101	1.84	9.35	37.4	0.636
			RPD				70% *			58% *			77% *
<u>Standard Reference Material Data</u>													
			1640 Direct / Hg = 1641		28.2			127.0			28.4		
			1640 Direct / Hg = 1641		25.6			114.0			26.1		
			Certified/Reference Value		34.3			121.5			27.4		
			Percent Recovery		82%			105%			104%		
					75% &			94%			95%		

BATTELLE MARINE SCIENCES LABORATORY

1529 W. Sequim Bay Road

Sequim, WA 98382

(360) 681-4564

Project: ENVVEST Sediment Quality Validation Study 2011

File #: 3151

SAMPLE ID SPONSOR	Station	Type	SAMPLE ID BATTELLE	% Dry Weight	SEM Fe µg/L	SEM Fe µg/g	SEM Fe µmole/g	SEM Mn µg/L	SEM Mn µg/g	SEM Mn µmole/g	SEM Ni µg/L	SEM Ni µg/g	SEM Ni µmole/g
Detection Limit (batch mean used for AVS)					1.0	1.81	0.0325	0.038	0.0689	0.00125	0.073	0.0100	0.000170
<u>Laboratory Control Sample Results</u>													
LCS r1					2.09			2.08			2.09		
LCS r2					1.93			2.01			1.93		
LCS r3					2.09			2.08			2.09		
LCS r4					1.93			2.01			1.93		
Mean Blank					1.0U			0.00534			0.073U		
			Spike Concentration		2			2			2		
			Percent Recovery, LCS r1		105%			104%			105%		
			Percent Recovery, LCS r2		97%			100%			97%		
			Percent Recovery, LCS r3		105%			104%			105%		
			Percent Recovery, LCS r4		97%			100%			97%		
<u>SEM Matrix Spike Recovery</u>													
SQV05-132	PS03	6-9cm	3151-389	33.6	13.0			12.6			2.25		
SQV05-132MS	PS03	6-9cm	3151-389 MS	33.6	33.2			33.4			22.7		
SQV05-132MSD	PS03	6-9cm	3151-389 MSD	33.6	32.4			32.1			22.7		
Amount Spiked					20.0			20.0			20.0		
% Recovery, MS					101%			104%			102%		
% Recovery, MSD					97%			98%			102%		
RPD					4%			6%			0%		
SQV05-168	PS10	9-13cm	3151-402	30.9	26.5			37.3			3.66		
SQV05-168MS	PS10	9-13cm	3151-402 MS	30.9	252			265			26.4		
SQV05-168MSD	PS10	9-13cm	3151-402 MSD	30.9	230			242			26.5		
Amount Spiked					200			200			20		
% Recovery, MS					113%			114%			114%		
% Recovery, MSD					102%			102%			114%		
RPD					10%			11%			0%		
SQV05-205	PS11	13-19cm	3151-415	27.0	17.9			17.3			2.87		
SQV05-205MS	PS11	13-19cm	3151-415 MS	27.0	212			214			22.4		
SQV05-205MSD	PS11	13-19cm	3151-415 MSD	27.0	202			209			23.3		
Amount Spiked					200			200			20.0		
% Recovery, MS					97%			98%			98%		
% Recovery, MSD					92%			96%			102%		
RPD					5%			3%			5%		
SQV05-1051	PS07	0-3cm	3151-837	19.9	27.7			38.2			11.0		
SQV05-1051MS	PS07	0-3cm	3151-837 MS	19.9	217			233			206		
SQV05-1051MSD	PS07	0-3cm	3151-837 MSD	19.9	236			251			219		
Amount Spiked					200			200			200		
% Recovery, MS					95%			97%			98%		
% Recovery, MSD					104%			106%			104%		
RPD					10%			9%			6%		

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SAMPLE ID SPONSOR	Station	Type	SAMPLE ID BATTELLE	% Dry Weight	SEM Pb µg/L	SEM Pb µg/g	SEM Pb µmole/g	SEM Ag µg/L	SEM Ag µg/g	SEM Ag µmole/g	SEM Zn µg/L	SEM Zn µg/g	SEM Zn µmole/g
Detection Limit (batch mean used for AVS)					0.03	0.0563	0.000272	0.032	0.0601	0.000557	0.31	0.582	0.00890
<u>Instrument Blanks</u>													
			Acid Blank R1		0.03U			0.032U			0.31U		
			Acid Blank R2		0.03U			0.032U			0.31U		
			Acid Blank R3		0.03U			0.032U			0.31U		
			Acid Blank R4		0.03U			0.032U			0.31U		
<u>AVS/SEM Blanks</u>													
			Method Blank R1 042911		0.03U	0.0563	0.000272 U	0.032U	0.0601	0.000557 U	1.19	2.15	0.0329
			Method Blank R2 042911		0.03U	0.0563	0.000272 U	0.032U	0.0601	0.000557 U	0.407	0.735	0.0112
			Method Blank R1 050211		0.03U	0.0563	0.000272 U	0.032U	0.0601	0.000557 U	1.26	2.34	0.0358
			Method Blank R2 050211		0.0620	0.115	0.000556	0.032U	0.0601	0.000557 U	2.19	4.07	0.0623
			Method Blank R1 050311		0.0696	0.120	0.000581	0.032U	0.0601	0.000557 U	0.499	0.863	0.0132
			Method Blank R2 050311		0.0819	0.142	0.000683	0.032U	0.0601	0.000557 U	0.765	1.32	0.0202
			Method Blank R1 050411		0.03U	0.0563	0.000272 U	0.032U	0.0601	0.000557 U	0.31U	0.582	0.00890 U
			Method Blank R2 050411		0.0586	0.133	0.000644	0.032U	0.0601	0.000557 U	0.31U	0.582	0.00890 U
			Mean AVS/SEM Blank		0.0680			0.032U			1.05		
<u>Replicate (SEM) Analysis Results</u>													
SQV05-151	PS09	13-19cm	3151-397 R1	43.7	69.6	83.7	0.404	0.176	0.212	0.00196	194	232	3.56
SQV05-151DUP	PS09	13-19cm	3151-397 R2	43.7	54.0	80.3	0.388	0.153	0.228	0.00211	184	273	4.17
			RPD				4%			7%			16%
SQV05-169	PS10	13-19cm	3151-403 R1	39.5	112	143.9	0.695	0.167	0.215	0.00199	194	248	3.80
SQV05-169DUP	PS10	13-19cm	3151-403 R2	39.5	57.4	134.1	0.647	0.144	0.337	0.00312	116	269	4.12
			RPD				7%			44% *			8%
SQV05-204	PS11	9-13cm	3151-414 R1	28.4	20.1	57.2	0.276	0.158	0.450	0.00417	52.6	148	2.26
SQV05-204DUP	PS11	9-13cm	3151-414 R2	28.4	24.0	57.3	0.276	0.104	0.248	0.00230	57.1	135	2.06
			RPD				0%			58% *			9%
SQV05-1054	PS07	9-13cm	3151-840 R1	27.8	14.8	47.3	0.228	0.0864	0.277	0.00256	32.6	102	1.56
SQV05-1054DUP	PS07	9-13cm	3151-840 R2	27.8	17.8	72.9	0.352	0.106	0.435	0.00403	52.1	210	3.22
			RPD				43% *			44% *			70% *
<u>Standard Reference Material Data</u>													
			1640 Direct / Hg = 1641		27.0			6.76			55.1		
			1640 Direct / Hg = 1641		25.9			6.47			50.9		
			Certified/Reference Value		27.89			7.62			53.2		
			Percent Recovery		97%			89%			104%		
					93%			85%			96%		

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Project: ENVVEST Sediment Quality Validation Study 2011

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SAMPLE ID SPONSOR	Station	Type	SAMPLE ID BATTELLE	% Dry Weight	SEM Pb µg/L	SEM Pb µg/g	SEM Pb µmole/g	SEM Ag µg/L	SEM Ag µg/g	SEM Ag µmole/g	SEM Zn µg/L	SEM Zn µg/g	SEM Zn µmole/g
Detection Limit (batch mean used for AVS)					0.03	0.0563	0.000272	0.032	0.0601	0.000557	0.31	0.582	0.00890
<u>Laboratory Control Sample Results</u>													
LCS r1					2.03			2.02			2.15		
LCS r2					2.04			1.88			1.96		
LCS r3					2.03			2.02			2.15		
LCS r4					2.04			1.88			1.96		
Mean Blank					0.03U			0.032U			0.31U		
			Spike Concentration		2			2			2		
			Percent Recovery, LCS r1		102%			101%			108%		
			Percent Recovery, LCS r2		102%			94%			98%		
			Percent Recovery, LCS r3		102%			101%			108%		
			Percent Recovery, LCS r4		102%			94%			98%		
<u>SEM Matrix Spike Recovery</u>													
SQV05-132	PS03	6-9cm	3151-389	33.6	13.6			0.083			28.4		
SQV05-132MS	PS03	6-9cm	3151-389 MS	33.6	33.7			20.2			225		
SQV05-132MSD	PS03	6-9cm	3151-389 MSD	33.6	34.0			19.2			206		
Amount Spiked					20.0			20.0			200		
% Recovery, MS					101%			101%			98%		
% Recovery, MSD					102%			96%			89%		
RPD					1%			5%			10%		
SQV05-168	PS10	9-13cm	3151-402	30.9	29.9			0.108			71.5		
SQV05-168MS	PS10	9-13cm	3151-402 MS	30.9	49.8			20.9			272		
SQV05-168MSD	PS10	9-13cm	3151-402 MSD	30.9	51.8			21.3			274		
Amount Spiked					20			20			200		
% Recovery, MS					100%			104%			100%		
% Recovery, MSD					110%			106%			101%		
RPD					10%			2%			1%		
SQV05-205	PS11	13-19cm	3151-415	27.0	11.9			0.07			30.7		
SQV05-205MS	PS11	13-19cm	3151-415 MS	27.0	31.6			19.3			227		
SQV05-205MSD	PS11	13-19cm	3151-415 MSD	27.0	32.5			19.3			219		
Amount Spiked					20.0			20.0			200		
% Recovery, MS					99%			96%			98%		
% Recovery, MSD					103%			96%			94%		
RPD					4%			0%			4%		
SQV05-1051	PS07	0-3cm	3151-837	19.9	17.5			0.102			44.8		
SQV05-1051MS	PS07	0-3cm	3151-837 MS	19.9	38.7			20.2			250		
SQV05-1051MSD	PS07	0-3cm	3151-837 MSD	19.9	38.4			20.1			247		
Amount Spiked					20.0			20.0			200		
% Recovery, MS					106%			100%			103%		
% Recovery, MSD					105%			100%			101%		
RPD					1%			0%			1%		

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1529 W. Sequim Bay Road

Sequim, WA 98382

(360) 681-3650

Project: ENVVEST Sediment Quality Validation Study 2011**File #:** 3151

SPONSOR ID	Station	Type	MSL ID	Receipt Date	Collection Date	Extraction Date	AVS Analysis Date	SEM Hg Analysis Date	SEM Analysis Date	Suggested 14 day Holding Time Expired	HT Exceeded by x Days
			Blank R1 042911			04/29/2011	04/29/2011		05/12/2011		
			Blank R2 042911			04/29/2011	04/29/2011		05/12/2011		
			Blank R1 050211			05/02/2011	05/02/2011		05/12/2011		
			Blank R2 050211			05/02/2011	05/02/2011		05/12/2011		
			Blank R1 050311			05/03/2011	05/03/2011		05/16/2011		
			Blank R2 050311			05/03/2011	05/03/2011		05/16/2011		
			Blank R1 050411			05/04/2011	05/04/2011		05/16/2011		
			Blank R2 050411			05/04/2011	05/04/2011		05/16/2011		
SQV05-130	PS03	0-3cm	3151-387	4/28/2011	04/27/2011	04/29/2011	4/29/2011		05/12/2011	05/11/2011	-12
SQV05-131	PS03	3-6cm	3151-388	4/28/2011	04/27/2011	04/29/2011	4/29/2011		05/12/2011	05/11/2011	-12
SQV05-132	PS03	6-9cm	3151-389	4/28/2011	04/27/2011	04/29/2011	4/29/2011		05/12/2011	05/11/2011	-12
SQV05-132	PS03	9-13cm	3151-390	4/28/2011	04/27/2011	04/29/2011	4/29/2011		05/12/2011	05/11/2011	-12
SQV05-133	PS03	13-19cm	3151-391	4/28/2011	04/27/2011	04/29/2011	4/29/2011		05/12/2011	05/11/2011	-12
SQV05-134	PS03	19-25cm	3151-392	4/28/2011	04/27/2011	04/29/2011	04/29/2011		05/12/2011	05/11/2011	-12
SQV05-147	PS09	0-3cm	3151-393	4/28/2011	04/27/2011	04/29/2011	04/29/2011		05/12/2011	05/11/2011	-12
SQV05-148	PS09	3-6cm	3151-394	4/28/2011	04/27/2011	04/29/2011	04/29/2011		05/12/2011	05/11/2011	-12
SQV05-149	PS09	6-9cm	3151-395	4/28/2011	04/27/2011	04/29/2011	04/29/2011		05/12/2011	05/11/2011	-12
SQV05-150	PS09	9-13cm	3151-396	4/28/2011	04/27/2011	04/29/2011	04/29/2011		05/12/2011	05/11/2011	-12
SQV05-151	PS09	13-19cm	3151-397 R1	4/28/2011	04/27/2011	04/29/2011	04/29/2011		05/12/2011	05/11/2011	-12
SQV05-151	PS09	13-19cm	3151-397 R2	4/28/2011	04/27/2011	04/29/2011	04/29/2011		05/12/2011	05/11/2011	-12
SQV05-152	PS09	19-23cm	3151-398	4/28/2011	04/27/2011	04/29/2011	04/29/2011		05/12/2011	05/11/2011	-12
SQV05-165	PS10	0-3cm	3151-399	4/28/2011	04/27/2011	04/29/2011	04/29/2011		05/12/2011	05/11/2011	-12
SQV05-166	PS10	3-6cm	3151-400	4/28/2011	04/27/2011	04/29/2011	04/29/2011		05/12/2011	05/11/2011	-12
SQV05-167	PS10	6-9cm	3151-401	4/28/2011	04/27/2011	05/02/2011	05/02/2011		05/12/2011	05/11/2011	-9
SQV05-168	PS10	9-13cm	3151-402	4/28/2011	04/27/2011	05/02/2011	05/02/2011		05/12/2011	05/11/2011	-9
SQV05-169	PS10	13-19cm	3151-403 R1	4/28/2011	04/27/2011	05/02/2011	05/02/2011		05/12/2011	05/11/2011	-9
SQV05-169	PS10	13-19cm	3151-403 R2	4/28/2011	04/27/2011	05/02/2011	05/02/2011		05/12/2011	05/11/2011	-9
SQV05-170	PS10	19-25cm	3151-404	4/28/2011	04/27/2011	05/02/2011	05/02/2011		05/12/2011	05/11/2011	-9
SQV05-183	PS10.1	0-3cm	3151-405	4/28/2011	04/27/2011	05/02/2011	05/02/2011		05/12/2011	05/11/2011	-9
SQV05-184	PS10.1	3-6cm	3151-406	4/28/2011	4/27/2011	05/02/2011	05/02/2011		05/12/2011	05/11/2011	-9
SQV05-185	PS10.1	6-9cm	3151-407	4/28/2011	4/27/2011	05/02/2011	05/02/2011		05/12/2011	05/11/2011	-9
SQV05-186	PS10.1	9-13cm	3151-408	4/28/2011	4/27/2011	05/02/2011	05/02/2011		05/12/2011	05/11/2011	-9
SQV05-187	PS10.1	13-19cm	3151-409	4/28/2011	4/27/2011	05/02/2011	05/02/2011		05/12/2011	05/11/2011	-9
SQV05-188	PS10.1	19-24cm	3151-410	4/28/2011	4/27/2011	05/02/2011	05/02/2011		05/12/2011	05/11/2011	-9
SQV05-201	PS11	0-3cm	3151-411	4/28/2011	4/27/2011	05/02/2011	05/02/2011		05/12/2011	05/11/2011	-9
SQV05-202	PS11	3-6cm	3151-412	4/28/2011	4/27/2011	05/02/2011	05/02/2011		05/12/2011	05/11/2011	-9
SQV05-203	PS11	6-9cm	3151-413	4/28/2011	4/27/2011	05/02/2011	05/02/2011		05/12/2011	05/11/2011	-9
SQV05-204	PS11	9-13cm	3151-414 R1	4/28/2011	4/27/2011	05/03/2011	05/03/2011		05/16/2011	05/11/2011	-8

Summary Dates

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SPONSOR ID	Station	Type	MSL ID	Receipt Date	Collection Date	Extraction Date	AVS Analysis Date	SEM Hg Analysis Date	SEM Analysis Date	Suggested 14 day Holding Time Expired	HT Exceeded by x Days
SQV05-204	PS11	9-13cm	3151-414 R2	4/28/2011	4/27/2011	05/03/2011	05/03/2011		05/16/2011	05/11/2011	-8
SQV05-205	PS11	13-19cm	3151-415	4/28/2011	4/27/2011	05/03/2011	05/03/2011		05/16/2011	05/11/2011	-8
SQV05-206	PS11	19-25cm	3151-416	4/28/2011	4/27/2011	05/03/2011	05/03/2011		05/16/2011	05/11/2011	-8
SQV05-219	PS08	0-3cm	3151-417	4/28/2011	4/27/2011	05/03/2011	05/03/2011		05/16/2011	05/11/2011	-8
SQV05-220	PS08	3-6cm	3151-418	4/28/2011	4/27/2011	05/03/2011	05/03/2011		05/16/2011	05/11/2011	-8
SQV05-221	PS08	6-9cm	3151-419	4/28/2011	4/27/2011	05/03/2011	05/03/2011		05/16/2011	05/11/2011	-8
SQV05-222	PS08	9-13cm	3151-420	4/28/2011	4/27/2011	05/03/2011	05/03/2011		05/16/2011	05/11/2011	-8
SQV05-223	PS08	13-19cm	3151-421	4/28/2011	4/27/2011	05/03/2011	05/03/2011		05/16/2011	05/11/2011	-8
SQV05-224	PS08	19-25cm	3151-422	4/28/2011	4/27/2011	05/03/2011	05/03/2011		05/16/2011	05/11/2011	-8
SQV05-1027	PS06	0-3cm	3151-825	4/29/2011	4/29/2011	05/03/2011	05/03/2011		05/16/2011	05/13/2011	-10
SQV05-1028	PS06	3-6cm	3151-826	4/29/2011	4/29/2011	05/03/2011	05/03/2011		05/16/2011	05/13/2011	-10
SQV05-1029	PS06	6-9cm	3151-827	4/29/2011	4/29/2011	05/03/2011	05/03/2011		05/16/2011	05/13/2011	-10
SQV05-1030	PS06	9-13cm	3151-828	4/29/2011	4/29/2011	05/03/2011	05/03/2011		05/16/2011	05/13/2011	-10
SQV05-1031	PS06	13-19cm	3151-829	4/29/2011	4/29/2011	05/03/2011	05/03/2011		05/16/2011	05/13/2011	-10
SQV05-1032	PS06	19-25cm	3151-830 Redo	4/29/2011	4/29/2011	05/04/2011	05/04/2011		05/16/2011	05/13/2011	-9
SQV05-1037	PS06DUP	0-3cm	3151-831	4/29/2011	4/29/2011	05/04/2011	05/04/2011		05/16/2011	05/13/2011	-9
SQV05-1038	PS06DUP	3-6cm	3151-832	4/29/2011	4/29/2011	05/04/2011	05/04/2011		05/16/2011	05/13/2011	-9
SQV05-1051	PS07	0-3cm	3151-837	4/29/2011	4/29/2011	05/04/2011	05/04/2011		05/16/2011	05/13/2011	-9
SQV05-1052	PS07	3-6cm	3151-838	4/29/2011	4/29/2011	05/04/2011	05/04/2011		05/16/2011	05/13/2011	-9
SQV05-1053	PS07	6-9cm	3151-839	4/29/2011	4/29/2011	05/04/2011	05/04/2011		05/16/2011	05/13/2011	-9
SQV05-1054	PS07	9-13cm	3151-840 R1	4/29/2011	4/29/2011	05/04/2011	05/04/2011		05/16/2011	05/13/2011	-9
SQV05-1054	PS07	9-13cm	3151-840 R2	4/29/2011	4/29/2011	05/04/2011	05/04/2011		05/16/2011	05/13/2011	-9
SQV05-1055	PS07	13-19cm	3151-841	4/29/2011	4/29/2011	05/04/2011	05/04/2011		05/16/2011	05/13/2011	-9
SQV05-1056	PS07	19-25cm	3151-842	4/29/2011	4/29/2011	05/04/2011	05/04/2011		05/16/2011	05/13/2011	-9

QAI/QC NARRATIVE

PROJECT: 2011 Sediment Verification Study: SQV05 (partial) Clear Core Sediment AVS/SEM

PARAMETER: Acid Volatile Sulfide (AVS) and Simultaneously Extracted Metals (SEM) to include: silver (SEM Ag), cadmium (SEM Cd), copper (SEM Cu), iron (SEM Fe), mercury (SEM Hg), manganese (SEM Mn), nickel (SEM Ni), lead (SEM Pb), and zinc (SEM Zn)

LABORATORY: Pacific Northwest National Laboratory (PNNL), Battelle Marine Sciences Laboratory (MSL), Sequim, Washington

MATRIX: SQV05: Sediment core profiles 0-25 cm

SAMPLE CUSTODY AND PROCESSING: *SQV05(partial)*
 The SQV05 sediment samples were collected at PSNS&IMF by the U.S. Navy and MSL on 04/27/11 and 04/29/11 (see QAPP Johnston et al. 2011). Three types of samples were collected by Navy divers: 1) squeeze core for porewater and sediment (reported separately), 2) clear cores (partially reported here), and 3) surface grabs (0-6cm). The clear cores consisted of a 40 cm cellulose acetate butyrate (CAB) plastic core tube with a 5.5 cm I.D. One clear core was collected at each of the eight sampling locations and one duplicate core was collected. The core was extruded and sub-sectioned at the following intervals: 0-3cm, 3-6cm, 6-9cm, 9-13cm, 13-19cm, and 19-25cm if core length allowed. The samples were split for AVS/SEM, total metals, organics, grain size, and screening analyses. This narrative addresses only the AVS/SEM analyses. The samples were stored refrigerated ($\pm 4^{\circ}\text{C}$) until analyses within 14 days of collection.

The following lists information on sample receipt and processing activities:

Lab Sample IDs:	3151*387-422, 825-832, 837-842
Description:	Sediment core profiles
Sample collection dates	04/27/11, 04/29/11
Laboratory arrival date	04/28/11, 04/29/11
Extraction	04/29/11, 05/02/11, 05/03/11, and 05/04/11
AVS Analysis	04/29/11, 05/02/11, 05/03/11, and 05/04/11
ICP-MS Analysis (SEM Metals)	05/12/11, 05/16/11
SEM Hg Analysis	05/03/11, 05/04/11, and 05/05/11

QAI/QC NARRATIVE

DATA QUALITY OBJECTIVES:

Analyte	Analytical Method	Range of Spike Recovery	SRM Percent Difference (PD)	Replicate Precisions (RPD)	Achieved MDL ¹
AVS	Spectrometer	70-130%	≤20%	≤30%	0.0358 μmole/g
SEM Cd	ICP-MS	70-130%	≤20%	≤30%	0.036 μg/L
SEM Cu	ICP-MS	70-130%	≤20%	≤30%	0.040 μg/L
SEM Fe	ICP-MS	70-130%	≤20%	≤30%	1.0 μg/L
SEM Hg	CVAF	70-130%	≤20%	≤30%	0.001 μg/L
SEM Mn	ICP-MS	70-130%	≤20%	≤30%	0.038 μg/L
SEM Ni	ICP-MS	70-130%	≤20%	≤30%	0.073 μg/L
SEM Pb	ICP-MS	70-130%	≤20%	≤30%	0.030 μg/L
SEM Ag	ICP-MS	70-130%	≤20%	≤30%	0.032 μg/L
SEM Zn	ICP-MS	70-130%	≤20%	≤30%	0.31 μg/L

¹ Batch average is reported for AVS; lowest passing standard used for Fe

METHODS:

Acid volatile sulfide (AVS) has been used to predict the sediment toxicity of silver (Ag), copper (Cu), cadmium (Cd), nickel (Ni), lead (Pb), mercury (Hg) and zinc (Zn) (Ankley et al. 1996; Berry et al. 1996). This relationship results from the volatilization of AVS present in sediment and simultaneous release of previously sulfide bound metals (SEM). As a metal sulfide complex, early research indicates that metals are not available for uptake by benthic organisms. Under this assumption, the amount of AVS present in sediment limits the metal bioavailability and subsequent toxicity in sediments. Sulfide is an important binding component in modeling metal sorption in sediments (Morse et al. 1987). In the presence of excess sulfide, most of the reactive metal will form insoluble metal sulfides. The AVS becomes an indicator of the ratio of available sulfide to the SEM metals and allows the partitioning of free aqueous phase metal and solid phase metal in sediments. The five divalent metals (Cd, Ni, Cu, Pb and Zn) plus Ag form metal sulfide complexes. If the molar ratios of the SEMs are greater than that of the AVS, the excess fraction of the metals may be considered to have a high potential for bioavailability. For divalent metals, one mole of SEM will react with one mole of AVS. For Ag, one mole of Ag reacts with two moles of AVS.

Sediment samples were extracted and analyzed for AVS in accordance with Battelle SOP MSL-C-001. This procedure is based on a peer-reviewed, published procedure for the analysis of AVS in sediment and dissolved sulfide in aqueous samples, adopted from a draft USEPA Method (Allen et al. 1991.). In this method, sulfide in the sample is converted to hydrogen sulfide by the addition of hydrochloric acid at room temperature. The hydrogen sulfide (H₂S) is purged from the sample by an inert gas and trapped in a sodium hydroxide (NaOH) solution. With the addition of a mixed-diamine reagent (MDR), the sulfide is converted to methylene blue and measured on a spectrometer. AVS results were reported in units of μmole/g on a dry-weight basis.

The SEM extracts were analyzed for Hg using cold-vapor atomic fluorescence (CVAF) spectroscopy according to Battelle SOP MSL-I-013, *Total Mercury in Aqueous Samples by CVAF*, following EPA Method 1631 revision E.

The SEM extracts were analyzed for all 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 analysis guidelines for this procedure are adapted from USEPA Method 1638 Determination of Trace Elements in Ambient Waters by Inductively Coupled Plasma-Mass Spectrometry. The SEM metal

QAI/QC NARRATIVE

solution concentrations are determined in units of µg/L and then converted to µg SEM/g of sediment extracted for AVS. These data are further converted to µmole/g for each SEM metal.

HOLDING TIMES:

The suggested holding time for AVS in sediment is 14 days per Battelle SOP MSL-C-001. The holding time may be extended if the samples are frozen and the oxidized layer is removed prior to analyses. The suggested holding time is calculated from day of collection to day of extraction (preservation of the sulfide). All samples were analyzed within the suggested holding time.

DETECTION LIMITS:

Analytical results were reported to laboratory achieved detection limits (MDL) derived from the annually verified Sediment MDL Study. The MDL study was conducted in compliance with 40 CFR Part 136 Appendix B Revision 1.11, which entails the analyses of at least seven replicates of the matrix (quartz sand) to calculate the MDL value. The AVS MDL was determined using low level standards as the sediment matrix is not stable for AVS. Since there is no current Fe MDL for ICP-MS in this matrix, the lowest passing calibration standard was used to assess the data.

Data were evaluated and flagged in accordance to the following criteria:

- U Analyte not detected at or above laboratory achieved detection limit, MDL reported
- J Value reported is below the RL, but above the MDL.
- & Accuracy results outside QC criteria of $\leq 20\%$ PD (SRM).
- * Precision results outside QC criteria of $\leq 30\%$ RPD.
- N Spiked sample recovery not within the QC limits of 70-130%.
- B Analyte detected in the method blank above the RL, sample concentration < 10 times detected blank value.
- b Reagent blank corrected using mean reagent blank concentration.

METHOD BLANKS:

Eight AVS Blanks were prepared with this group of samples. No AVS was detectable above the batch specific MDL. The AVS/SEM blanks were created during the AVS analysis and the creation of the SEM extract for each sample. It consists of deionized water added to the bubblers along with hydrochloric acid used to oxidize the AVS from the sediment matrix. The blank SEM extracts were analyzed for the metals. Detectable levels of metals are typical for this process since the trace levels of metals are present in the reagents. The detected levels were subtracted from the SEM concentration prior to molar calculations. The average SEM blank concentration was less than ten times the MDL for all metals.

LABORATORY CONTROL SAMPLE ACCURACY:

Duplicate or triplicate laboratory control samples (LCS) samples were prepared and analyzed with each analytical batch of AVS. All recoveries for the AVS LCS were within the QC criterion of 70-130% recovery. Since only AVS is spiked in the AVS LCS samples, the SEM collected from the AVS blank was post spiked with the SEM metals to generate an LCS for the SEM analysis. The SEM blank spike or LCS was within the QC criterion of 70-130% recovery.

STANDARD REFERENCE MATERIAL ACCURACY:

A standard reference material (SRM) for AVS is not available due to the reactivity of this sulfur species. A riverine water SRM (1640) was analyzed with the SEM extract by ICP-MS and SRM 1641 for Hg to provide a measure of instrument accuracy. The percent recoveries between the measured and certified or reference values were within the method QC criterion

QAI/QC NARRATIVE

of $\pm 20\%$ for all metals except one replicate for Fe (75%). This is considered an ancillary parameter and does not impact data quality.

MATRIX SPIKE ACCURACY:

Matrix spikes for AVS are not performed due to the volatile nature of the AVS in the sample. Once the sediment is added, the extraction vessel is sealed and acid is only added through a valve. The analyses of the SEM extracts included the preparation of matrix spike samples in duplicate (MS/MSD). An aliquot of the SEM extract was spiked in duplicate with all SEM metals and analyzed with the batch. The matrix spike recoveries were within the QC acceptance criterion of $\pm 30\%$.

LABORATORY PRECISION:

A minimum of one laboratory duplicate was extracted and analyzed with each analytical batch. The duplicate analyses for AVS consist of the extraction of two different aliquots of sediment from the same sample container. The SEM precision was calculated once the SEM metal concentrations ($\mu\text{g/L}$), determined from the ICP-MS, were converted to a mass basis ($\mu\text{g/g}$) to account for differences in sample mass extracted. Analytical precision was also assessed by the analyses of matrix spikes in duplicate.

Both the samples were analyzed in duplicate. Precision was expressed as the relative percent difference (RPD) of replicate results. A majority of the RPD values were within the QC criterion of $\leq 30\%$. The exceedances occurred primarily on one sample and may be attributed to the presence of these metals in forms other than metal sulfide. For example, the shipyard operations results in paint chips, metal filings, etc. The lack of reproducibility was not attributed to laboratory conditions, but rather field heterogeneity. This has been documented in other sediment samples collected near the piers within the shipyard.

Laboratory precision was calculated using the duplicate matrix spikes. The precision was within the QC criterion for all MS/MSD sets.

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**ENVVEST Sinclair and Dyes Inlet
 2011 Sediment Verification Study
 METALS AND SULFIDE IN POREWATER**

MSL Code	Station ID	Sponsor Code	Depth (cm)	Collection Date	Dissolved Sulfide	Hg	Fe	Cr	Cu	Mn	Ni	Zn	Cd	Pb
				MDL (10x)	0.027	1	10	0.58	0.040	0.038	0.073	0.31	0.036	0.030
				RL	0.086	3	32	1.8	0.13	0.12	0.23	1.0	0.11	0.10
				Units:	μmole/mL	ng/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L	μg/L
				Analysis Batch ID	042811DS	51011	1051811A	50411	50411	50411	50411	50411	50411	50411
				CAS No.	18496-25-8	7439-97-6	7439-89-6	7440-47-3	7440-50-8	7439-96-5	7440-02-0	7440-66-6	7440-43-9	7439-92-1
Squeeze Cores														
3151-244	PS03	SQV05-046	0-3cm	04/27/11	0.0323 J	3.14	520	2.22	1.12	590	4.85	6.28	0.036 U	0.030 U
3151-245	PS03	SQV05-047	3-6cm	04/27/11	0.322	3.47	26.2 J	3.84	1.22	168	6.11	1.92	0.036 U	0.030 U
3151-246	PS03	SQV05-048	6-9cm	04/27/11	0.453	2.27 J	17.8 J	5.08	1.11	80.5	6.76	1.93	0.036 U	0.030 U
3151-247	PS03	SQV05-049	9-13cm	04/27/11	0.782	1.95 J	10 U	6.48	0.905	37.5	6.49	1.78	0.036 U	0.030 U
3151-248	PS03	SQV05-050	13-19cm	04/27/11	1.14	5.08	10 U	8.38	0.818	1.70	5.50	1.99	0.036 U	0.030 U
3151-249	PS03	SQV05-051	19-25cm	04/27/11	1.28	6.58	11.6 J	8.83	0.374	0.500	5.68	2.12	0.036 U	0.030 U
3151-250	PS09	SQV05-064	0-3cm	04/27/11	0.027 U	1.91 J	406	4.85	1.55	370	7.30	10.6	0.036 U	0.030 U
3151-251	PS09	SQV05-065	3-6cm	04/27/11	0.0593 J	2.02 J	32.3	5.06	1.88	133	7.02	2.57	0.036 U	0.030 U
3151-252	PS09	SQV05-066	6-9cm	04/27/11	0.188	2.53 J	18.4 J	5.47	1.80	92.4	6.93	3.33	0.036 U	0.030 U
3151-253	PS09	SQV05-067	9-13cm	04/27/11	0.122	4.99	13.9 J	5.28	1.81	75.2	6.79	6.83	0.036 U	0.030 U
3151-254	PS09	SQV05-068	13-19cm	04/27/11	0.172	3.04	23.8 J	5.34	1.91	84.7	5.36	3.08	0.036 U	0.030 U
3151-255	PS09	SQV05-069	19-25cm	04/27/11	0.0340 J	18.0	28.0 J	4.52	2.05	131	6.51	4.22	0.036 U	0.030 U

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Quality Control Table
ENVVEST Sinclair and Dyes Inlet
2011 Sediment Verification Study
SULFIDE IN POREWATER

MSL Code	Station ID	Sponsor Code	Depth (cm)	Collection Date	Dissolved Sulfide
MDL (10x)					0.027
RL					0.086
Units:					μmole/mL
Analysis Batch ID					042811DS
CAS No.					18496-25-8
<u>Procedural Blank</u>					
Blank 1		MB		04/28/11	0.027 U
Blank 2		MB		04/28/11	0.027 U
<u>Laboratory Control Sample Results (Blank Spike)</u>					
LCS 1		LCS		04/28/11	0.385
LCS 2		LCS		04/28/11	0.389
LCS 3		LCS		04/28/11	0.401
LCS 4		LCS		04/28/11	0.389
Spike Concentration					0.495
Percent Recovery					78%
Percent Recovery					79%
Percent Recovery					81%
Percent Recovery					78%

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**Quality Control Table for CVAF
ENVVEST Sinclair and Dyes Inlet
2011 Sediment Verification Study
METALS AND SULFIDE IN POREWATER**

MSL Code	Station ID	Sponsor Code	Depth (cm)	Collection Date	Hg
MDL (10x)					1
RL					3
Units:					ng/L
Analysis Batch ID					51011
CAS No.					7439-97-6
<u>Procedural Blank</u>					
Blank 050811		MB		05/10/11	1 U
<u>Laboratory Control Sample Results (Blank Spike)</u>					
OPR 050811 run1		LCS		05/10/11	5.03
OPR 050811 run2		LCS		05/10/11	5.19
Spike Concentration					4.96
Percent Recovery					101%
Percent Recovery					105%
%RPD					3%
<u>Standard Reference Material (SRM)</u>					
1641d 050811		SRM		05/10/11	1603882
Certified or Reference Value					1590000
Range					± 18000
% Recovery					101%

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Quality Control Table for ICP-OES
ENVVEST Sinclair and Dyes Inlet
2011 Sediment Verification Study
METALS AND SULFIDE IN POREWATER

MSL Code	Station ID	Sponsor Code	Depth (cm)	Collection Date	Fe
				MDL (10x)	10
				RL	32
				Units:	µg/L
				Analysis Batch ID	I051811A
				CAS No.	7439-89-6

Procedural Blank

Blank 051811	MB	05/18/11	10 U
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Laboratory Control Sample Results (Blank Spike)

LCS	LCS	05/18/11	105
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Spike Concentration	100
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Percent Recovery	105%
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Standard Reference Material (SRM)

1643E	SRM	05/18/11	102
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Certified or Reference Value	98.1
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Range	±1.4
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% Recovery	104%
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Matrix Spike/Matrix Spike Duplicate Results

3151-244 MS		2547
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3151-244	PS03	SQV05-046	0-3cm	04/27/11	520
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Spike Concentration, MS	2000
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Percent Recovery, MS	101%
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**Quality Control Table for ICP-MS
 ENVVEST Sinclair and Dyes Inlet
 2011 Sediment Verification Study
 METALS AND SULFIDE IN POREWATER**

MSL Code	Station ID	Sponsor Code	Depth (cm)	Collection Date	Cr	Cu	Mn	Ni	Zn	Cd	Pb
				MDL (10x)	0.58	0.040	0.038	0.073	0.31	0.036	0.030
				RL	1.8	0.13	0.12	0.23	1.0	0.11	0.10
				Units:	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
				Analysis Batch ID	50411	50411	50411	50411	50411	50411	50411
				CAS No.	7440-47-3	7440-50-8	7439-96-5	7440-02-0	7440-66-6	7440-43-9	7439-92-1
<u>Procedural Blank</u>											
Blank 1		MB		05/04/11	0.58 U	0.040 U	0.038 U	0.073 U	0.31 U	0.036 U	0.030 U
<u>Laboratory Control Sample Results (Blank Spike)</u>											
LCS 1		LCS		05/04/11	2.11	2.02	2.07	2.07	2.01	2.06	1.97
LCS 2		LCS		05/04/11	2.07	1.94	2.03	1.99	2.00	2.08	1.96
Spike Concentration					2.00	2.00	2.00	2.00	2.00	2.00	2.00
Percent Recovery					106%	101%	104%	104%	101%	103%	99%
Percent Recovery					104%	97%	102%	100%	100%	104%	98%
%RPD					2%	4%	2%	4%	0%	1%	1%
<u>Standard Reference Material (SRM)</u>											
1640 10x		SRM		05/04/11	40.5	88.4	125	26.1	54.2	23.0	26.9
Certified or Reference Value					38.6	85.2	121.5	27.4	53.2	22.79	27.89
Range					±1.6	±1.2	±1.1	±0.8	±1.1	±0.96	±0.14
% Recovery					105%	104%	103%	95%	102%	101%	96%
<u>Replicate Analysis Results</u>											
3151-244	PS03	SQV05-046	0-3cm	04/27/11	2.22	1.12	590	4.85	6.28	0.036 U	0.030 U
3151-244r2	PS03	SQV05-046	0-3cm	04/27/11	2.41	1.58	597	4.57	6.85	0.036 U	0.030 U
MEAN					2.32	1.35	594	4.71	6.57	NA	NA
RPD					8%	34% *	1%	6%	9%	NA	NA
<u>Matrix Spike/Matrix Spike Duplicate Results</u>											
3151-248 MS				05/04/11	125	110	116	116	116	107	112
3151-248 MSD				05/04/11	125	109	117	118	120	108	115
3151-248	PS03	SQV05-050	13-19cm	04/27/11	8.38	0.818	1.70	5.50	1.99	0.036 U	0.030 U
Spike Concentration, MS					111	111	111	111	111	111	111
Spike Concentration, MSD					111	111	111	111	111	111	111
Percent Recovery, MS					105%	98%	103%	99%	103%	96%	101%
Percent Recovery, MSD					105%	97%	104%	101%	106%	97%	104%
RPD					0%	1%	1%	2%	3%	1%	3%

QAI/QC NARRATIVE

PROJECT: 2011 Sediment Verification Study: SQV05 (partial) Squeeze Core Porewater

PARAMETER: Cadmium (Cd), copper (Cu), iron (Fe), mercury (Hg), manganese (Mn), nickel (Ni), lead (Pb), zinc (Zn), and dissolved sulfide

LABORATORY: Pacific Northwest National Laboratory (PNNL), Battelle Marine Sciences Laboratory (MSL), Sequim, Washington

MATRIX: SQV05: Marine sediment core porewater profiles 0-25 cm

SAMPLE CUSTODY AND PROCESSING: *SQV05(partial)*
 The SQV05 sediment samples were collected at PSNS&IMF by the U.S. Navy and MSL on 04/27/11 and 04/29/11 (see QAPP Johnston et al. 2011). Three types of samples were collected by Navy divers: 1) squeeze core for porewater and sediment concentrations (sediment data reported separately), 2) clear cores (reported separately), and 3) surface grabs (reported separately). Two sites were selected for porewater collection using squeeze cores. The squeeze cores (9 cm I.D.) were collected by divers using specialized polycarbonate core liners fitted with sampling ports at 1cm intervals. Porewater was extracted from the intact sediment cores using a modification of the whole core squeezing technique originally described by Jahnke (1988) with modifications described by Warken et al. (2000). Two sediment cores were collected and extruded to provide subsections at the following intervals: 0-3cm, 3-6cm, 6-9cm, 9-13cm, 13-19cm, and 19-25cm. The sediment cores were collected from the PS03 and PS09 locations as described in the sampling and analysis plan (Johnston et al. 2011).

The following lists information on sample receipt and processing activities:

Lab Sample IDs:		3151*244-255
Description:		Sediment core profiles
Sample collection dates		04/27/11
Laboratory arrival date		04/28/11
Porewater Extraction		04/27/11
ICP-MS Analysis (Cr, Cu, Mn, Ni, Zn, Cd, Pb)		05/04/11
ICP-OES Analysis (Fe)		05/18/11
CVAF Analysis (Hg)		05/10/11
Dissolved Sulfide Analysis		04/28/11

QAI/QC NARRATIVE

DATA QUALITY OBJECTIVES:

Analyte	Analytical Method	Range of Spike Recovery	SRM Percent Difference (PD)	Replicate Precisions (RPD)	Achieved MDL ¹
Dissolved Sulfide	Spectrometer	70-130%	≤20%	≤30%	0.027 μmole/mL
Cd	ICP-MS	70-130%	≤20%	≤30%	0.036 μg/L
Cr	ICP-MS	70-130%	≤20%	≤30%	0.58 μg/L
Cu	ICP-MS	70-130%	≤20%	≤30%	0.040 μg/L
Fe	ICP-OES	70-130%	≤20%	≤30%	10 μg/L
Hg	CVAF	70-130%	≤20%	≤30%	1 ng/L
Mn	ICP-MS	70-130%	≤20%	≤30%	0.038 μg/L
Ni	ICP-MS	70-130%	≤20%	≤30%	0.073 μg/L
Pb	ICP-MS	70-130%	≤20%	≤30%	0.030 μg/L
Zn	ICP-MS	70-130%	≤20%	≤30%	0.31 μg/L

¹ Batch average is reported for dissolved sulfide. The MDLs are adjusted for the 10x dilution required for porewater.

METHODS:

Dissolved sulfide has been used to predict the sediment toxicity of silver (Ag), copper (Cu), cadmium (Cd), nickel (Ni), lead (Pb), mercury (Hg) and zinc (Zn) (Ankley et al. 1996; Berry et al. 1996). As a metal sulfide complex, early research indicates that metals are not available for uptake by benthic organisms. Sulfide is an important binding component in modeling metal sorption in sediments (Morse et al. 1987). In the presence of excess sulfide, most of the reactive metal will form insoluble metal sulfides. The AVS becomes an indicator of the ratio of available sulfide to the SEM metals and allows the partitioning of free aqueous phase metal and solid phase metal in sediments. The five divalent metals (Cd, Ni, Cu, Pb and Zn) plus Ag form metal sulfide complexes.

Porewater samples were filtered under nitrogen and analyzed the next day for dissolved sulfides in accordance with Battelle SOP MSL-C-001. This procedure is based on a peer-reviewed, published procedure for the analysis of acid volatile sulfide (AVS) in sediment and dissolved sulfide in aqueous samples, adopted from a draft USEPA Method (Allen et al. 1991.). In this method, sulfide in the sample is converted to hydrogen sulfide by the addition of hydrochloric acid at room temperature. The hydrogen sulfide (H₂S) is purged from the sample by an inert gas and trapped in a sodium hydroxide (NaOH) solution. With the addition of a mixed-diamine reagent (MDR), the sulfide is converted to methylene blue and measured on a spectrometer. Dissolved sulfide in porewater was reported in units of μmole/mL.

Porewaters were analyzed for Hg using cold-vapor atomic fluorescence (CVAF) spectroscopy according to Battelle SOP MSL-I-013, *Total Mercury in Aqueous Samples by CVAF*, following EPA Method 1631 revision E.

Porewaters were analyzed for Fe using inductively coupled plasma optical emissions spectroscopy (ICP-OES) according to Battelle SOP MSL-I-033, *Determination of Elements in Aqueous and Digestate Samples by ICP-OES*. This procedure is based on two methods modified and adapted for analysis of low level samples: EPA Method 6010B and 200.7.

Porewaters were analyzed for all 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 analysis guidelines for this procedure are adapted from USEPA Method 1638 *Determination of Trace Elements in Ambient Waters by Inductively Coupled Plasma-Mass Spectrometry*. The Ag data was not usable due to carry over in the instrument and insufficient sample volume to reanalyze.

QAI/QC NARRATIVE

HOLDING TIMES:	The suggested holding time for dissolved sulfide is 7 days per Battelle SOP MSL-C-001. The holding time for Hg is 90days and all other metals it is 6 months. The suggested holding time is calculated from day of collection to day of extraction (preservation of the sulfide). All samples were analyzed within the suggested holding time.
DETECTION LIMITS:	Analytical results were reported to laboratory achieved detection limits (MDL) derived from the annually verified Sediment MDL Study. The MDL study was conducted in compliance with 40 CFR Part 136 Appendix B Revision 1.11, which entails the analyses of at least seven replicates of the matrix to calculate the MDL value. Since the matrix is porewater analyzed at a 10x dilution, the MDL was adjusted to reflect the dilution factor. Data were evaluated and flagged in accordance to the following criteria: - U Analyte not detected at or above laboratory achieved detection limit, MDL reported - J Value reported is below the RL, but above the MDL. & Accuracy results outside QC criteria of $\leq 20\%$ PD (SRM). * Precision results outside QC criteria of $\leq 30\%$ RPD. - N Spiked sample recovery not within the QC limits of 70-130%. - B Analyte detected in the method blank above the RL, sample concentration < 10 times detected blank value. - b Reagent blank corrected using mean reagent blank concentration.
METHOD BLANKS:	A minimum of one method blank was analyzed with each analytical batch. None of the parameters were detected in the method blanks.
LABORATORY CONTROL SAMPLE ACCURACY:	A minimum of one laboratory control samples (LCS) sample was prepared and analyzed with each analytical batch. All recoveries were within the QC criterion of 70-130% recovery.
STANDARD REFERENCE MATERIAL ACCURACY:	A standard reference material (SRM) for dissolved sulfide is not available due to the reactivity of this sulfur species. A riverine water SRM (1640) provided instrument accuracy for metals analyzed by ICP-MS, SRM 1641 for Hg, and SRM 1643E for Fe. The percent recoveries between the measured and certified or reference values were within the method QC criterion of $\pm 20\%$ for all metals. Seawater SRMs are available, but require a preconcentration technique which was not conducted on the porewater. The porewater concentrations are sufficiently elevated to allow for a 10x dilution of the seawater matrix.
MATRIX SPIKE ACCURACY:	Matrix spikes for dissolved sulfide were not performed due to the volatility. Due to the limited volume of sample, matrix spikes were only conducted for the elements analyzed by ICP-MS and ICP-OES. The matrix spike recoveries were within the QC acceptance criterion of $\pm 30\%$.
LABORATORY PRECISION:	A minimum of one laboratory duplicate was extracted and analyzed for elements report by ICP-MS. Due to sample volume limitations, duplicates could not be performed for each analytical batch. Duplicate LCS/OPR and matrix spikes were also used to evaluate the analytical precision. Analytical precision was expressed as the relative percent difference (RPD) of replicate results. The RPD values were within the QC criterion of $\leq 30\%$ except the

QAI/QC NARRATIVE

laboratory duplicate for Cu (34%). Duplicate matrix spikes for Cu demonstrated the variability was not attributed to instrumentation.

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U Concentration less than the MDL reported

J Estimated concentration > MDL, but less than the RL

B Blank >RL and sample concentration < 10 times detected blank.

D Sample was diluted 50x

NA Not applicable/available

NS Not spiked

N Spiked sample recovery outside QC criterion of $\pm 30\%$

& Accuracy outside QC criterion of $\pm 20\%$ difference (SRMs)

* Precision outside QC criterion of $\leq 30\%$ RPD

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**ENVVEST Sinclair and Dyes Inlet
2011 Sediment Verification Study
TOC IN SEDIMENT, Percent (Dry Wt basis)**

Station	Code	Type Name	Collection Date	Analysis Date	Analysis Method	Component	Units	Result	Detection Limit	Reporting Limit
<u>Squeeze Cores</u>										
PS03		0-3cm; Squeeze core A	04/27/2011	07/14/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.41 =	0.020	0.050
PS03		3-6cm; Squeeze core A	04/27/2011	07/14/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.32 =	0.020	0.050
PS03		6-9cm; Squeeze core A	04/27/2011	07/14/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.00 =	0.020	0.050
PS03		9-13cm; Squeeze core A	04/27/2011	07/14/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.06 =	0.020	0.050
PS03		13-19cm; Squeeze core A	04/27/2011	07/14/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.85 =	0.020	0.050
PS03		19-25cm; Squeeze core A	04/27/2011	07/14/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.76 =	0.020	0.050
PS09		0-3cm; Squeeze core B 50ft	04/27/2011	07/14/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.42 =	0.020	0.050
PS09		3-6cm; Squeeze core B 50ft	04/27/2011	07/14/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.02 =	0.020	0.050
PS09		6-9cm; Squeeze core B 50ft	04/27/2011	07/14/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.18 =	0.020	0.050
PS09		9-13cm; Squeeze core B 50ft	04/27/2011	07/14/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.67 =	0.020	0.050
PS09		13-19cm; Squeeze core B 50ft	04/27/2011	07/14/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.79 =	0.020	0.050
PS09		19-25cm; Squeeze core B 50ft	04/27/2011	07/14/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.95 =	0.020	0.050
<u>Clear Cores</u>										
PS03		0-3cm; Clear core 008	04/27/2011	07/14/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.27 =	0.020	0.050
PS03		3-6cm; Clear core 008	04/27/2011	07/14/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	7.12 =	0.020	0.050
PS03		6-9cm; Clear core 008	04/27/2011	07/14/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.43 =	0.020	0.050
PS03		9-13cm; Clear core 008	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.54 =	0.020	0.050
PS03		13-19cm; Clear core 008	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.57 =	0.020	0.050
PS03		19-25cm; Clear core 008	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.43 =	0.020	0.050
PS09		0-3cm; Clear core 016	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.34 =	0.020	0.050
PS09		3-6cm; Clear core 016	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.60 =	0.020	0.050
PS09		6-9cm; Clear core 016	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.25 =	0.020	0.050
PS09		9-13cm; Clear core 016	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.97 =	0.020	0.050
PS09		13-19cm; Clear core 016	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.25 =	0.020	0.050
PS09		19-23cm; Clear core 016	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.03 =	0.020	0.050
PS10		0-3cm; Clear core 023	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.59 =	0.020	0.050
PS10		3-6cm; Clear core 023	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.38 =	0.020	0.050
PS10		6-9cm; Clear core 023	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.48 =	0.020	0.050
PS10		9-13cm; Clear core 023	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.36 =	0.020	0.050
PS10		13-19cm; Clear core 023	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	0.321 =	0.020	0.050
PS10		19-25cm; Clear core 023	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	1.80 =	0.020	0.050
PS10.1		0-3cm; Clear core 030	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.48 =	0.020	0.050

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2011 Sediment Verification Study
TOC IN SEDIMENT, Percent (Dry Wt basis)**

Station	Code	Type Name	Collection Date	Analysis Date	Analysis Method	Component	Units	Result	Detection Limit	Reporting Limit
PS10.1		3-6cm; Clear core 030	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.74 =	0.020	0.050
PS10.1		6-9cm; Clear core 030	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.65 =	0.020	0.050
PS10.1		9-13cm; Clear core 030	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	5.10 =	0.020	0.050
PS10.1		13-19cm; Clear core 030	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.10 =	0.020	0.050
PS10.1		19-24cm; Clear core 030	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	4.84 =	0.020	0.050
PS11		0-3cm; Clear core 037	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.48 =	0.020	0.050
PS11		3-6cm; Clear core 037	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.41 =	0.020	0.050
PS11		6-9cm; Clear core 037	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.60 =	0.020	0.050
PS11		9-13cm; Clear core 037	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.45 =	0.020	0.050
PS11		13-19cm; Clear core 037	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.50 =	0.020	0.050
PS11		19-25cm; Clear core 037	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.23 =	0.020	0.050
PS08		0-3cm; Clear core 044	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.00 =	0.020	0.050
PS08		3-6cm; Clear core 044	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.45 =	0.020	0.050
PS08		6-9cm; Clear core 044	04/27/2011	07/15/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.77 =	0.020	0.050
PS08		9-13cm; Clear core 044	04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.64 =	0.020	0.050
PS08		13-19cm; Clear core 044	04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.72 =	0.020	0.050
PS08		19-25cm; Clear core 044	04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.44 =	0.020	0.050
PS06		0-3cm	04/29/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.14 =	0.020	0.050
PS06DUP		0-3cm	04/29/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	1.90 =	0.020	0.050
PS06		3-6cm	04/29/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.36 =	0.020	0.050
PS06DUP		3-6cm	04/29/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.08 =	0.020	0.050
PS06		6-9cm	04/29/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.34 =	0.020	0.050
PS06		9-13cm	04/29/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.07 =	0.020	0.050
PS06		13-19cm	04/29/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.43 =	0.020	0.050
PS06		19-25cm	04/29/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	1.66 =	0.020	0.050
PS07		0-3cm	04/29/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.36 =	0.020	0.050
PS07		3-6cm	04/29/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.35 =	0.020	0.050
PS07		6-9cm	04/29/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.36 =	0.020	0.050
PS07		9-13cm	04/29/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.24 =	0.020	0.050
PS07		13-19cm	04/29/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.12 =	0.020	0.050
PS07		19-25cm	04/29/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.03 =	0.020	0.050

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Station	Code	Type Name	Collection Date	Analysis Date	Analysis Method	Component	Units	Result	Detection Limit	Reporting Limit
Grab Samples										
PS03	1		04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	7.18 =	0.020	0.050
PS03	2		04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	4.94 =	0.020	0.050
PS03	3		04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	4.68 =	0.020	0.050
PS03	4		04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	7.18 =	0.020	0.050
PS03	5		04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	4.15 =	0.020	0.050
PS03	6		04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	9.23 =	0.020	0.050
PS09	1		04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	6.73 =	0.020	0.050
PS09	2		04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	1.91 =	0.020	0.050
PS09	3		04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.04 =	0.020	0.050
PS09	4		04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	8.31 =	0.020	0.050
PS09	5		04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.85 =	0.020	0.050
PS09	6		04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.35 =	0.020	0.050
PS10	1		04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.79 =	0.020	0.050
PS10	2		04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.47 =	0.020	0.050
PS10	3		04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.25 =	0.020	0.050
PS10	4		04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.74 =	0.020	0.050
PS10	5		04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.00 =	0.020	0.050
PS10	6		04/27/2011	07/19/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.28 =	0.020	0.050
PS10.1	1		04/27/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.12 =	0.020	0.050
PS10.1	2		04/27/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.68 =	0.020	0.050
PS10.1	3		04/27/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.02 =	0.020	0.050
PS10.1	4		04/27/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.78 =	0.020	0.050
PS10.1	5		04/27/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.36 =	0.020	0.050
PS10.1	6		04/27/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	8.70 =	0.020	0.050
PS11	1		04/27/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.79 =	0.020	0.050
PS11	2		04/27/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	1.41 =	0.020	0.050
PS11	3		04/27/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.52 =	0.020	0.050
PS11	4		04/27/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.70 =	0.020	0.050
PS11	5		04/27/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.88 =	0.020	0.050
PS11	6		04/27/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.93 =	0.020	0.050
PS08	1		04/27/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.81 =	0.020	0.050
PS08	2		04/27/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	8.79 =	0.020	0.050

BATTELLE MARINE SCIENCE LABORATORIES

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

**ENVVEST Sinclair and Dyes Inlet
2011 Sediment Verification Study
TOC IN SEDIMENT, Percent (Dry Wt basis)**

Station	Code	Type Name	Collection Date	Analysis Date	Analysis Method	Component	Units	Result	Detection Limit	Reporting Limit
PS08	3		04/27/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.76 =	0.020	0.050
PS08	4		04/27/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.34 =	0.020	0.050
PS08	5		04/27/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.90 =	0.020	0.050
PS08	6		04/27/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.85 =	0.020	0.050
PS06	1		04/29/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.15 =	0.020	0.050
PS06	2		04/29/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.89 =	0.020	0.050
PS06	3		04/29/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.83 =	0.020	0.050
PS06	4		04/29/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	0.978 =	0.020	0.050
PS06	5		04/29/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.07 =	0.020	0.050
PS06	6		04/29/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.66 =	0.020	0.050
PS07	1		04/29/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	1.05 =	0.020	0.050
PS07	2		04/29/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	2.09 =	0.020	0.050
PS07	3		04/29/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.04 =	0.020	0.050
PS07	4		04/29/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.11 =	0.020	0.050
PS07	5		04/29/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	3.01 =	0.020	0.050
PS07	6		04/29/2011	07/20/2011	ASTM D4129-82M	Carbon, Total Organic (TOC)	Percent	1.92 =	0.020	0.050

COLUMBIA ANALYTICAL SERVICES, INC.

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request No.: K1106259
Date Received: 7/12/11

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

One hundred & ten sediment samples were received for analysis at Columbia Analytical Services on 7/12/11. 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.

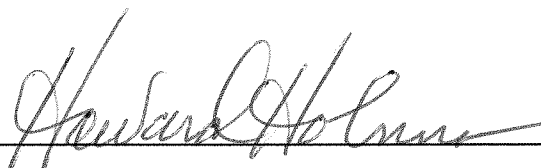
General Chemistry Parameters

Total Organic Carbon by ASTM D4129-82M:

All samples were received past the recommended holding time. The analysis was performed as soon as possible after receipt by the laboratory. The data was flagged to indicate the holding time violation.

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

Approved by

 Date 7-22-11

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.
- 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 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.
- 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 estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.1 definition: Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

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

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Collected: 4/27/11 - 4/29/11
Date Received: 7/12/11

Prep Method: CAS SOP
Analysis Method: ASTM D4129-82M

Units: Percent
Basis: Dry per method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SQV05-088 PS03 0-3 S	K1106259-001	3.41		0.050	0.020	1	7/13/11	7/14/11 09:30	*
SQV05-089 PS03 3-6 S	K1106259-002	2.32		0.050	0.020	1	7/13/11	7/14/11 09:30	*
SQV05-090 PS03 6-9 S	K1106259-003	3.00		0.050	0.020	1	7/13/11	7/14/11 09:30	*
SQV05-091 PS03 9-13 S	K1106259-004	3.06		0.050	0.020	1	7/13/11	7/14/11 09:30	*
SQV05-092 PS03 13-19 S	K1106259-005	2.85		0.050	0.020	1	7/13/11	7/14/11 09:30	*
SQV05-093 PS03 19-25 S	K1106259-006	3.76		0.050	0.020	1	7/13/11	7/14/11 09:30	*
SQV05-106 PS09 0-3 S	K1106259-007	3.42		0.050	0.020	1	7/13/11	7/14/11 09:30	*
SQV05-107 PS09 3-6 S	K1106259-008	3.02		0.050	0.020	1	7/13/11	7/14/11 09:30	*
SQV05-108 PS09 6-9 S	K1106259-009	3.18		0.050	0.020	1	7/13/11	7/14/11 09:30	*
SQV05-109 PS09 9-13 S	K1106259-010	2.67		0.050	0.020	1	7/13/11	7/14/11 09:30	*
SQV05-110 PS09 13-19 S	K1106259-011	2.79		0.050	0.020	1	7/13/11	7/14/11 09:30	*
SQV05-111 PS09 19-25 S	K1106259-012	2.95		0.050	0.020	1	7/13/11	7/14/11 09:30	*
SQV05-124 PS03 0-3 C	K1106259-013	3.27		0.050	0.020	1	7/13/11	7/14/11 09:30	*
SQV05-125 PS03 3-6 C	K1106259-014	7.12		0.050	0.020	1	7/13/11	7/14/11 09:30	*
SQV05-126 PS03 6-9 C	K1106259-015	3.43		0.050	0.020	1	7/13/11	7/14/11 09:30	*
SQV05-127 PS03 9-13 C	K1106259-016	2.54		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-128 PS03 13-19 C	K1106259-017	3.57		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-129 PS03 19-25 C	K1106259-018	3.43		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-141 PS09 0-3 C	K1106259-019	3.34		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-142 PS09 3-6 C	K1106259-020	3.60		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-143 PS09 6-9 C	K1106259-021	3.25		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-144 PS09 9-13 C	K1106259-022	2.97		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-145 PS09 13-19 C	K1106259-023	2.25		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-146 PS09 19-23 C	K1106259-024	2.03		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-159 PS10 0-3 C	K1106259-025	3.59		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-160 PS10 3-6 C	K1106259-026	3.38		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-161 PS10 6-9 C	K1106259-027	3.48		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-162 PS10 9-13 C	K1106259-028	3.36		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-163 PS10 13-19 C	K1106259-029	0.321		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-164 PS10 19-25 C	K1106259-030	1.80		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-177 PS10.1 0-3 C	K1106259-031	3.48		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-178 PS10.1 3-6 C	K1106259-032	3.74		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-179 PS10.1 6-9 C	K1106259-033	2.65		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-180 PS10.1 9-13 C	K1106259-034	5.10		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-181 PS10.1 13-19 C	K1106259-035	3.10		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-182 PS10.1 19-24 C	K1106259-036	4.84		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-195 PS11 0-3 C	K1106259-037	3.48		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-196 PS11 3-6 C	K1106259-038	3.41		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-197 PS11 6-9 C	K1106259-039	3.60		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-198 PS11 9-13 C	K1106259-040	3.45		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-199 PS11 13-19 C	K1106259-041	3.50		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-200 PS11 19-25 C	K1106259-042	3.23		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-213 PS08 0-3 C	K1106259-043	3.00		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-214 PS08 3-6 C	K1106259-044	2.45		0.050	0.020	1	7/13/11	7/15/11 10:30	*

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Collected: 4/27/11 - 4/29/11
Date Received: 7/12/11

Prep Method: CAS SOP
Analysis Method: ASTM D4129-82M

Units: Percent
Basis: Dry per method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SQV05-215 PS08 6-9 C	K1106259-045	2.77		0.050	0.020	1	7/13/11	7/15/11 10:30	*
SQV05-216 PS08 9-13 C	K1106259-046	2.64		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-217 PS08 13-19 C	K1106259-047	2.72		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-218 PS08 19-25 C	K1106259-048	2.44		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-1021 PS06 0-3	K1106259-049	2.14		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-1022 PS06 3-6	K1106259-050	2.36		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-1023 PS06 6-9	K1106259-051	2.34		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-1024 PS06 9-13	K1106259-052	2.07		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-1025 PS06 13-19	K1106259-053	2.43		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-1026 PS06 19-25	K1106259-054	1.66		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-1035 PS06DUP 0-3	K1106259-055	1.90		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-1036 PS06DUP 3-6	K1106259-056	2.08		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-1045 PS07 0-3	K1106259-057	3.36		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-1046 PS07 3-6	K1106259-058	3.35		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-1047 PS07 6-9	K1106259-059	3.36		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-1048 PS07 9-13	K1106259-060	3.24		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-1049 PS07 13-19	K1106259-061	3.12		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-1050 PS07 19-25	K1106259-062	3.03		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-264 PS03-1	K1106259-063	7.18		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-268 PS03-2	K1106259-064	4.94		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-272 PS03-3	K1106259-065	4.68		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-276 PS03-4	K1106259-066	7.18		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-280 PS03-5	K1106259-067	4.15		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-284 PS03-6	K1106259-068	9.23		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-288 PS09-1	K1106259-069	6.73		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-292 PS09-2	K1106259-070	1.91		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-296 PS09-3	K1106259-071	2.04		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-300 PS09-4	K1106259-072	8.31		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-304 PS09-5	K1106259-073	2.85		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-308 PS09-6	K1106259-074	3.35		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-312 PS10-1	K1106259-075	3.79		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-316 PS10-2	K1106259-076	3.47		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-320 PS10-3	K1106259-077	3.25		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-324 PS10-4	K1106259-078	3.74		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-328 PS10-5	K1106259-079	3.00		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-332 PS10-6	K1106259-080	3.28		0.050	0.020	1	7/13/11	7/19/11 10:00	*
SQV05-336 PS10.1-1	K1106259-081	3.12		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-340 PS10.1-2	K1106259-082	3.68		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-344 PS10.1-3	K1106259-083	2.02		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-348 PS10.1-4	K1106259-084	2.78		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-352 PS10.1-5	K1106259-085	3.36		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-356 PS10.1-6	K1106259-086	8.70		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-360 PS11-1	K1106259-087	3.79		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-364 PS11-2	K1106259-088	1.41		0.050	0.020	1	7/13/11	7/20/11 09:00	*

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Collected: 4/27/11 - 4/29/11
Date Received: 7/12/11

Prep Method: CAS SOP
Analysis Method: ASTM D4129-82M

Units: Percent
Basis: Dry per method

Carbon, Total Organic (TOC)

Sample Name	Lab Code	Result	Q	MRL	MDL	Dilution Factor	Date Extracted	Date Analyzed	Note
SQV05-368 PS11-3	K1106259-089	3.52		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-372 PS11-4	K1106259-090	3.70		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-376 PS11-5	K1106259-091	2.88		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-380 PS11-6	K1106259-092	2.93		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-384 PS08-1	K1106259-093	2.81		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-388 PS08-2	K1106259-094	8.79		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-392 PS08-3	K1106259-095	2.76		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-396 PS08-4	K1106259-096	2.34		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-400 PS08-5	K1106259-097	2.90		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-404 PS08-6	K1106259-098	2.85		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-1059 PS06-1	K1106259-099	3.15		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-1063 PS06-2	K1106259-100	2.89		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-1067 PS06-3	K1106259-101	2.83		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-1071 PS06-4	K1106259-102	0.978		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-1075 PS06-5	K1106259-103	3.07		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-1079 PS06-6	K1106259-104	2.66		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-1083 PS07-1	K1106259-105	1.05		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-1087 PS07-2	K1106259-106	2.09		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-1091 PS07-3	K1106259-107	3.04		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-1095 PS07-4	K1106259-108	3.11		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-1099 PS07-5	K1106259-109	3.01		0.050	0.020	1	7/13/11	7/20/11 09:00	*
SQV05-1103 PS07-6	K1106259-110	1.92		0.050	0.020	1	7/13/11	7/20/11 09:00	*
Method Blank	K1106259-MB1	ND	U	0.050	0.020	1	NA	7/14/11 09:30	
Method Blank	K1106259-MB2	ND	U	0.050	0.020	1	NA	7/14/11 09:30	
Method Blank	K1106259-MB3	ND	U	0.050	0.020	1	NA	7/15/11 10:30	
Method Blank	K1106259-MB4	ND	U	0.050	0.020	1	NA	7/15/11 10:30	
Method Blank	K1106259-MB5	ND	U	0.050	0.020	1	NA	7/19/11 10:00	
Method Blank	K1106259-MB6	ND	U	0.050	0.020	1	NA	7/19/11 10:00	
Method Blank	K1106259-MB7	ND	U	0.050	0.020	1	NA	7/20/11 09:00	
Method Blank	K1106259-MB8	ND	U	0.050	0.020	1	NA	7/20/11 09:00	

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Collected: 4/27/11
Date Received: 7/12/11
Date Analyzed: 7/14/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: SQV05-088 PS03 0-3 S
Lab Code: K1106259-001

Units: Percent
Basis: Dry per method

SQV05-088 PS03 0-3 SDUP								
Duplicate Sample K1106259-001DUP1								
Analyte Name	Method	MRL	MDL	Sample Result	Result	Average	RPD	RPD Limit
Carbon, Total Organic (TOC)	ASTM D4129-82M	0.050	0.020	3.41	3.07	3.24	10	27

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

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

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Collected: 4/27/11
Date Received: 7/12/11
Date Analyzed: 7/15/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: SQV05-142 PS09 3-6 C
Lab Code: K1106259-020

Units: Percent
Basis: Dry per method

SQV05-142 PS09 3-6 CDUP Duplicate Sample K1106259-020DUP2								
Analyte Name	Method	MRL	MDL	Sample Result	Result	Average	RPD	RPD Limit
Carbon, Total Organic (TOC)	ASTM D4129-82M	0.050	0.020	3.60	3.68	3.64	2	27

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

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

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Collected: 4/27/11
Date Received: 7/12/11
Date Analyzed: 7/15/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: SQV05-181 PS10.1 13-19 C
Lab Code: K1106259-035

Units: Percent
Basis: Dry per method

					SQV05-181 PS10.1 13-19 CDUP Duplicate Sample K1106259-035DUP3			
Analyte Name	Method	MRL	MDL	Sample Result	Result	Average	RPD	RPD Limit
Carbon, Total Organic (TOC)	ASTM D4129-82M	0.050	0.020	3.10	3.10	3.10	<1	27

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

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Collected: 4/29/11
Date Received: 7/12/11
Date Analyzed: 7/19/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: SQV05-1049 PS07 13-19
Lab Code: K1106259-061

Units: Percent
Basis: Dry per method

					SQV05-1049 PS07 13-19DUP Duplicate Sample K1106259-061DUP4			
Analyte Name	Method	MRL	MDL	Sample Result	Result	Average	RPD	RPD Limit
Carbon, Total Organic (TOC)	ASTM D4129-82M	0.050	0.020	3.12	3.01	3.07	3	27

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

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

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Collected: 4/27/11
Date Received: 7/12/11
Date Analyzed: 7/19/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: SQV05-332 PS10-6
Lab Code: K1106259-080

Units: Percent
Basis: Dry per method

				SQV05-332 PS10-6DUP		Duplicate Sample K1106259-080DUP5		RPD	RPD Limit
Analyte Name	Method	MRL	MDL	Sample Result	Result	Average			
Carbon, Total Organic (TOC)	ASTM D4129-82M	0.050	0.020	3.28	3.50	3.39	7		27

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

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Collected: 4/29/11
Date Received: 7/12/11
Date Analyzed: 7/20/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: SQV05-1067 PS06-3
Lab Code: K1106259-101

Units: Percent
Basis: Dry per method

				SQV05-1067 PS06-3DUP Duplicate Sample K1106259-101DUP6			RPD	RPD Limit
Analyte Name	Method	MRL	MDL	Sample Result	Result	Average		
Carbon, Total Organic (TOC)	ASTM D4129-82M	0.050	0.020	2.83	2.53	2.68	11	27

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

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Collected: 4/29/11
Date Received: 7/12/11
Date Analyzed: 7/20/11

Replicate Sample Summary
General Chemistry Parameters

Sample Name: SQV05-1071 PS06-4
Lab Code: K1106259-102

Units: Percent
Basis: Dry per method

					SQV05-1071 PS06-4DUP			
					Duplicate Sample			
					K1106259-102DUP7			
Analyte Name	Method	MRL	MDL	Sample Result	Result	Average	RPD	RPD Limit
Carbon, Total Organic (TOC)	ASTM D4129-82M	0.050	0.020	0.978	0.983	0.980	<1	27

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

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
 Project: Sediment Quality Verification Study
 Sample Matrix: Sediment

Service Request: K1106259
 Date Collected: 4/27/11
 Date Received: 7/12/11
 Date Analyzed: 7/14/11

Matrix Spike Summary
General Chemistry Parameters

Sample Name: SQV05-088 PS03 0-3 S
 Lab Code: K1106259-001

Units: Percent
 Basis: Dry per method

Analytical Method: ASTM D4129-82M

Analyte Name	Sample Result	SQV05-088 PS03 0-3 SMS Matrix Spike K1106259-001MS1			SQV05-088 PS03 0-3 SDMS Duplicate Matrix Spike K1106259-001DMS1			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Carbon, Total Organic (TOC)	3.41	10.1	5.77	117	15.8	11.9	104	69 - 123	12	27

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

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

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

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SuperSet Reference: 11-0000183231 rev 00

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QA/QC Report

Client: Battelle Marine Sciences Lab
 Project: Sediment Quality Verification Study
 Sample Matrix: Sediment

Service Request: K1106259
 Date Collected: 4/27/11
 Date Received: 7/12/11
 Date Analyzed: 7/15/11

Matrix Spike Summary
General Chemistry Parameters

Sample Name: SQV05-142 PS09 3-6 C
 Lab Code: K1106259-020

Units: Percent
 Basis: Dry per method

Analytical Method: ASTM D4129-82M

Analyte Name	Sample Result	SQV05-142 PS09 3-6 CMS Matrix Spike K1106259-020MS2			SQV05-142 PS09 3-6 CDMS Duplicate Matrix Spike K1106259-020DMS2			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Carbon, Total Organic (TOC)	3.60	16.4	13.4	96	9.50	5.90	100	69 - 123	4	27

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

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

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Form 3A

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SuperSet Reference: 11-0000183231 rev 00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Collected: 4/27/11
Date Received: 7/12/11
Date Analyzed: 7/15/11

Matrix Spike Summary
General Chemistry Parameters

Sample Name: SQV05-181 PS10.1 13-19 C
Lab Code: K1106259-035

Units: Percent
Basis: Dry per method

Analytical Method: ASTM D4129-82M

SQV05-181 PS10.1 13-19 CMS

SQV05-181 PS10.1 13-19

CDMS

Matrix Spike
K1106259-035MS3

Duplicate Matrix Spike
K1106259-035DMS3

Analyte Name	Sample Result	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Carbon, Total Organic (TOC)	3.10	9.92	6.87	99	9.76	6.85	97	69 - 123	2	27

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

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Form 3A

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SuperSet Reference: 11-0000183231 rev 00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Collected: 4/29/11
Date Received: 7/12/11
Date Analyzed: 7/19/11

**Matrix Spike Summary
 General Chemistry Parameters**

Sample Name: SQV05-1049 PS07 13-19
Lab Code: K1106259-061

Units: Percent
Basis: Dry per method

Analytical Method: ASTM D4129-82M

Analyte Name	Sample Result	SQV05-1049 PS07 13-19MS Matrix Spike K1106259-061MS4			SQV05-1049 PS07 13-19DMS Duplicate Matrix Spike K1106259-061DMS4			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Carbon, Total Organic (TOC)	3.12	10.9	7.96	98	12.6	9.93	95	69 - 123	3	27

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
 Project: Sediment Quality Verification Study
 Sample Matrix: Sediment

Service Request: K1106259
 Date Collected: 4/27/11
 Date Received: 7/12/11
 Date Analyzed: 7/19/11

Matrix Spike Summary
General Chemistry Parameters

Sample Name: SQV05-332 PS10-6
 Lab Code: K1106259-080

Units: Percent
 Basis: Dry per method

Analytical Method: ASTM D4129-82M

Analyte Name	Sample Result	SQV05-332 PS10-6MS Matrix Spike K1106259-080MS5			SQV05-332 PS10-6DMS Duplicate Matrix Spike K1106259-080DMS5			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Carbon, Total Organic (TOC)	3.28	10.8	7.77	96	9.32	6.35	95	69 - 123	1	27

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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Collected: 4/29/11
Date Received: 7/12/11
Date Analyzed: 7/20/11

**Matrix Spike Summary
General Chemistry Parameters**

Sample Name: SQV05-1067 PS06-3
Lab Code: K1106259-101

Units: Percent
Basis: Dry per method

Analytical Method: ASTM D4129-82M

Analyte Name	Sample Result	SQV05-1067 PS06-3MS Matrix Spike K1106259-101MS6			SQV05-1067 PS06-3DMS Duplicate Matrix Spike K1106259-101DMS6			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Carbon, Total Organic (TOC)	2.83	9.40	7.66	86	7.75	6.35	77	69 - 123	11	27

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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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
 Project: Sediment Quality Verification Study
 Sample Matrix: Sediment

Service Request: K1106259
 Date Collected: 4/29/11
 Date Received: 7/12/11
 Date Analyzed: 7/20/11

Matrix Spike Summary
 General Chemistry Parameters

Sample Name: SQV05-1071 PS06-4
 Lab Code: K1106259-102

Units: Percent
 Basis: Dry per method

Analytical Method: ASTM D4129-82M

Analyte Name	Sample Result	SQV05-1071 PS06-4MS Matrix Spike K1106259-102MS7			SQV05-1071 PS06-4DMS Duplicate Matrix Spike K1106259-102DMS7			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Carbon, Total Organic (TOC)	0.978	5.22	4.76	89	5.06	3.94	104	69 - 123	16	27

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

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

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Analyzed: 7/14/11

Lab Control Sample Summary
General Chemistry Parameters

Units: Percent
Basis: Dry per method

Analyte Name	Method	Lab Control Sample K1106259-LCS1			
		Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic (TOC)	ASTM D4129-82M	0.263	0.280	94	74 - 118

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

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Analyzed: 7/14/11

Lab Control Sample Summary
General Chemistry Parameters

Units: Percent
Basis: Dry per method

Lab Control Sample K1106259-LCS2					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic (TOC)	ASTM D4129-82M	0.263	0.280	94	74 - 118

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

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Analyzed: 7/15/11

Lab Control Sample Summary
General Chemistry Parameters

Units: Percent
Basis: Dry per method

Analyte Name	Method	Lab Control Sample K1106259-LCS3			
		Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic (TOC)	ASTM D4129-82M	0.263	0.280	94	74 - 118

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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COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Analyzed: 7/15/11

Lab Control Sample Summary
General Chemistry Parameters

Units: Percent
Basis: Dry per method

Lab Control Sample K1106259-LCS4					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic (TOC)	ASTM D4129-82M	0.239	0.280	85	74 - 118

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: 11-0000183231 rev 00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Analyzed: 7/19/11

Lab Control Sample Summary
General Chemistry Parameters

Units: Percent
Basis: Dry per method

Lab Control Sample K1106259-LCS5					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic (TOC)	ASTM D4129-82M	0.261	0.289	90	74 - 118

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: 11-0000183231 rev 00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Analyzed: 7/19/11

Lab Control Sample Summary
General Chemistry Parameters

Units: Percent
Basis: Dry per method

Lab Control Sample K1106259-LCS6					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic (TOC)	ASTM D4129-82M	0.308	0.279	110	74 - 118

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: 11-0000183231 rev 00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Analyzed: 7/20/11

Lab Control Sample Summary
General Chemistry Parameters

Units: Percent
Basis: Dry per method

Analyte Name	Method	Lab Control Sample K1106259-LCS7			
		Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic (TOC)	ASTM D4129-82M	0.282	0.280	101	74 - 118

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: 11-0000183231 rev 00

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study
Sample Matrix: Sediment

Service Request: K1106259
Date Analyzed: 7/20/11

Lab Control Sample Summary
General Chemistry Parameters

Units: Percent
Basis: Dry per method

Lab Control Sample K1106259-LCS8					
Analyte Name	Method	Result	Spike Amount	% Rec	% Rec Limits
Carbon, Total Organic (TOC)	ASTM D4129-82M	0.235	0.280	84	74 - 118

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

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

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study

Service Request: K1106259

Continuing Calibration Verification (CCV) Summary
Carbon, Total Organic (TOC)

Analytical Method: ASTM D4129-82M**Units:** Percent

	Analysis Lot	Lab Code	Date Analyzed	True Value	Measured Value	Percent Recovery	Acceptance Limits
CCV1	253581	KQ1106960-23	7/14/11 09:30	20.0	19.5	97	90 - 110
CCV2	253581	KQ1106960-24	7/14/11 09:30	20.0	19.5	97	90 - 110
CCV3	253581	KQ1106960-25	7/14/11 09:30	20.0	19.4	97	90 - 110
CCV4	253581	KQ1106960-26	7/14/11 09:30	20.0	19.6	98	90 - 110
CCV5	253581	KQ1106960-27	7/14/11 09:30	20.0	19.6	98	90 - 110
CCV6	253581	KQ1106960-28	7/14/11 09:30	20.0	19.1	96	90 - 110
CCV7	253720	KQ1107028-13	7/15/11 10:30	20.0	19.5	98	90 - 110
CCV8	253720	KQ1107028-14	7/15/11 10:30	20.0	19.0	95	90 - 110
CCV9	253720	KQ1107028-15	7/15/11 10:30	20.0	19.4	97	90 - 110
CCV10	253720	KQ1107028-16	7/15/11 10:30	20.0	19.8	99	90 - 110
CCV11	253720	KQ1107028-17	7/15/11 10:30	20.0	19.3	97	90 - 110
CCV12	254078	KQ1107189-01	7/19/11 10:00	20.0	19.4	97	90 - 110
CCV13	254078	KQ1107189-02	7/19/11 10:00	20.0	19.2	96	90 - 110
CCV14	254078	KQ1107189-03	7/19/11 10:00	20.0	19.4	97	90 - 110
CCV15	254078	KQ1107189-04	7/19/11 10:00	20.0	19.6	98	90 - 110
CCV16	254078	KQ1107189-05	7/19/11 10:00	20.0	19.9	99	90 - 110
CCV17	254078	KQ1107189-06	7/19/11 10:00	20.0	19.4	97	90 - 110
CCV18	254172	KQ1107233-01	7/20/11 09:00	20.0	19.5	98	90 - 110
CCV19	254172	KQ1107233-02	7/20/11 09:00	20.0	18.8	94	90 - 110
CCV20	254172	KQ1107233-03	7/20/11 09:00	20.0	18.3	91	90 - 110
CCV21	254172	KQ1107233-04	7/20/11 09:00	20.0	19.3	96	90 - 110

COLUMBIA ANALYTICAL SERVICES, INC.

QA/QC Report

Client: Battelle Marine Sciences Lab
Project: Sediment Quality Verification Study

Service Request: K1106259

Continuing Calibration Blank (CCB) Summary
Carbon, Total Organic (TOC)

Analytical Method: ASTM D4129-82M**Units:** Percent

	Analysis Lot	Lab Code	Date Analyzed	MDL	MRL	Result	Q
CCB1	253581	KQ1106960-17	7/14/11 09:30	0.020	0.050	ND	U
CCB2	253581	KQ1106960-18	7/14/11 09:30	0.020	0.050	ND	U
CCB3	253581	KQ1106960-19	7/14/11 09:30	0.020	0.050	ND	U
CCB4	253581	KQ1106960-20	7/14/11 09:30	0.020	0.050	ND	U
CCB5	253581	KQ1106960-21	7/14/11 09:30	0.020	0.050	ND	U
CCB6	253581	KQ1106960-22	7/14/11 09:30	0.020	0.050	ND	U
CCB7	253720	KQ1107028-07	7/15/11 10:30	0.020	0.050	ND	U
CCB8	253720	KQ1107028-08	7/15/11 10:30	0.020	0.050	ND	U
CCB9	253720	KQ1107028-09	7/15/11 10:30	0.020	0.050	ND	U
CCB10	253720	KQ1107028-10	7/15/11 10:30	0.020	0.050	ND	U
CCB11	253720	KQ1107028-11	7/15/11 10:30	0.020	0.050	ND	U
CCB12	254078	KQ1107189-07	7/19/11 10:00	0.020	0.050	ND	U
CCB13	254078	KQ1107189-08	7/19/11 10:00	0.020	0.050	ND	U
CCB14	254078	KQ1107189-09	7/19/11 10:00	0.020	0.050	ND	U
CCB15	254078	KQ1107189-10	7/19/11 10:00	0.020	0.050	ND	U
CCB16	254078	KQ1107189-11	7/19/11 10:00	0.020	0.050	ND	U
CCB17	254078	KQ1107189-12	7/19/11 10:00	0.020	0.050	ND	U
CCB18	254172	KQ1107233-05	7/20/11 09:00	0.020	0.050	ND	U
CCB19	254172	KQ1107233-06	7/20/11 09:00	0.020	0.050	ND	U
CCB20	254172	KQ1107233-07	7/20/11 09:00	0.020	0.050	ND	U
CCB21	254172	KQ1107233-08	7/20/11 09:00	0.020	0.050	ND	U
CCB22	254172	KQ1107233-09	7/20/11 09:00	0.020	0.050	ND	U

Revised 8/10/11
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SAMPLE CHAIN OF CUSTODY FORM

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

Storm Drains (SQV01)

Battelle

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

Analyze parameters per QAP/FSP

Sample Label	Station ID	Collection Date/Time	Matrix	Hardness	TOC	DOC	TSS	TME/DME	TPH	Turbidity	Total Metals	Organics	Screening	No. containers	Sample Type (Grab vs. Comp)	Storm#	Notes / Comp. Cond. Reading μ S/cm
* Should be "SQV" 4/28/11																	
3151-8/10/11 567569 56857 56958	SQV01-0001	PSNS 096	4/20/11 (1130)	SED							X		X			PSNS 096	3151-8432
	SQV01-0002	PSNS 015	4/20/11 (1340)	SEO							X		X			015	844 Metals
	SQV01-0003	PSNS 008	4/20/11 (1420)	SED							X		X			008	845
																096	846 2 Grain
																015	847 3
																008	848 2e
Metals Split																	
570 571 572	SQV01-0004	PSNS 096															
	SQV01-0005	PSNS 015															
	SQV01-0006	PSNS 008															
Screen Split																	
	SQV01-0007																
	SQV01-0008																
	SQV01-0009																
Relinquished by:	Signature: <u>Brian Rupert</u> Date: <u>4/20/11</u> Time: <u>1300</u>			Received by: <u>R. C. Johnson</u> Signature: <u>R. C. Johnson</u> Date: <u>4/27/11</u>										Total # of Containers: _____			
	Printed Name: _____ Company: <u>TEC Inc</u>			Printed Name: _____										Shipment Method: <u>Hand delivery to MSL</u>			
Relinquished by:	Signature: <u>[Signature]</u> Date: <u>4/28/11</u> Time: _____			Received by: <u>[Signature]</u> Signature: <u>[Signature]</u> Date: <u>4/28/11</u>										Sample Disposition: _____			
	Printed Name: _____ Company: _____			Printed Name: _____										Distribution: _____			

① Organics by SQV QAPP.

SAMPLE LOGIN

Project Manager: Brandenberger
Date Received: 4/28/2011
Batch: (use SQV ID as reference)
Login Designee: Csuslick



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

Project: **ENVVEST Sed Quality Varification Study - Storm Drains (SQV01)**

Sponsor ID	Site Description	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SQV01-0001	PSNS096	3151-569	SED	Walkin Freezer	Organics	04/20/11
SQV01-0002	PSNS015	3151-567	SED	Walkin Freezer	Organics	04/20/11
SQV01-0003	PSNS008	3151-568	SED	Walkin Freezer	Organics	04/20/11
SQV01-0004	PSNS096	3151-570	SED	Deep Freezer	Metals	04/20/11
SQV01-0005	PSNS015	3151-571	SED	Deep Freezer	Metals	04/20/11
SQV01-0006	PSNS008	3151-572	SED	Deep Freezer	Metals	04/20/11

New Splits taken from original Organics jar, 8/10/11:

SQV01-0007	PSNS096	3151-843	SED	Walkin Refrigerator	Metals	04/20/11
SQV01-0008	PSNS015	3151-844	SED	Walkin Refrigerator	Metals	04/20/11
SQV01-0009	PSNS008	3151-845	SED	Walkin Refrigerator	Metals	04/20/11
SQV01-0010	PSNS096	3151-846	SED	Walkin Refrigerator	Grain Size	04/20/11
SQV01-0011	PSNS015	3151-847	SED	Walkin Refrigerator	Grain Size	04/20/11
SQV01-0012	PSNS008	3151-848	SED	Walkin Refrigerator	Grain Size	04/20/11



REVISED 8/10/11

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 3151 Sample No(s): 567-572 Batch: SQV01
Project Name: ENVVEST SED EVAL Study Project Manager: JMB

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

Matrix: SEDS (filtered) WP# _____
Storvick Drains

Yes	No	
☐	☐	Navy-type Project (requires high-level sample tracking procedures)
☐	☐	USDA Samples (see Compliance Agreement Checklist)

PM Verification: _____

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

Sample Preservation Instructions: _____

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

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes	No	N/A	Indicate in Appropriate Box
☐	☒	☐	Custody seal present
☐	☐	☒	Seal intact? YES NO
☐	☐	☒	Cooler temperature (acceptable range: $4 \pm 2^\circ\text{C}$ or solids: frozen) (if multiple coolers, note temp. of each)
☐	☐	☒	Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc) Comment/Remedy: _____
☒	☐	☐	Were <u>all</u> chain of custody forms signed and dated?
☐	☐	☒	Were samples filtered at MSL?

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

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

Notes: Sample was split @ MSL

Completed By: JMB Date/Time: 4/28/11 1630

SAMPLE PRESERVATION

☐	Sample(s) were preserved prior to arrival at MSL (noted on CoC / Sample / per PM Instruction)
☐	Random pH checked for ~10% of samples (use dip paper) Sample IDs: _____
☐	Complete pH check required for project (use pH meter and record on pH Record form)
☐	Sample(s) were preserved at MSL

Type:	☐ 0.2% HNO ₃	Notes:	Lot#
	☐ 0.5% HCl (Hg samples)	Notes:	Lot#
	☐ Refrigerate/Freeze	Notes:	<u>DRG = Freezer</u> <u>MET = deep Fzn</u>
	☐ Other	Notes:	

Completed By: JMB Date/Time: 4/28/11 1700

Storage Shelf: _____

URS**Chain of Custody**

URS Corporation
 1501 4th Avenue, Suite 1400
 Seattle, WA 98101-1616
 206.438.2700

Contact:

Josie Smith

Phone No.:

206-438-2700

Page 1 of 3

Installation ID <i>BNC</i>		Job No. <i>33762009</i>		Analytical Methods <i>Envest</i> Indicate Any Condition That Would Affect Sample Analysis Indicate Samples Containing Quantities for MS/MSD Analysis														
Site ID <i>OUB M</i>	Zone ID <i>—</i>	Sampling Co. <i>URS</i>																
Airbill Co./Number <i>Hand Deliver</i>		Shipping Date <i>5/7/10</i>																
Sample Number	Date (mm/dd/yy)	Time (24 Hr.)	Matrix Type													Sample Type		
<i>1500-G19</i>	<i>5/4/10</i>	<i>1545</i>	<i>SD</i>	<i>ES</i>	NUMBER OF BOTTLES PER ANALYTICAL METHODS	<i>X</i>												Remarks
<i>1500-G15</i>	<i>5/4/10</i>	<i>1619</i>	<i>SD</i>	<i>ES</i>		<i>X</i>												
<i>1500-G14</i>	<i>5/4/10</i>	<i>1635</i>	<i>SD</i>	<i>ES</i>		<i>X</i>												
<i>Dupl-050410</i>	<i>5/4/10</i>	<i>—</i>	<i>SD</i>	<i>ES</i>		<i>X</i>												
<i>1500-G5</i>	<i>5/5/10</i>	<i>0445</i>	<i>SD</i>	<i>ES</i>		<i>X</i>												
<i>1500-G6</i>	<i>5/5/10</i>	<i>1030</i>	<i>SD</i>	<i>ES</i>		<i>X</i>												
<i>1500-G7</i>	<i>5/5/10</i>	<i>1100</i>	<i>SD</i>	<i>ES</i>		<i>X</i>												
<i>1500-G8</i>	<i>5/5/10</i>	<i>1155</i>	<i>SD</i>	<i>ES</i>		<i>X</i>												
<i>1500-G9</i>	<i>5/5/10</i>	<i>1230</i>	<i>SD</i>	<i>ES</i>		<i>X</i>												
<i>1500-G10</i>	<i>5/5/10</i>	<i>1340</i>	<i>SD</i>	<i>ES</i>		<i>X</i>												
Preservation: A = HCL to pH < 2; B = HNO ₃ to pH < 2; C = H ₂ SO ₄ to pH < 2; D = NaOH to pH < 12; E = Other (specify)																		
Relinquished by Sampler: (Signature) <i>[Signature]</i>		Date <i>5/7/10</i>	Time <i>1445</i>	Received by: (Signature) <i>[Signature]</i>		Laboratory Name: <i>Battelle</i>												
Relinquished by: (Signature) <i>[Signature]</i>		Date <i>5/17/10</i>	Time <i>1500</i>	Received by: (Signature) <i>[Signature]</i>		Laboratory Contract No.:												
Relinquished by: (Signature) <i>[Signature]</i>		Date	Time	Received by Lab: (Signature) <i>[Signature]</i>		Samples Disposed by:						Date	Time					
Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water; Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Goldenrod = URS Sample Control Copy Sample Types Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank																		

Chain of Custody

URS Corporation

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Seattle, WA 98101-1616
206.438.2700

Contact: Josie Smith

Phone No.: 206-438-2700

Page 2 of 3

Installation ID		Job No.		Analytical Methods												Remarks									
Site ID		Zone ID		Sampling Co.		Shipping Date		Indicate Any Condition That Would Affect Sample Analysis																	
Airbill Co./Number								Indicate Samples Containing Quantities for MS/MSD Analysis																	
Sample Number		Sample Collection		Matrix Type		Sample Type		Remarks																	
		Date (mm/dd/yy)		Time (24 Hr.)																					
500-G64		05/06/10		0830		SD ES		ns/msd ✓																	
500-G65		05/06/10		0915		SD ES		✓																	
500-G67		05/06/10		1040		SD ES		✓																	
500-G68		05/06/10		1125		SD ES		✓																	
Dupl-050610		05/06/10		-		SD ES		✓																	
500-G59		05/06/10		1220		SD ES		✓																	
500-G60		05/06/10		1355		SD ES		✓																	
500-G37		05/06/10		1430		SD ES		✓																	
500-G66		05/06/10		1450		SD ES		✓																	
500-G69		05/06/10		1530		SD ES		✓																	
Preservation: A = HCL to pH < 2; B = HNO ₃ to pH < 2; C = H ₂ SO ₄ to pH < 2; D = NaOH to pH < 12; E = Other (specify)																									
Relinquished by Sampler: (Signature)				Date		Time		Received by: (Signature)				Laboratory Name:													
Relinquished by: (Signature)				Date		Time		Received by: (Signature)				Laboratory Contract No.:													
Relinquished by: (Signature)				Date		Time		Received by Lab: (Signature)				Samples Disposed by:													
												Date		Time											

Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue WR - Water Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Goldenrod = URS Sample Control Copy

Sample Types Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank

Duplicate COC. Original 3 of 3
COC missing. Information based on labels

**PSNS Project ENVVEST
FC TMDL STUDY**

[illegible]

URS

Chain of Custody

URS Corporation
1501 4th Avenue, Suite 1400
Seattle, WA 98101-1616
206.438.2700

Contact: Josie Smith
Phone No.: 206-438-2700

Page 1 of 5

Installation ID <u>BNC</u>		Job No. <u>33762009</u>	
Site ID <u>0UBM</u>	Zone ID <u>-</u>	Sampling Co. <u>URS</u>	
Airbill Co./Number <u>And Deliver</u>		Shipping Date <u>5/13/10</u>	
Sample Number	Sample Collection Date (mm/dd/yy) Time (24 Hr.)	Matrix Type	Sample Type
500-G40	05/10/10 0840	SD	ES
500-G41	05/10/10 0920	SD	ES
500-G42	05/10/10 0930	SD	ES
DUP1-051010	05/10/10 -	SD	ES
500-G43	05/10/10 1040	SD	ES
500-G45	05/10/10 1130	SD	ES
500-G46	05/10/10 1210	SD	ES
500-G47	05/10/10 1315	SD	ES
500-G49	05/10/10 1350	SD	ES
500-G48	05/10/10 1530	SD	ES
Preservation: A = HCL to pH < 2; B = HNO ₃ to pH < 2; C = H ₂ SO ₄ to pH < 2; D = NaOH to pH < 12; E = Other (specify)			
Relinquished by: (Signature) <u>[Signature]</u>		Date <u>5/10/10</u>	Time <u>1420</u>
Relinquished by: (Signature) <u>[Signature]</u>		Date <u>5/17/10</u>	Time <u>1500</u>
Relinquished by: (Signature)		Date	Time
Received by: (Signature) <u>[Signature]</u>		Laboratory Name: <u>Battelle</u>	
Received by: (Signature) <u>[Signature]</u>		Laboratory Contract No.:	
Received by Lab: (Signature)		Samples Disposed by:	Date
Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water		Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Goldenrod = URS Sample Control Copy	
Sample Types Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank			

Analytical Methods
ENVEST

NUMBER OF BOTTLES PER ANALYTICAL METHODS

Indicate Any Condition That Would Affect Sample Analysis

Indicate Samples Containing Quantities for MS/MSD Analysis

Remarks

ms/msd ✓ 3 Jars

✓

✓

✓

✓

✓

✓

✓

✓

✓ Another 500-G48 dated 5/12/10

URS

Chain of Custody

URS Corporation
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206.438.2700

Contact: Joie Smith
Phone No.: 206-438-2700

Page 2 of 5

Installation ID <u>BNC</u>		Job No. <u>33762009</u>		
Site ID <u>OU B M</u>	Zone ID <u>—</u>	Sampling Co. <u>URS</u>		
Airbill Co./Number <u>Hand Deliver</u>		Shipping Date		
Sample Number	Sample Collection		Matrix Type	Sample Type
	Date (mm/dd/yy)	Time (24 Hr.)		
<u>500-G51</u>	<u>05/10/10</u>	<u>1450</u>	<u>SD</u>	<u>ES</u>
<u>500-G44</u>	<u>05/10/10</u>	<u>1345</u>	<u>SD</u>	<u>ES</u>
<u>500-G1</u>	<u>05/11/10</u>	<u>0810</u>	<u>SD</u>	<u>ES</u>
<u>500-G2</u>	<u>05/11/10</u>	<u>0840</u>	<u>SD</u>	<u>ES</u>
<u>500-G3</u>	<u>05/11/10</u>	<u>0900</u>	<u>SD</u>	<u>ES</u>
<u>500-G4</u>	<u>05/11/10</u>	<u>0935</u>	<u>SD</u>	<u>ES</u>
<u>500-G5</u>	<u>05/11/10</u>	<u>1020</u>	<u>SD</u>	<u>ES</u>
<u>ER-051110</u>	<u>05/11/10</u>	<u>1050</u>	<u>WR</u>	<u>ES</u>
<u>500-G6</u>	<u>05/11/10</u>	<u>1130</u>	<u>SD</u>	<u>ES</u>
<u>500-G7</u>	<u>05/11/10</u>	<u>1155</u>	<u>SD</u>	<u>ES</u>
Preservation: A = HCL to pH < 2; B = HNO ₃ to pH < 2; C = H ₂ SO ₄ to pH < 2; D = NaOH to pH < 12; E = Other (specify)				
Relinquished by: (Signature) <u>E. L. Lyle</u>		Date <u>5/13/10</u>	Time <u>1420</u>	Received by: (Signature) <u>JK Lyle</u>
Relinquished by: (Signature) <u>JK Lyle</u>		Date <u>5/13/10</u>	Time <u>1500</u>	Received by: (Signature) <u>JK Lyle</u>
Relinquished by: (Signature)		Date	Time	Received by Lab: (Signature)
Laboratory Name: <u>Battelle</u>				Laboratory Contract No.:
Samples Disposed by:				Date
Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue WR - Water				Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Goldenrod = URS Sample Control Copy
Sample Types Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank				

Chain of Custody

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Seattle, WA 98101-1616
206.438.2700

Contact: Josie Smith

Phone No.: 206 438-2700

Page 3 of 5

Installation ID BNC		Job No. 33762009			
Site ID 00B M	Zone ID		Sampling Co. URS		
Airbill Co./Number Hand Delivered		Shipping Date			
Sample Number	Sample Collection		Matrix Type	Sample Type	
	Date (mm/dd/yy)	Time (24 Hr.)			
500-G8	05/11/10	1250	SD	ES	
500-G9	05/11/10	1320	SD	ES	
500-G10	05/11/10	1355	SD	ES	
500-G11	05/11/10	1425	SD	ES	
500-G12	05/11/10	1500	SD	ES	
500-G13	05/11/10	1530	SD	ES	
500-G30	5/12/10	840	SD	ES	
500-G34	5/12/10	900	SD	ES	
500-G39	5/12/10	943	SD	ES	
500-G35	5/12/10	1017	SD	ES	
Preservation: A = HCL to pH < 2; B = HNO ₃ to pH < 2; C = H ₂ SO ₄ to pH < 2; D = NaOH to pH < 12; E = Other (specify)					
Relinquished by: (Signature) <i>[Signature]</i>		Date 5/13/10	Time 1420	Received by: (Signature) <i>[Signature]</i>	
Relinquished by: (Signature) <i>[Signature]</i>		Date 5/13/10	Time 1500	Received by: (Signature) <i>[Signature]</i>	
Relinquished by: (Signature)		Date	Time	Received by Lab: (Signature)	
Laboratory Name: Battelle				Laboratory Contract No.:	
Samples Disposed by:				Date	Time
Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue WR - Water Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Goldenrod = URS Sample Control Copy					
Sample Types Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank					



Contact: JOSIE SMITH
Phone No.: 206 438 2700

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Installation ID BNC		Job No. 33702009		Analytical Methods ENVEST																Indicate Any Condition That Would Affect Sample Analysis			
Site ID OUBM	Zone ID		Sampling Co. URS																			Shipping Date	
Airbill Co./Number Hand deliver																							
Sample Number	Sample Collection		Matrix Type																				Sample Type
	Date (mm/dd/yy)	Time (24 Hr.)																			Remarks		
500-G31	05/12/10	1105	SD	ES	X																	✓	
500-G36	05/12/10	1135	SD	ES	X																	✓	
500-G58	05/12/10	1250	SD	ES	X																	✓	
500-G27	05/12/10	1358	SD	ES	X																	✓	
500-G33	05/12/10	1417	SD	ES	X																	✓	
500-G62	05/12/10	1457	SD	ES	X																	✓	
500-G5A	05/12/10	1525	SD	ES	X																	✓	
500-G24	05/12/10	0015	SD	ES	X																	✓	
500-G25	05/13/10	0410	SD	ES	X																	✓	
500-G28	05/12/10	0440	SD	ES	X																	✓	
Preservation: A = HCL to pH < 2; B = HNO ₃ to pH < 2; C = H ₂ SO ₄ to pH < 2; D = NaOH to pH < 12; E = Other (specify)																							
Relinquished by Sampler: (Signature) E. L. [Signature]				Date 5/12/10	Time 1420	Received by: (Signature) [Signature]				Laboratory Name: B. Helle													
Relinquished by: (Signature) RK [Signature]				Date 5/13/10	Time 1500	Received by: (Signature) [Signature]				Laboratory Contract No.:													
Relinquished by: (Signature)				Date	Time	Received by Lab: (Signature)				Samples Disposed by:								Date	Time				
Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; T1 - Tissue WR - Water Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Goldenrod = URS Sample Control Copy																							
Sample Types Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank																							

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Seattle, WA 98101-1616
206.438.2700

Contact: Jessie Smith
Phone No.: 206-438-2700

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Installation ID BNC		Job No. 33762009		
Site ID OUBM	Zone ID -	Sampling Co. URS		
Airbill Co./Number Hand Delivered		Shipping Date		
Sample Number	Sample Collection		Matrix Type	Sample Type
	Date (mm/dd/yy)	Time (24 Hr.)		
500-G26	05/13/10	1040	SD	ES
500-G29	05/13/10	1105	SD	ES
500-G32	05/13/10	1135	SD	ES
500-G38	05/13/10	1300	SD	ES
500-G71	05/13/10	1400	SD	ES
Dupl 051110	05/11			
Preservation: A = HCL to pH < 2; B = HNO ₃ to pH < 2; C = H ₂ SO ₄ to pH < 2; D = NaOH to pH < 12; E = Other (specify)				
Relinquished by: (Signature) <i>[Signature]</i>		Date 5/10/10	Time 1420	Received by: (Signature) <i>[Signature]</i>
Relinquished by: (Signature) <i>[Signature]</i>		Date 5/15/2010	Time 1500	Received by: (Signature) <i>[Signature]</i>
Relinquished by: (Signature)		Date	Time	Received by Lab: (Signature)
Laboratory Name: Ba Helle			Laboratory Contract No.:	
Samples Disposed by:			Date	Time
Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue WR - Water Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Goldenrod = URS Sample Control Copy				
Sample Types Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank				

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Contact: Josie Smith
Phone No.: 206-438-2700

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Installation ID BNC		Job No. 33762009		
Site ID 02B M	Zone ID —	Sampling Co. URS		
Airbill Co./Number Hand Deliver		Shipping Date 5/20/10		
Sample Number	Sample Collection		Matrix Type	Sample Type
	Date (mm/dd/yy)	Time (24 Hr.)		
500-G14	05/18/10	0845	SD	ES
500-G15	05/18/10	0915	SD	ES
500-G16	05/18/10	0945	SD	ES
500-G17	05/18/10	1055	SD	ES
500-G18	05/18/10	1130	SD	ES
500-G19	05/18/10	1200	SD	ES
500-G20	05/18/10	1330	SD	ES
500-G21	05/18/10	1405	SD	ES
500-G22	05/18/10	1445	SD	ES
500-G23	05/18/10	1520	SD	ES
Preservation: A = HCL to pH < 2; B = HNO ₃ to pH < 2; C = H ₂ SO ₄ to pH < 2; D = NaOH to pH < 12; E = Other (specify)				
Relinquished by Sampler: (Signature) <i>[Signature]</i>		Date 5/20/10	Time 0900	Received by: (Signature) <i>[Signature]</i>
Relinquished by: (Signature) <i>[Signature]</i>		Date 7-28-10	Time 1805	Received by: (Signature) <i>[Signature]</i>
Relinquished by: (Signature) <i>[Signature]</i>		Date	Time	Received by Lab: (Signature)
Laboratory Name: Battelle				
Laboratory Contract No.:				
Samples Disposed by:				
Date				
Time				
Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue; WR - Water; Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Goldenrod = URS Sample Control Copy				
Sample Types Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank				

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Contact: Josic Smith
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Page 1 of 2

Installation ID BUC		Job No. 3376200		Analytical Methods Envest Indicate Any Condition That Would Affect Sample Analysis Indicate Samples Containing Quantities for MS/MSD Analysis Remarks												
Site ID OU B M	Zone ID —	Sampling Co. URS														
Airbill Co./Number Hand Deliver		Shipping Date 6/1/10														
Sample Number	Date (mm/dd/yy)	Time (24 Hr.)	Matrix Type													Sample Type
1500-G28	5/27/10	1350	SD	ES	NUMBER OF BOTTLES PER ANALYTICAL METHODS											
1500-G27	5/27/10	1320	SD	ES												
1500-G23	5/27/10	1045	SD	ES												
1500-G2	5/27/10	1805	SD	ES												
1500-G1	5/27/10	1830	SD	ES												
1500-G4	5/27/10	1725	SD	ES												
1500-G3	5/27/10	1700	SD	ES												
1500-G25	5/27/10	1145	SD	ES												
1500-G24	5/27/10	1115	SD	ES												
1500-G22	5/26/10	1500	SD	ES												
Preservation: A = HCL to pH < 2; B = HNO ₃ to pH < 2; C = H ₂ SO ₄ to pH < 2; D = NaOH to pH < 12; E = Other (specify)																
Relinquished by Sampler (Signature) <i>David Lewis</i>		Date 6/1/10	Time 0930	Received by: (Signature) <i>REK</i>		Laboratory Name: Battelle										
Relinquished by: (Signature) <i>SPAWAR</i>		Date 7-28-10	Time 1005	Received by: (Signature) <i>Charles Battelle</i>		Laboratory Contract No.:										
Relinquished by: (Signature) <i>[Signature]</i>		Date	Time	Received by Lab: (Signature)		Samples Disposed by:				Date	Time					
Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue WR - Water Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Goldenrod = URS Sample Control Copy																
Sample Types Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank																

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Contact: Josie Smith
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Page 2 of 2

Installation ID BUC		Job No. 33762009		Analytical Methods Indicate Any Condition That Would Affect Sample Analysis Indicate Samples Containing Quantities for MS/MSD Analysis Remarks																							
Site ID 0UB m	Zone ID -	Sampling Co. URS																									
Airbill Co./Number Hand Deliver		Shipping Date 6/1/10																									
Sample Number	Sample Collection Date (mm/dd/yy) Time (24 Hr.)		Matrix Type													Sample Type											
DUP1-052710	5/21/10	-	SD	ES	NUMBER OF BOTTLES PER ANALYTICAL METHODS																						
1500-621	5/26/10	1425	SD	ES																							
1500-632	5/27/10	1525	SD	ES																							
1500-631	5/27/10	1455	SD	ES																							
1500-629	5/27/10	1430	SD	ES																							
Preservation: A = HCL to pH < 2; B = HNO ₃ to pH < 2; C = H ₂ SO ₄ to pH < 2; D = NaOH to pH < 12; E = Other (specify)																											
Relinquished by Sampler: (Signature) Dave Lewis		Date 6/1/10	Time 0930	Received by: (Signature) RIC		Laboratory Name: Ba Helle																					
Relinquished by: (Signature) SPAWAR		Date 7-28-10	Time 1805	Received by: (Signature) Chris Bottom		Laboratory Contract No.: 7/28/10																					
Relinquished by: (Signature)		Date	Time	Received by Lab: (Signature)		Samples Disposed by:				Date		Time															
Matrix Types: A - Air; PR - Product; SD - Sediment; SL - Soil; TI - Tissue WR - Water														Distribution: White = Accompanies Shipment; Canary = Lab Copy; Pink = Field Copy; Goldenrod = URS Sample Control Copy													
Sample Types Types: ER - Equipment Rinsate; ES - Environmental Sample; FB - Field Blank; TB - Trip Blank																											

FORM 11-2
SAMPLE COLLECTION INFORMATION

[illegible]

Sample Matrix			Sampling Equipment				Sample Types				
AA	ambient air	PP	precipitate	B	bailer	HA	hand auger	AB	ambient condition	N	Normal (Regular)
AX	air	SBS	subsurface soil	BS	beach seine	HC	hand collected		blank	PE	performance evaluation
BS	brackish sediment	SE	sediment	CC	continuous core sampler	HK	hook and line	BIOCON	bioassay control	RD	regulatory duplicate
DF	dust/fallout	SL	sludge	CH	charcoal sampling tube	PP	pump-peristaltic		sample	SB	source blank
DR	debris/rubble	SN	building material	CO	core sampler	PU	pump-standard	BS	blank spike	SBD	source blank duplicate
EF	emissions flux	SO	soil	CP	pump-centrifugal	SK	skimmer	BSD	blanks spike dup	SD	matrix spike duplicate
EW	elutriate water	SS	scrapings	DG	drill rig	SS	split spoon	EB	equipment blank	SPLIT	sample split
FB	fibers	SU	surface soil	DT	drive tube(geoprobe, direct push, CPT rig)	SY	syringe	EBD	equipment blank / rinsate dup	SRM	standard reference material
GR	gravel	SW	swab or wipe	E2	pump-electric	T	shelby tube	FB	field blank	TB	trip blank
GS	soil gas	TX	tissue			TB	tedlar bag	FD	field duplicate	TBD	trip blank duplicate
IDS	IDW soil	W	water	G	grab	TR	animal trap	FR	field replicate	TBR	trip blank replicate
IDW	IDW water	WB	brackish water			TL	trawl	FS	field spike		
LF	product	WG	groundwater			VC	vacuum (gas)	MB	material blank		
MR	marine sediment	WM	marine water			V V	van veen	MS	matrix spike		
NS	near-surface soil	WS	surface water			W	swab or wipe				

Recorder: Eric Lillywhite	Date: 6/7/10
Checker:	Date:

FORM 11-2
SAMPLE COLLECTION INFORMATION

[illegible]

Sample Matrix				Sampling Equipment				Sample Types			
AA	ambient air	PP	precipitate	B	bailer	HA	hand auger	AB	ambient condition	N	Normal (Regular)
AX	air	SBS	subsurface soil	BS	beach seine	HC	hand collected		blank	PE	performance evaluation
BS	brackish sediment	SE	sediment	CC	continuous core sampler	HK	hook and line	BIOCON	bioassay control	RD	regulatory duplicate
DF	dust/fallout	SL	sludge	CH	charcoal sampling tube	PP	pump-peristaltic		sample	SB	source blank
DR	debris/rubble	SN	building material	CO	core sampler	PU	pump-standard	BS	blank spike	SBD	source blank duplicate
EF	emissions flux	SO	soil	CP	pump-centrifugal	SK	skimmer	BSD	blanks spike dup	SD	matrix spike duplicate
EW	elutriate water	SS	scrapings	DG	drill rig	SS	split spoon	EB	equipment blank	SPLIT	sample split
FB	fibers	SU	surface soil	DT	drive tube(geoprobe, direct push, CPT rig)	SY	syringe	EBD	equipment blank / rinsate dup	SRM	standard reference material
GR	gravel	SW	swab or wipe			T	shelby tube	FB	field blank	TB	trip blank
GS	soil gas	TX	tissue	E2	pump-electric	TB	tedlar bag	FD	field duplicate	TBD	trip blank duplicate
IDS	IDW soil	W	water		submersible	TR	animal trap	FR	field replicate	TBR	trip blank replicate
IDW	IDW water	WB	brackish water	G	grab	TL	trawl	FS	field spike		
LF	product	WG	groundwater			VC	vacuum (gas)	MB	material blank		
MR	marine sediment	WM	marine water			VV	van veen	MS	matrix spike		
NS	near-surface soil	WS	surface water			W	swab or wipe				

Recorder: Eric Lillywhite	Date: 6/7/10
Checker:	Date:

FORM 11-2
SAMPLE COLLECTION INFORMATION

Installation ID: BNC		Establishing Contract ID: N44255-09-D-4100		Prime Contractor Name: URS				
Site Name: Operable Unit B (Marine)		DO/CTO: 0009		Establishing Phase:		Collection Date: 5/10/10		
Location Name	Sample Name	Depth Range (feet bgs)		Collection Time	Sample Matrix	Sample Type	Sampling Equipment	Composite (Y/N)
		Start Depth	End Depth					
500-G40	500-G40	0	0.33	0840	MR	N	VV	Y
500-G41	500-G41	0	0.33	0920	MR	N	VV	Y
500-G42	500-G42	0	0.33	0950	MR	N	VV	Y
500-G42	DUP1-051010	0	0.33	0950	MR	FD	VV	Y
500-G43	500-G43	0	0.33	1040	MR	N	VV	Y
500-G45	500-G45	0	0.33	1130	MR	N	VV	Y
500-G46	500-G46	0	0.33	1210	MR	N	VV	Y
500-G47	500-G47	0	0.33	1315	MR	N	VV	Y
500-G49	500-G49	0	0.33	1350	MR	N	VV	Y
500-G51	500-G51	0	0.33	1450	MR	N	VV	Y
500-G48	500-G48	0	0.33	1530	MR	N	VV	Y
500-G44	500-G44	0	0.33	1545	MR	N	VV	Y
RINSATE	ER-051010	--	--	1600	W	EB	G	N

Sample Matrix			Sampling Equipment			Sample Types		
AA ambient air	PP precipitate	B bailer	HA hand auger	AB ambient condition blank	N Normal (Regular)			
AX air	SBS subsurface soil	BS beach seine	HC hand collected	BIOCON bioassay control sample	PE performance evaluation			
BS brackish sediment	SE sediment	CC continuous core sampler	HK hook and line	BS blank spike	RD regulatory duplicate			
DF dust/fallout	SL sludge	CH charcoal sampling tube	PP pump-peristaltic	BSD blanks spike dup	SB source blank			
DR debris/rubble	SN building material	CO core sampler	PU pump-standard	EB equipment blank	SBD source blank duplicate			
EF emissions flux	SO soil	CP pump-centrifugal	SK skimmer	EBD equipment blank / rinsate dup	SD matrix spike duplicate			
EW elutriate water	SS scrapings	DG drill rig	SS split spoon	FB field blank	SPLIT sample split			
FB fibers	SU surface soil	DT drive tube(genprobe, direct push, CPT rig)	SY syringe	FD field duplicate	SRM standard reference material			
GR gravel	SW swab or wipe	E2 pump-electric submersible	T shelly tube	FR field replicate	TB trip blank			
GS soil gas	TX tissue	G grab	TB tedlar bag	FS field spike	TBD trip blank duplicate			
IDS IDW soil	W water		TR animal trap	MB material blank	TBR trip blank replicate			
IDW IDW water	WB brackish water		TL trawl	MS matrix spike				
LF product	WG groundwater		VC vacuum (gas)					
MR marine sediment	WM marine water		VV van veen					
NS near-surface soil	WS surface water		W swab or wipe					

Recorder: Eric Lillywhite	Date: 6/7/10
Checker:	Date:

**FORM 11-2
SAMPLE COLLECTION INFORMATION**

Installation ID: BNC		Establishing Contract ID: N44255-09-D-4100		Prime Contractor Name: URS	
Site Name: Operable Unit B (Marine)		DO/CTO: 0009		Establishing Phase:	
				Collection Date: 5/11/10	

Location Name	Sample Name	Depth Range (feet bgs)		Collection Time	Sample Matrix	Sample Type	Sampling Equipment	Composite (Y/N)
		Start Depth	End Depth					
500-G01	500-G1	0	0.33	0810	MR	N	VV	Y
500-G02	500-G2	0	0.33	0840	MR	N	VV	Y
500-G03	500-G3	0	0.33	0900	MR	N	VV	Y
500-G04	500-G4	0	0.33	0935	MR	N	VV	Y
500-G05	500-G5	0	0.33	1020	MR	N	VV	Y
500-G06	500-G6	0	0.33	1130	MR	N	VV	Y
500-G07	500-G7	0	0.33	1155	MR	N	VV	Y
500-G08	500-G8	0	0.33	1250	MR	N	VV	Y
500-G09	500-G9	0	0.33	1320	MR	N	VV	Y
500-G10	500-G10	0	0.33	1355	MR	N	VV	Y
500-G11	500-G11	0	0.33	1425	MR	N	VV	Y
500-G11	DUP1 051110	0	0.33	1425	MR	FD	VV	Y
500-G12	500-G12	0	0.33	1500	MR	N	VV	Y
500-G13	500-G13	0	0.33	1530	MR	N	VV	Y
RINSATE	ER-051110	--	--	1050	W	EB	G	N

Sample Matrix		Sampling Equipment		Sample Types	
AA ambient air	PP precipitate	B bailer	HA hand auger	AB ambient condition	N Normal (Regular)
AX air	SBS subsurface soil	BS beach seine	HC hand collected	blank	PE performance evaluation
BS brackish sediment	SE sediment	CC continuous core sampler	HK hook and line	BIOCON bioassay control	RD regulatory duplicate
DF dust/fallout	SL sludge	CH charcoal sampling tube	PP pump-peristaltic	sample	SB source blank
DR debris/rubble	SN building material	CO core sampler	PU pump-standard	BS blank spike	SBD source blank duplicate
EF emissions flux	SO soil	CP pump-centrifugal	SK skimmer	BSD blanks spike dup	SD matrix spike duplicate
EW elutriate water	SS scrapings	DG drill rig	SS split spoon	EB equipment blank	SPLIT sample split
FB fibers	SU surface soil	DT drive tube(geoprobe, direct push, CPT rig)	SY syringe	EBD equipment blank / rinsate dup	SRM standard reference material
GR gravel	SW swab or wipe	E2 pump-electric	T shelly tube	FB field blank	TB trip blank
GS soil gas	TX tissue	G grab	TB tedlar bag	FD field duplicate	TBD trip blank duplicate
IDS IDW soil	W water		TR animal trap	FR field replicate	TBR trip blank replicate
IDW IDW water	WB brackish water		TL trawl	FS field spike	
LF product	WG groundwater		VC vacuum (gas)	MB material blank	
MR marine sediment	WM marine water		VV van veen	MS matrix spike	
NS near-surface soil	WS surface water		W swab or wipe		

Recorder: Eric Lillywhite		Date: 6/7/10
Checker:		Date:

FORM 11-2
SAMPLE COLLECTION INFORMATION

[illegible]

Sample Matrix				Sampling Equipment				Sample Types			
AA	ambient air	PP	precipitate	B	bailer	HA	hand auger	AB	ambient condition	N	Normal (Regular)
AX	air	SBS	subsurface soil	BS	beach seine	HC	hand collected		blank	PE	performance evaluation
BS	brackish sediment	SE	sediment	CC	continuous core sampler	HK	hook and line	BIOCON	bioassay control	RD	regulatory duplicate
DF	dust/fallout	SL	sludge	CH	charcoal sampling tube	PP	pump-peristaltic		sample	SB	source blank
DR	debris/rubble	SN	building material	CO	core sampler	PU	pump-standard	BS	blank spike	SBD	source blank duplicate
EF	emissions flux	SO	soil	CP	pump-centrifugal	SK	skimmer	BSD	blanks spike dup	SD	matrix spike duplicate
EW	elutriate water	SS	scrapings	DG	drill rig	SS	split spoon	EB	equipment blank	SPLIT	sample split
FB	fibers	SU	surface soil	DT	drive tube(geoprobe, direct push, CPT rig)	SY	syringe	EBD	equipment blank / rinsate dup	SRM	standard reference material
GR	gravel	SW	swab or wipe			T	shelby tube	FB	field blank	TB	trip blank
GS	soil gas	TX	tissue	E2	pump-electric	TB	tedlar bag	FD	field duplicate	TBD	trip blank duplicate
IDS	IDW soil	W	water		submersible	TR	animal trap	FR	field replicate	TBR	trip blank replicate
IDW	IDW water	WB	brackish water	G	grab	TL	trawl	FS	field spike		
LF	product	WG	groundwater			VC	vacuum (gas)	MB	material blank		
MR	marine sediment	WM	marine water			VV	van veen	MS	matrix spike		
NS	near-surface soil	WS	surface water			W	swab or wipe				

Recorder: Eric Lillywhite	Date: 6/7/10
Checker:	Date:

SAMPLE LOGIN



Project Manager: JMB
 Date Received: Assorted (see COC) - After splits, samples logged in 7/30/10
 Batch: 1
 Login Designee: Csuslick

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

Project: **ENVVEST Sed Eval Study** SQV02_Metals

SPONSOR CODE	Site Description	BATTELLE CODE	MATRIX	STORAGE LOCATION	PARAMETERS REQUESTED	COLLECTION DATE	INITIALS	Selected for confirmation
1500-G1	NA	3151-1	SED	Deep Freezer	Metals	5/27/2010	CS	x
1500-G2	NA	3151-2	SED	Deep Freezer	Metals	5/27/2010	CS	
1500-G3	NA	3151-3	SED	Deep Freezer	Metals	5/27/2010	CS	x
1500-G4	NA	3151-4	SED	Deep Freezer	Metals	5/27/2010	CS	
1500-G5	NA	3151-5	SED	Deep Freezer	Metals	5/5/2010	CS	
1500-G6	NA	3151-6	SED	Deep Freezer	Metals	5/5/2010	CS	
1500-G7	NA	3151-7	SED	Deep Freezer	Metals	5/5/2010	CS	
1500-G8	NA	3151-8	SED	Deep Freezer	Metals	5/5/2010	CS	
1500-G9	NA	3151-9	SED	Deep Freezer	Metals	5/5/2010	CS	
1500-G10	NA	3151-10	SED	Deep Freezer	Metals	5/5/2010	CS	
1500-G11	NA	3151-11	SED	Deep Freezer	Metals	5/19/2010	CS	
1500-G12	NA	3151-12	SED	Deep Freezer	Metals	5/19/2010	CS	x
DUP1-051910	NA	3151-13	SED	Deep Freezer	Metals	5/19/2010	CS	
1500-G13	NA	3151-14	SED	Deep Freezer	Metals	5/19/2010	CS	
1500-G14	NA	3151-15	SED	Deep Freezer	Metals	5/4/2010	CS	
DUP1-050410	NA	3151-16	SED	Deep Freezer	Metals	5/4/2010	CS	
1500-G15	NA	3151-17	SED	Deep Freezer	Metals	5/4/2010	CS	
1500-G16	NA	3151-18	SED	Deep Freezer	Metals	5/19/2010	CS	
1500-G17	NA	3151-19	SED	Deep Freezer	Metals	5/19/2010	CS	
1500-G18	NA	3151-20	SED	Deep Freezer	Metals	5/19/2010	CS	

SAMPLE LOGIN



Project Manager: JMB
 Date Received: Assorted (see COC) - After splits, samples logged in 7/30/10
 Batch: 1
 Login Designee: Csuslick

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

Project: **ENVVEST Sed Eval Study** SQV02_Metals

SPONSOR CODE	Site Description	BATTELLE CODE	MATRIX	STORAGE LOCATION	PARAMETERS REQUESTED	COLLECTION DATE	INITIALS	Selected for confirmation
1500-G19	NA	3151-21	SED	Deep Freezer	Metals	5/4/2010	CS	x
1500-G20	NA	3151-22	SED	Deep Freezer	Metals	5/19/2010	CS	
1500-G21	NA	3151-23	SED	Deep Freezer	Metals	5/27/2010	CS	
1500-G22	NA	3151-24	SED	Deep Freezer	Metals	5/26/2010	CS	x
1500-G23	NA	3151-25	SED	Deep Freezer	Metals	5/27/2010	CS	x
DUP1-052710	NA	3151-26	SED	Deep Freezer	Metals	5/27/2010	CS	
1500-G24	NA	3151-27	SED	Deep Freezer	Metals	5/27/2010	CS	x
1500-G25	NA	3151-28	SED	Deep Freezer	Metals	5/27/2010	CS	x
1500-G26	NA	3151-29	SED	Deep Freezer	Metals	5/19/2010	CS	
1500-G27	NA	3151-30	SED	Deep Freezer	Metals	5/27/2010	CS	x
1500-G28	NA	3151-31	SED	Deep Freezer	Metals	5/27/2010	CS	
1500-G29	NA	3151-32	SED	Deep Freezer	Metals	5/27/2010	CS	x
1500-G30	NA	3151-33	SED	Deep Freezer	Metals	5/19/2010	CS	
1500-G31	NA	3151-34	SED	Deep Freezer	Metals	5/27/2010	CS	
1500-G32	NA	3151-35	SED	Deep Freezer	Metals	5/27/2010	CS	x
500-G1	NA	3151-36	SED	Deep Freezer	Metals	5/11/2010	CS	
500-G2	NA	3151-37	SED	Deep Freezer	Metals	5/11/2010	CS	
500-G3	NA	3151-38	SED	Deep Freezer	Metals	5/11/2010	CS	
500-G4	NA	3151-39	SED	Deep Freezer	Metals	5/11/2010	CS	
500-G5	NA	3151-40	SED	Deep Freezer	Metals	5/11/2010	CS	

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500-G6	NA	3151-41	SED	Deep Freezer	Metals	5/11/2010	CS	
500-G7	NA	3151-42	SED	Deep Freezer	Metals	5/11/2010	CS	
500-G8	NA	3151-43	SED	Deep Freezer	Metals	5/11/2010	CS	
500-G9	NA	3151-44	SED	Deep Freezer	Metals	5/11/2010	CS	
500-G10	NA	3151-45	SED	Deep Freezer	Metals	5/11/2010	CS	
500-G11	NA	3151-46	SED	Deep Freezer	Metals	5/11/2010	CS	
DUP1 051110	NA	3151-47	SED	Deep Freezer	Metals	5/11/2010	CS	
500-G12	NA	3151-48	SED	Deep Freezer	Metals	5/11/2010	CS	x
500-G13	NA	3151-49	SED	Deep Freezer	Metals	5/11/2010	CS	
500-G14	NA	3151-50	SED	Deep Freezer	Metals	5/18/2010	CS	x
500-G15	NA	3151-51	SED	Deep Freezer	Metals	5/18/2010	CS	
500-G16	NA	3151-52	SED	Deep Freezer	Metals	5/18/2010	CS	
500-G17	NA	3151-53	SED	Deep Freezer	Metals	5/18/2010	CS	
500-G18	NA	3151-54	SED	Deep Freezer	Metals	5/18/2010	CS	
500-G19	NA	3151-55	SED	Deep Freezer	Metals	5/18/2010	CS	x
500-G20	NA	3151-56	SED	Deep Freezer	Metals	5/18/2010	CS	
500-G21	NA	3151-57	SED	Deep Freezer	Metals	5/18/2010	CS	
500-G22	NA	3151-58	SED	Deep Freezer	Metals	5/18/2010	CS	
500-G23	NA	3151-59	SED	Deep Freezer	Metals	5/18/2010	CS	
500-G24	NA	3151-60	SED	Deep Freezer	Metals	5/13/2010	CS	

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500-G25	NA	3151-61	SED	Deep Freezer	Metals	5/13/2010	CS	
500-G26	NA	3151-62	SED	Deep Freezer	Metals	5/13/2010	CS	
500-G27	NA	3151-63	SED	Deep Freezer	Metals	5/12/2010	CS	
500-G28	NA	3151-64	SED	Deep Freezer	Metals	5/13/2010	CS	
500-G29	NA	3151-65	SED	Deep Freezer	Metals	5/13/2010	CS	
500-G30	NA	3151-66	SED	Deep Freezer	Metals	5/12/2010	CS	x
500-G31	NA	3151-67	SED	Deep Freezer	Metals	5/12/2010	CS	
500-G32	NA	3151-68	SED	Deep Freezer	Metals	5/13/2010	CS	
500-G33	NA	3151-69	SED	Deep Freezer	Metals	5/12/2010	CS	
500-G34	NA	3151-70	SED	Deep Freezer	Metals	5/12/2010	CS	
500-G35	NA	3151-71	SED	Deep Freezer	Metals	5/12/2010	CS	
500-G36	NA	3151-72	SED	Deep Freezer	Metals	5/12/2010	CS	
500-G37	NA	3151-73	SED	Deep Freezer	Metals	5/6/2010	CS	
500-G38	NA	3151-74	SED	Deep Freezer	Metals	5/13/2010	CS	x
500-G39	NA	3151-75	SED	Deep Freezer	Metals	5/12/2010	CS	x
500-G40	NA	3151-76	SED	Deep Freezer	Metals	5/10/2010	CS	
500-G41	NA	3151-77	SED	Deep Freezer	Metals	5/10/2010	CS	
500-G42	NA	3151-78	SED	Deep Freezer	Metals	5/10/2010	CS	
DUP1-051010	NA	3151-79	SED	Deep Freezer	Metals	5/10/2010	CS	
500-G43	NA	3151-80	SED	Deep Freezer	Metals	5/10/2010	CS	x

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500-G44	NA	3151-81	SED	Deep Freezer	Metals	5/10/2010	CS	x
500-G45	NA	3151-82	SED	Deep Freezer	Metals	5/10/2010	CS	
500-G46	NA	3151-83	SED	Deep Freezer	Metals	5/10/2010	CS	x
500-G47	NA	3151-84	SED	Deep Freezer	Metals	5/10/2010	CS	
500-G48	NA	3151-85	SED	Deep Freezer	Metals	5/10/2010	CS	
500-G49	NA	3151-86	SED	Deep Freezer	Metals	5/10/2010	CS	
500-G50	NA	3151-87	SED	Deep Freezer	Metals	5/7/2010	CS	
500-G51	NA	3151-88	SED	Deep Freezer	Metals	5/10/2010	CS	x
500-G52	NA	3151-89	SED	Deep Freezer	Metals	5/7/2010	CS	x
500-G53	NA	3151-90	SED	Deep Freezer	Metals	5/7/2010	CS	x
500-G54	NA	3151-91	SED	Deep Freezer	Metals	5/12/2010	CS	x
500-G55	NA	3151-92	SED	Deep Freezer	Metals	5/7/2010	CS	
500-G56	NA	3151-93	SED	Deep Freezer	Metals	5/7/2010	CS	
500-G57	NA	3151-94	SED	Deep Freezer	Metals	5/7/2010	CS	
500-G58	NA	3151-95	SED	Deep Freezer	Metals	5/12/2010	CS	
500-G59	NA	3151-96	SED	Deep Freezer	Metals	5/6/2010	CS	
500-G60	NA	3151-97	SED	Deep Freezer	Metals	5/6/2010	CS	x
500-G61	NA	3151-98	SED	Deep Freezer	Metals	5/7/2010	CS	x
500-G62	NA	3151-99	SED	Deep Freezer	Metals	5/12/2010	CS	
500-G63	NA	3151-100	SED	Deep Freezer	Metals	5/7/2010	CS	

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500-G64	NA	3151-101	SED	Deep Freezer	Metals	5/6/2010	CS	
500-G65	NA	3151-102	SED	Deep Freezer	Metals	5/6/2010	CS	x
500-G66	NA	3151-103	SED	Deep Freezer	Metals	5/6/2010	CS	
500-G67	NA	3151-104	SED	Deep Freezer	Metals	5/6/2010	CS	x
500-G68	NA	3151-105	SED	Deep Freezer	Metals	5/6/2010	CS	x
DUP1-050610	NA	3151-106	SED	Deep Freezer	Metals	5/6/2010	CS	
500-G69	NA	3151-107	SED	Deep Freezer	Metals	5/6/2010	CS	
500-G70	NA	3151-108	SED	Deep Freezer	Metals	5/6/2010	CS	
500-G71	NA	3151-109	SED	Deep Freezer	Metals	5/13/2010	CS	x
PQ1	NA	3151-110	SED	Walk in Freezer	Metals	7/27/2010	CS	
PQ2	NA	3151-111	SED	Walk in Freezer	Metals	7/27/2010	CS	
DD6-1	NA	3151-112	SED	Walk in Freezer	Metals	7/15/2010	CS	
DD6-4	NA	3151-113	SED	Walk in Freezer	Metals	7/15/2010	CS	
DD6-7	NA	3151-114	SED	Walk in Freezer	Metals	7/26/2010	CS	

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SQV02_Organics

SPONSOR CODE	Site Description	BATTELLE CODE	MATRIX	STORAGE LOCATION	PARAMETERS REQUESTED	COLLECTION DATE	INITIALS	Selected for confirmation
1500-G1	NA	3151-115	SED	Walkin Freezer	Organics	5/27/2010	CS	
1500-G2	NA	3151-116	SED	Walkin Freezer	Organics	5/27/2010	CS	
1500-G3	NA	3151-117	SED	Walkin Freezer	Organics	5/27/2010	CS	
1500-G4	NA	3151-118	SED	Walkin Freezer	Organics	5/27/2010	CS	
1500-G5	NA	3151-119	SED	Walkin Freezer	Organics	5/5/2010	CS	
1500-G6	NA	3151-120	SED	Walkin Freezer	Organics	5/5/2010	CS	
1500-G7	NA	3151-121	SED	Walkin Freezer	Organics	5/5/2010	CS	
1500-G8	NA	3151-122	SED	Walkin Freezer	Organics	5/5/2010	CS	
1500-G9	NA	3151-123	SED	Walkin Freezer	Organics	5/5/2010	CS	
1500-G10	NA	3151-124	SED	Walkin Freezer	Organics	5/5/2010	CS	
1500-G11	NA	3151-125	SED	Walkin Freezer	Organics	5/19/2010	CS	
1500-G12	NA	3151-126	SED	Walkin Freezer	Organics	5/19/2010	CS	
DUP1-051910	NA	3151-127	SED	Walkin Freezer	Organics	5/19/2010	CS	
1500-G13	NA	3151-128	SED	Walkin Freezer	Organics	5/19/2010	CS	
1500-G14	NA	3151-129	SED	Walkin Freezer	Organics	5/4/2010	CS	
DUP1-050410	NA	3151-130	SED	Walkin Freezer	Organics	5/4/2010	CS	
1500-G15	NA	3151-131	SED	Walkin Freezer	Organics	5/4/2010	CS	
1500-G16	NA	3151-132	SED	Walkin Freezer	Organics	5/19/2010	CS	
1500-G17	NA	3151-133	SED	Walkin Freezer	Organics	5/19/2010	CS	
1500-G18	NA	3151-134	SED	Walkin Freezer	Organics	5/19/2010	CS	

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1500-G19	NA	3151-135	SED	Walkin Freezer	Organics	5/4/2010	CS	
1500-G20	NA	3151-136	SED	Walkin Freezer	Organics	5/19/2010	CS	
1500-G21	NA	3151-137	SED	Walkin Freezer	Organics	5/27/2010	CS	
1500-G22	NA	3151-138	SED	Walkin Freezer	Organics	5/26/2010	CS	
1500-G23	NA	3151-139	SED	Walkin Freezer	PAHs	5/27/2010	CS	x
DUP1-052710	NA	3151-140	SED	Walkin Freezer	Organics	5/27/2010	CS	
1500-G24	NA	3151-141	SED	Walkin Freezer	Organics	5/27/2010	CS	
1500-G25	NA	3151-142	SED	Walkin Freezer	PAHs	5/27/2010	CS	x
1500-G26	NA	3151-143	SED	Walkin Freezer	PAHs	5/19/2010	CS	x
1500-G27	NA	3151-144	SED	Walkin Freezer	Organics	5/27/2010	CS	
1500-G28	NA	3151-145	SED	Walkin Freezer	Organics	5/27/2010	CS	
1500-G29	NA	3151-146	SED	Walkin Freezer	Organics	5/27/2010	CS	
1500-G30	NA	3151-147	SED	Walkin Freezer	Organics	5/19/2010	CS	
1500-G31	NA	3151-148	SED	Walkin Freezer	Organics	5/27/2010	CS	
1500-G32	NA	3151-149	SED	Walkin Freezer	PAHs	5/27/2010	CS	x
500-G1	NA	3151-150	SED	Walkin Freezer	PAHs	5/11/2010	CS	x
500-G2	NA	3151-151	SED	Walkin Freezer	Organics	5/11/2010	CS	
500-G3	NA	3151-152	SED	Walkin Freezer	Organics	5/11/2010	CS	
500-G4	NA	3151-153	SED	Walkin Freezer	Organics	5/11/2010	CS	
500-G5	NA	3151-154	SED	Walkin Freezer	Organics	5/11/2010	CS	

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500-G6	NA	3151-155	SED	Walkin Freezer	Organics	5/11/2010	CS	
500-G7	NA	3151-156	SED	Walkin Freezer	Organics	5/11/2010	CS	
500-G8	NA	3151-157	SED	Walkin Freezer	Organics	5/11/2010	CS	
500-G9	NA	3151-158	SED	Walkin Freezer	Organics	5/11/2010	CS	
500-G10	NA	3151-159	SED	Walkin Freezer	Organics	5/11/2010	CS	
500-G11	NA	3151-160	SED	Walkin Freezer	Organics	5/11/2010	CS	
DUP1 051110	NA	3151-161	SED	Walkin Freezer	Organics	5/11/2010	CS	
500-G12	NA	3151-162	SED	Walkin Freezer	Organics	5/11/2010	CS	
500-G13	NA	3151-163	SED	Walkin Freezer	Organics	5/11/2010	CS	
500-G14	NA	3151-164	SED	Walkin Freezer	Organics	5/18/2010	CS	
500-G15	NA	3151-165	SED	Walkin Freezer	Organics	5/18/2010	CS	
500-G16	NA	3151-166	SED	Walkin Freezer	PAHs	5/18/2010	CS	x
500-G17	NA	3151-167	SED	Walkin Freezer	Organics	5/18/2010	CS	
500-G18	NA	3151-168	SED	Walkin Freezer	PAHs	5/18/2010	CS	x
500-G19	NA	3151-169	SED	Walkin Freezer	PAHs	5/18/2010	CS	x
500-G20	NA	3151-170	SED	Walkin Freezer	Organics	5/18/2010	CS	
500-G21	NA	3151-171	SED	Walkin Freezer	Organics	5/18/2010	CS	
500-G22	NA	3151-172	SED	Walkin Freezer	Organics	5/18/2010	CS	
500-G23	NA	3151-173	SED	Walkin Freezer	Organics	5/18/2010	CS	
500-G24	NA	3151-174	SED	Walkin Freezer	Organics	5/13/2010	CS	

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500-G25	NA	3151-175	SED	Walkin Freezer	Organics	5/13/2010	CS	
500-G26	NA	3151-176	SED	Walkin Freezer	PAHs	5/13/2010	CS	x
500-G27	NA	3151-177	SED	Walkin Freezer	Organics	5/12/2010	CS	
500-G28	NA	3151-178	SED	Walkin Freezer	Organics	5/13/2010	CS	
500-G29	NA	3151-179	SED	Walkin Freezer	Organics	5/13/2010	CS	
500-G30	NA	3151-180	SED	Walkin Freezer	Organics	5/12/2010	CS	
500-G31	NA	3151-181	SED	Walkin Freezer	Organics	5/12/2010	CS	
500-G32	NA	3151-182	SED	Walkin Freezer	Organics	5/13/2010	CS	
500-G33	NA	3151-183	SED	Walkin Freezer	Organics	5/12/2010	CS	
500-G34	NA	3151-184	SED	Walkin Freezer	Organics	5/12/2010	CS	
500-G35	NA	3151-185	SED	Walkin Freezer	Organics	5/12/2010	CS	
500-G36	NA	3151-186	SED	Walkin Freezer	Organics	5/12/2010	CS	
500-G37	NA	3151-187	SED	Walkin Freezer	Organics	5/6/2010	CS	
500-G38	NA	3151-188	SED	Walkin Freezer	Organics	5/13/2010	CS	
500-G39	NA	3151-189	SED	Walkin Freezer	PAHs	5/12/2010	CS	x
500-G40	NA	3151-190	SED	Walkin Freezer	PAHs	5/10/2010	CS	x
500-G41	NA	3151-191	SED	Walkin Freezer	Organics	5/10/2010	CS	
500-G42	NA	3151-192	SED	Walkin Freezer	PAHs	5/10/2010	CS	x
DUP1-051010	NA	3151-193	SED	Walkin Freezer	Organics	5/10/2010	CS	
500-G43	NA	3151-194	SED	Walkin Freezer	PAHs	5/10/2010	CS	x

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500-G44	NA	3151-195	SED	Walkin Freezer	Organics	5/10/2010	CS	
500-G45	NA	3151-196	SED	Walkin Freezer	PAHs	5/10/2010	CS	x
500-G46	NA	3151-197	SED	Walkin Freezer	Organics	5/10/2010	CS	
500-G47	NA	3151-198	SED	Walkin Freezer	Organics	5/10/2010	CS	
500-G48	NA	3151-199	SED	Walkin Freezer	PAHs	5/10/2010	CS	x
500-G49	NA	3151-200	SED	Walkin Freezer	PAHs	5/10/2010	CS	x
500-G50	NA	3151-201	SED	Walkin Freezer	Organics	5/7/2010	CS	
500-G51	NA	3151-202	SED	Walkin Freezer	Organics	5/10/2010	CS	
500-G52	NA	3151-203	SED	Walkin Freezer	Organics	5/7/2010	CS	
500-G53	NA	3151-204	SED	Walkin Freezer	Organics	5/7/2010	CS	
500-G54	NA	3151-205	SED	Walkin Freezer	Organics	5/12/2010	CS	
500-G55	NA	3151-206	SED	Walkin Freezer	PAHs	5/7/2010	CS	x
500-G56	NA	3151-207	SED	Walkin Freezer	PAHs	5/7/2010	CS	x
500-G57	NA	3151-208	SED	Walkin Freezer	PAHs	5/7/2010	CS	x
500-G58	NA	3151-209	SED	Walkin Freezer	Organics	5/12/2010	CS	
500-G59	NA	3151-210	SED	Walkin Freezer	PAHs	5/6/2010	CS	x
500-G60	NA	3151-211	SED	Walkin Freezer	PAHs	5/6/2010	CS	x
500-G61	NA	3151-212	SED	Walkin Freezer	PAHs	5/7/2010	CS	x
500-G62	NA	3151-213	SED	Walkin Freezer	Organics	5/12/2010	CS	
500-G63	NA	3151-214	SED	Walkin Freezer	PAHs	5/7/2010	CS	x

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500-G64	NA	3151-215	SED	Walkin Freezer	Organics	5/6/2010	CS	
500-G65	NA	3151-216	SED	Walkin Freezer	Organics	5/6/2010	CS	
500-G66	NA	3151-217	SED	Walkin Freezer	Organics	5/6/2010	CS	
500-G67	NA	3151-218	SED	Walkin Freezer	PAHs	5/6/2010	CS	x
500-G68	NA	3151-219	SED	Walkin Freezer	Organics	5/6/2010	CS	
DUP1-050610	NA	3151-220	SED	Walkin Freezer	Organics	5/6/2010	CS	
500-G69	NA	3151-221	SED	Walkin Freezer	PAHs	5/6/2010	CS	x
500-G70	NA	3151-222	SED	Walkin Freezer	Organics	5/6/2010	CS	
500-G71	NA	3151-223	SED	Walkin Freezer	PAHs	5/13/2010	CS	x
PQ1	NA	3151-224	SED	Walk in Freezer	(waiting on client)	7/27/2010	CS	
PQ2	NA	3151-225	SED	Walk in Freezer	(waiting on client)	7/27/2010	CS	
DD6-1	NA	3151-226	SED	Walk in Freezer	(waiting on client)	7/15/2010	CS	
DD6-4	NA	3151-227	SED	Walk in Freezer	(waiting on client)	7/15/2010	CS	
DD6-7	NA	3151-228	SED	Walk in Freezer	(waiting on client)	7/26/2010	CS	

(3151-224 thru 228 numbers not used. CS 5/26/11)

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: N 3151 Sample No(s): 1-223 Batch: 1
Project Name: ENVVEST OUB Project Manager: JMB

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

Matrix: sediment 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 / freeze org aliquot
Sample Preservation Instructions: freezer
See LIMS for archive/disposal information Done 7/30/10

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes No N/A Indicate in Appropriate Box

☐ ☐ ☒ Custody seal present Seal intact? YES NO
☒ ☐ ☐ Cooler temperature (acceptable range: $4 \pm 2^\circ\text{C}$ or solids: frozen) #1 - 5.2, #3 5.8°C
(if multiple coolers, note temp. of each) #2 - 5.5, #4 5.2°C
☐ ☐ ☒ Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)
Comment/Remedy: _____
☒ ☐ ☐ Were all chain of custody forms signed and dated?
☐ ☒ ☐ Were samples filtered at MSL?

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

Container type: Teflon Poly Glass Cap Vial Other: _____

Notes: Hand delivered by Navy

Completed By: JMB Date/Time: 5/17/10 1530

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

Samples were
split @ MSL (mt/orc)
7/28 & 7/30/10
Chen

Type: ☐ 0.2% HNO₃ Notes: _____ Lot# _____
☐ 0.5% HCl (Hg samples) Notes: _____ Lot# _____
☒ Refrigerate/Freeze Notes: see below
☐ Other Notes: _____

Completed By: Chen Date/Time: 7/30/10 1730

Storage Shelf: Met = deep Free bottom shelf ORG = wk in C 3/4, 6 4/5

SAMPLE CUSTODY RECORD

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

Date: 7/28/10



... Putting Technology To Work

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

Project Name: SED EVAL STUDY - ENVVEST

Project Manager: Brandenberger / Johnston

Phone Number: _____

Shipment Method: Hand delivery

Preservation: _____

No. of Containers

Test Parameters

SQV03 - Dry Deck Splits

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers						Laboratory ID	Observations/Comments
1	PQ1		SED	1							Sample delivered
2	PQ2		I	1							to MSL by
3	DD6-1		I	1							Joel Guerrero
4	DD6-4		I	1							from Per Bob
5	DD6-7		I	1							Johnston's instruction
6											<u>Chen</u> 7/28/10
7											
8											
9											
10											
11											
12											
13											
14											
15											

Relinquished By:

Company:

SPAWAR US NAVY

J. GUERRERO
Signature/Printed Name

7-28-10 1654
Date/Time

Received By:

Company:

Battelle MSL

Chen C. SUSLUK
Signature/Printed Name

7/28/10 1655
Date/Time

Relinquished By:

Company:

Signature/Printed Name

Date/Time

Received By:

Company:

Signature/Printed Name

Date/Time

RSC Project - Drydock & Outfall Sediment Pre-Site Assessment

[illegible]

From: Space & Naval Warfare (SPAWAR) Systems Center Pacific [SSC-PACIFIC]
 Advanced Systems & Applied Sciences Division
 Applied Systems & Environmental Sciences Branch, Code 71752
 Project NSY Puget Sound - Drydock Caisson Sediment Assessment
 Project Manager Dr. R.K. Johnston, PhD. - MESO NW Det.
 Project POC Joel Guerrero
 Position Environmental Chemist
 Street Address 53475 Strothe Road
 City, State, Zip Code San Diego, CA 92152
 Telephone Number 619.553.5332 619.553.4169
 Email Address #1 johnston@spawar.navy.mil
 Email Address #2 joel.guerrero@navy.mil

To: Battelle Marine Sciences Laboratory (BMSL)
 Laboratory Battelle Sequim Operations PNNL
 Contact Dr. Jill Brandenberger, PhD.
 Carolyn Suslick
 Position Sr Staff Scientist/Member Technical Staff
 Street Address 1529 West Sequim Bay Road
 City, State, Zip Code Sequim, WA 98382
 Phone Number 360.681.4564
 Fax Number 360.681.3699
 Email Address # 1 jill.brandenberger@pnl.gov
 Email Address # 2 carolyn.suslick@pnl.gov

Project Name: RSC Project - Drydock & Outfall Sediment Pre-Site Assessment

Instruction	Yes/No	Comment
1) Email COC	Yes	
2) Call/Fax Prior to Shipping	Yes	
3) Verify receipt of samples via Email	Yes	cc to D.B. Chadwick/J.Guerrero
4) Special Processing Required	No	samples kept dark/cold

SAMPLE LOGIN

Pacific Northwest
NATIONAL LABORATORY

Battelle
The Business of Innovation

Project Manager: JMB
Date Received: Assorted (see COC) - After splits, samples logged in 7/30/10
Batch: 1
Login Designee: Csuslick

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

Project: **ENVVEST Sed Eval Study**

SPONSOR CODE	Site Description	BATTELLE CODE	MATRIX	STORAGE LOCATION	PARAMETERS REQUESTED	COLLECTION DATE	INITIALS
500-G64	NA	3151-101	SED	Deep Freezer	Metals	5/6/2010	CS
500-G65	NA	3151-102	SED	Deep Freezer	Metals	5/6/2010	CS
500-G66	NA	3151-103	SED	Deep Freezer	Metals	5/6/2010	CS
500-G67	NA	3151-104	SED	Deep Freezer	Metals	5/6/2010	CS
500-G68	NA	3151-105	SED	Deep Freezer	Metals	5/6/2010	CS
DUP1-050610	NA	3151-106	SED	Deep Freezer	Metals	5/6/2010	CS
500-G69	NA	3151-107	SED	Deep Freezer	Metals	5/6/2010	CS
500-G70	NA	3151-108	SED	Deep Freezer	Metals	5/6/2010	CS
500-G71	NA	3151-109	SED	Deep Freezer	Metals	5/13/2010	CS
SQUAD 3 S2411	PQ1	3151-110	SED	Walk in Freezer	(waiting on client)	7/27/2010	CS
	PQ2	3151-111	SED	Walk in Freezer	(waiting on client)	7/27/2010	CS
	DD6-1	3151-112	SED	Walk in Freezer	(waiting on client)	7/15/2010	CS
	DD6-4	3151-113	SED	Walk in Freezer	(waiting on client)	7/15/2010	CS
	DD6-7	3151-114	SED	Walk in Freezer	(waiting on client)	7/26/2010	CS

Applies to both SQV02 and SQV03
 LOG-IN CHECKLIST SQV03 Sample numbers are 110-114 Reference SOP# MSL-A-001

Central File #: N 3151 Sample No(s): 1-223 Batch: 1
 Project Name: ENVVEST OUB Project Manager: JMB

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

Matrix: sediment 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 / freeze org aliquot
 Sample Preservation Instructions: freezer
 See LIMS for archive/disposal information Done 7/30/10

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes No N/A Indicate in Appropriate Box

☐ ☐ ☒ Custody seal present Seal intact? YES NO
☒ ☐ ☐ Cooler temperature (acceptable range: $4 \pm 2^\circ\text{C}$ or solids: frozen) #1 - 5.2 #3 5.8°C
 (if multiple coolers, note temp. of each) #2 - 5.5 #4 5.2°C
☐ ☐ ☒ Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)
 Comment/Remedy: _____
☒ ☐ ☐ Were all chain of custody forms signed and dated?
☐ ☒ ☐ Were samples filtered at MSL?

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

Container type: Teflon Poly Glass Cap Vial Other: _____

Notes: Hand delivered by Navy

Completed By: JMB Date/Time: 5/17/10 1530

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

*Samples were split @ MSL (mt/orc)
 7/28 & 7/30/10
 Gnan*

Type: ☐ 0.2% HNO₃ Notes: _____ Lot# _____
☐ 0.5% HCl (Hg samples) Notes: _____ Lot# _____
☒ Refrigerate/Freeze Notes: See below
☐ Other Notes: _____

Completed By: Gnan Date/Time: 7/30/10 1730

Storage Shelf: Met = deep Free bottom shelf ORG = wk in C 3/4, 6 4/5

SAMPLE CHAIN OF CUSTODY FORM

Date: 3/10/2011

Page: 77 of 100

COC Number:

Johnston/Leisle NAVFAC
BNS

Battelle

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

Project No.: PIER 7 Drum SAMPLING	EVENT:	Laboratory: Battelle MSL
Project Name: ENVVEST Ambient Monitoring Samples taken after 5 Drums collected	Testing Parameters	Address: 1529 W. Sequim Bay Road Sequim, WA 98382
Project Manager: Jill Brandenberger Phone: (360) 681-3668		Attention: Jill Brandenberger Observations, Instructions

Lab. Use only: Lab ID	Sample ID	Sample Label	Date/Time	Matrix	Metals (Total/Dissolved)	Total Hg	TS/TSS	Nuts/TOC	DOC	Osal	Oil & Grease	Spect	No. of containers	Station ID	Comments
	PIER 7		3/17/2011												(D) location of Drum Samples Mitch & Tyler Diversion here water
	DRUM SAMPLING LOCATION		PSNS Divers Collection												glass for sample location → NW NE S
11/11 229	Middle	PSNS Pier 7 Drum - M	3/17/2011 13:36	Sed										Pier 7 Drum	Over collected Grab 3/5/11
11/12 230	NORTH	- N												3/5/11 240	
11/13 231	EAST	- E												241	
11/14 232	WEST	- W												242	
11/15 233	SOUTH	- S												3/5/11 243	3/5/11

Relinquished by:				Received by: <i>[Signature]</i> 08/24/11		Total # of Containers	
Signature		Date		Time		Shipment Method:	
Printed Name		Company		Signature		Shipment Method:	
Printed Name		Company		Printed Name		Sample Disposition:	
Relinquished by:				Received by:		Distribution:	
Signature		Date		Time		1) 2 copies to the Laboratory	
Printed Name		Company		Signature		2) 1 copy to project manager	
Printed Name		Company		Printed Name		3) Return completed original to Battelle Marine Sciences Laboratory	

SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 3/24/2011

Batch: 2

Login Designee: McGahan

Project: **ENVVEST Sed Eval Study - Pier 7 Drums (SQV04)**



Marine Sciences Laboratory

1529 West Sequim Bay Road

Sequim, Washington 98382

PH: (360) 681-4565

SPONSOR CODE		Site Description	BATTELLE CODE	MATRIX	STORAGE LOCATION	PARAMETERS REQUESTED	COLLECTION DATE	INITIALS
SQV04-001	Middle	PSNS Pier 7 Drum-M	3151-229	sediment	Outside Refridgerator	rapid screening metals	03/17/11	MLFM
SQV04-002	North	PSNS Pier 7 Drum-N	3151-230	sediment	Outside Refridgerator	rapid screening metals	03/17/11	MLFM
SQV04-003	East	PSNS Pier 7 Drum-E	3151-231	sediment	Outside Refridgerator	rapid screening metals	03/17/11	MLFM
SQV04-004	West	PSNS Pier 7 Drum-W	3151-232	sediment	Outside Refridgerator	rapid screening metals	03/17/11	MLFM
SQV04-005	South	PSNS Pier 7 Drum-S	3151-233	sediment	Outside Refridgerator	rapid screening metals	03/17/11	MLFM
SQV04-006	Middle	PSNS Pier 7 Drum-M	3151-234	sediment	Deep Freezer C-2	metals	03/17/11	MLFM
SQV04-007	North	PSNS Pier 7 Drum-N	3151-235	sediment	Deep Freezer C-2	metals	03/17/11	MLFM
SQV04-008	East	PSNS Pier 7 Drum-E	3151-236	sediment	Deep Freezer C-2	metals	03/17/11	MLFM
SQV04-009	West	PSNS Pier 7 Drum-W	3151-237	sediment	Deep Freezer C-2	metals	03/17/11	MLFM
SQV04-010	South	PSNS Pier 7 Drum-S	3151-238	sediment	Deep Freezer C-2	metals	03/17/11	MLFM
SQV04-011	Middle	PSNS Pier 7 Drum-M	3151-239	sediment	Outside Freezer	organics	03/17/11	MLFM
SQV04-012	North	PSNS Pier 7 Drum-N	3151-240	sediment	Outside Freezer	organics	03/17/11	MLFM
SQV04-013	East	PSNS Pier 7 Drum-E	3151-241	sediment	Outside Freezer	organics	03/17/11	MLFM
SQV04-014	West	PSNS Pier 7 Drum-W	3151-242	sediment	Outside Freezer	organics	03/17/11	MLFM
SQV04-015	South	PSNS Pier 7 Drum-S	3151-243	sediment	Outside Freezer	organics	03/17/11	MLFM

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 3151 Sample No(s): 229-243
Project Name: Sediment Varnication Batch: 2
Project Manager: Jmms

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

Matrix: sea WP# _____

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

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

Yes ☐ No ☒ Filter Samples: Amount: Entire sample Half of sample

Yes ☒ No ☐ Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Login Lab)

Yes ☒ No ☐ Special instructions: split for rapid screening

Sample Preservation Instructions: 1-SPEX, 1-407, return 1607.

See LIMS for archive/disposal information

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

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

Yes ☐ No ☒ Custody seal present Seal intact? YES NO

Yes ☒ No ☐ Cooler temperature (acceptable range: $4 \pm 2^\circ\text{C}$ or solids:frozen) 5.1 °C
(if multiple coolers, note temp. of each) _____ °C

Yes ☐ No ☒ Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)
Comment/Remedy: _____

Yes ☒ No ☐ Were all chain of custody forms signed and dated?

Yes ☐ No ☒ Were samples filtered at MSL?

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

Container type: Teflon Poly Glass Cap. Vial Other: 224-238 transferred to SPEX

Notes: _____

Completed By: JmmsDate/Time: 3/24/11 1830

SAMPLE PRESERVATION

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

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

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

☐ Sample(s) were preserved at MSL

Type: ☐ 0.2% HNO₃ Notes: _____ Lot# _____

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

☒ Refrigerate/Freeze Notes: 229-233 - outside fridge, 234-238 - Deep freeze C-2

☐ Other Notes: _____

Completed By: [Signature]Date/Time: 03/24/11 1100Storage Shelf: Deep freeze C-2

SAMPLE CHAIN OF CUSTODY FORM

SQV05_Porewater

Battelle

Date: 4/27/11
 Page: 4 of
 COC Number:

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

Project No.:	EVENT:	Laboratory: Battelle MSL
Project Name:		Address: 1529 W. Sequim Bay Road Sequim, WA 98382
Project Manager: Jill Brandenberger Phone: (360) 681-3668	Testing Parameters	Attention: Jill Brandenberger Observations, Instructions

Lab. Use only: Lab ID	Sample ID	Sample Label	Collection Date/Time	Matrix	PW = Pore Water	Metals PW (DME) + H ₂	DOC PW	D. Sulfide PW							No. of containers	StationID	Comments
3151- SGV05- SGV05																	(A) PS03 leaks more than (B)
244	- 046	PS03	4/27/11 1700	sediment	x											2cm	from Squeeze core snail hole
245	- 047				x											5 cm	
246	- 048				x											8 cm	
247	- 049				x											12 cm	
248	- 050				x											16 cm	
249	- 051				x											20-18 cm	
256	- 052						x									2 cm	1 mil
257	- 053						x									5	1 mil
258	- 054						x									8	1 mil
259	- 055						x									12	1 mil
260	- 056						x									16	1 mil
261	- 057						x									20	1 mil
268	- 058						x									2 cm	1 mil
269	- 059						x									5	1 mil
270	- 060						x									8	0.5 mil

Relinquished by: <u>[Signature]</u> Signature Date: <u>4/28/11</u> Time: <u>3pm</u> Printed Name: <u>MSL</u> Company: <u> </u>	Received by: <u>[Signature]</u> Signature C. S. S. <u>[Signature]</u> Printed Name: <u>MSL</u> Company: <u> </u>	Total # of Containers: <u> </u> Shipment Method: <u> </u> Shipment Method: <u>Hand</u> Sample Disposition: <u> </u> Distribution: 1) 2 copies to the Laboratory 2) 1 copy to project manager 3) Return completed original to Battelle Marine Sciences Laboratory
Relinquished by: <u> </u> Signature Date: <u> </u> Time: <u> </u> Printed Name: <u> </u> Company: <u> </u>	Received by: <u> </u> Signature <u> </u> Printed Name: <u> </u> Company: <u> </u>	

SAMPLE CHAIN OF CUSTODY FORM

Date: _____
 Page: 56 of _____
 COC Number: _____

Battelle

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

Project No.:	EVENT:	Laboratory: Battelle MSL
Project Name:		Address: 1529 W. Sequim Bay Road Sequim, WA 98382
Project Manager: Jill Brandenberger Phone: (360) 681-3668	Testing Parameters	Attention: Jill Brandenberger Observations, Instructions

Lab. Use only: Lab ID	Sample ID	Sample Label	Collection Date/Time	Matrix	PW = Pore water	Metals PW	DOC PW	P. Subside PW								No. of containers	Station ID	Comments
351-	SQV05-																	
271	-061	PS03	4/27/11 1700	PW			X									12	cm	0.5 mil
272	-062						X									16		0.5 mil
273	-063						X									20		0.5 mil
250	-064	PS09				X										2		
251	-065					X										5		
252	-066					X										8		
253	-067					X										12		
254	-068					X										16		
255	-069					X										20		
262	-070						X									2		1 mil
263	-071						X									5		1 mil
264	-072						X									8		1 mil
265	-073						X									12		1 mil
266	-074						X									16		1 mil
267	-075						X									20		1 mil

Relinquished by: <u>[Signature]</u> Signature _____ Date <u>4/28/11</u> Time _____ Printed Name _____ Company <u>MSL</u>	Received by: <u>[Signature]</u> Signature _____ Date <u>4/28/11 0900</u> Printed Name _____ Company <u>MSL</u>	Total # of Containers _____ Shipment Method: _____ Shipment Method: <u>Air</u>
Relinquished by: _____ Signature _____ Date _____ Time _____ Printed Name _____ Company _____	Received by: _____ Signature _____ Printed Name _____	Sample Disposition: Distribution: 1) 2 copies to the Laboratory 2) 1 copy to project manager 3) Return completed original to Battelle Marine Sciences Laboratory

SAMPLE CHAIN OF CUSTODY FORM

Date: _____
 Page: B6 of _____
 COC Number: _____

Battelle

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

Project No.:	EVENT:	Laboratory: Battelle MSL
Project Name:		Address: 1529 W. Sequim Bay Road Sequim, WA 98382
Project Manager: Jill Brandenberger Phone: (360) 681-3668	Testing Parameters	Attention: Jill Brandenberger Observations, Instructions

Lab. Use only: Lab ID	Sample ID	Sample Label	Collection Date/Time	Matrix	Metals PLW	DOC PLW	P. Sulfide PLW									No. of containers	Station ID	Comments
3151-	274	-076	PS09	4/27/11	POD		X									2	cm	1 mil
	275	-077					X									5		1 mil
	276	-078					X									8		1 mil
	277	-079					X									12		0.5 mil
	278	-080					X									16		1 mil
	279	-081					X									20		0.5 mil
		-082																
		-083																
		-084																
		-085																
		-086																
		-087																
		-088																
		-089																
		-090																

Relinquished by: <u>[Signature]</u> Signature: _____ Date: <u>4/27/11</u> Time: _____ Printed Name: _____ Company: <u>MSL</u>	Received by: <u>[Signature]</u> Signature: _____ Date: <u>4/27/11</u> Time: _____ Printed Name: _____ Company: <u>MSL</u>	Total # of Containers: _____ Shipment Method: <u>Hand</u> Sample Disposition: _____
Relinquished by: _____ Signature: _____ Date: _____ Time: _____ Printed Name: _____ Company: _____	Received by: _____ Signature: _____ Date: _____ Time: _____ Printed Name: _____ Company: _____	Distribution: 1) 2 copies to the Laboratory 2) 1 copy to project manager 3) Return completed original to Battelle Marine Sciences Laboratory

SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 4/28/2011

Batch: SQV05

Login Designee: CSuslick

Project: **Sed Qual Validation Study (SQV05)**



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
SQV05-046	PS03	3151-244	Porewater	ICP-MS Lab	Metals	04/27/11
SQV05-047	PS03	3151-245	Porewater	ICP-MS Lab	Metals	04/27/11
SQV05-048	PS03	3151-246	Porewater	ICP-MS Lab	Metals	04/27/11
SQV05-049	PS03	3151-247	Porewater	ICP-MS Lab	Metals	04/27/11
SQV05-050	PS03	3151-248	Porewater	ICP-MS Lab	Metals	04/27/11
SQV05-051	PS03	3151-249	Porewater	ICP-MS Lab	Metals	04/27/11
SQV05-064	PS09	3151-250	Porewater	ICP-MS Lab	Metals	04/27/11
SQV05-065	PS09	3151-251	Porewater	ICP-MS Lab	Metals	04/27/11
SQV05-066	PS09	3151-252	Porewater	ICP-MS Lab	Metals	04/27/11
SQV05-067	PS09	3151-253	Porewater	ICP-MS Lab	Metals	04/27/11
SQV05-068	PS09	3151-254	Porewater	ICP-MS Lab	Metals	04/27/11
SQV05-069	PS09	3151-255	Porewater	ICP-MS Lab	Metals	04/27/11
SQV05-052	PS03	3151-256	Porewater	Deep Freezer	DOC	04/27/11
SQV05-053	PS03	3151-257	Porewater	Deep Freezer	DOC	04/27/11
SQV05-054	PS03	3151-258	Porewater	Deep Freezer	DOC	04/27/11
SQV05-055	PS03	3151-259	Porewater	Deep Freezer	DOC	04/27/11
SQV05-056	PS03	3151-260	Porewater	Deep Freezer	DOC	04/27/11
SQV05-057	PS03	3151-261	Porewater	Deep Freezer	DOC	04/27/11
SQV05-070	PS09	3151-262	Porewater	Deep Freezer	DOC	04/27/11
SQV05-071	PS09	3151-263	Porewater	Deep Freezer	DOC	04/27/11

SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 4/28/2011

Batch: SQV05

Login Designee: CSuslick

Project: **Sed Qual Validation Study (SQV05)**



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
SQV05-072	PS09	3151-264	Porewater	Deep Freezer	DOC	04/27/11
SQV05-073	PS09	3151-265	Porewater	Deep Freezer	DOC	04/27/11
SQV05-074	PS09	3151-266	Porewater	Deep Freezer	DOC	04/27/11
SQV05-075	PS09	3151-267	Porewater	Deep Freezer	DOC	04/27/11
SQV05-058	PS03	3151-268	Porewater	Lab 130	Sulfide	04/27/11
SQV05-059	PS03	3151-269	Porewater	Lab 130	Sulfide	04/27/11
SQV05-060	PS03	3151-270	Porewater	Lab 130	Sulfide	04/27/11
SQV05-061	PS03	3151-271	Porewater	Lab 130	Sulfide	04/27/11
SQV05-062	PS03	3151-272	Porewater	Lab 130	Sulfide	04/27/11
SQV05-063	PS03	3151-273	Porewater	Lab 130	Sulfide	04/27/11
SQV05-076	PS09	3151-274	Porewater	Lab 130	Sulfide	04/27/11
SQV05-077	PS09	3151-275	Porewater	Lab 130	Sulfide	04/27/11
SQV05-078	PS09	3151-276	Porewater	Lab 130	Sulfide	04/27/11
SQV05-079	PS09	3151-277	Porewater	Lab 130	Sulfide	04/27/11
SQV05-080	PS09	3151-278	Porewater	Lab 130	Sulfide	04/27/11
SQV05-081	PS09	3151-279	Porewater	Lab 130	Sulfide	04/27/11

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #: 3151 Sample No(s): 244-279 Batch: SQV05
Project Name: ENVVest SQV EVAL Study Project Manager: JMB

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

Matrix: <u>Porewaters</u>		WP#
Yes	No	
☐	☐	Navy-type Project (requires high-level sample tracking procedures)
☐	☐	USDA Samples (see Compliance Agreement Checklist)
		PM Verification:
☐	☐	Filter Samples: <u>Amount:</u> <u>Entire sample</u> <u>Half of sample</u>
☐	☐	Freeze dry sample(s) - samples will be weighed and placed in ultralow temp freezer (Login Lab)
☐	☐	Special instructions:
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)
☐	☐	☒	Project Manager notified of any custody/login discrepancies (cooler temp, sponsor codes, etc)
☒	☐	☐	Comment/Remedy:
☐	☒	☐	Were <u>all</u> chain of custody forms signed and dated?
☐	☒	☐	Were samples filtered at MSL?
Sample condition(s): <u>Acceptable</u> <u>Other (explain):</u>			
Container type: <u>Teflon</u> <u>Poly</u> <u>Glass</u> <u>Cap. Vial</u> <u>Other:</u>			
Notes:			

Hand delivered to Lab
from field 4/27/11
Stored in Walkin Cooler
until login

Completed By: C. Probst Date/Time: 4/28/11 0900

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)
☐	Complete pH check required for project (use pH meter and record on pH Record form)
☐	Sample(s) were preserved at MSL
Type: ☒	0.2% HNO ₃
☐	0.5% HCl (Hg samples)
☒	Refrigerate/Freeze
☐	Other
Notes:	<u>Optima HNO₃ (10µl) Lot# 1210080</u>
Notes:	<u>DDC-freezer Met- to KPLms Sulfide-Lab 130</u>
Notes:	
Completed By: <u>C. Probst</u>	Date/Time: <u>4/28/11</u> <u>0930</u>
Storage Shelf:	

SAMPLE CHAIN OF CUSTODY FORM

Date: 4/27/11

Page: 1 of

COC Number:

SQV05_Cores/Grabs
Samples split at MSL

Battelle

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

Project No.:	EVENT:	Laboratory: Battelle MSL
Project Name:		Address: 1529 W. Sequim Bay Road Sequim, WA 98382
Project Manager: Jill Brandenberger Phone: (360) 681-3668	Testing Parameters	Attention: Jill Brandenberger Observations, Instructions

See Lab CAC for MSL CODES	Lab. Use only: Lab ID	Sample ID	Sample Label	Collection Date/Time	Matrix	Metals PW	DOC PW	D Sulfolo PW	Metals ICP-MS	TOC	Org. C	Serology	Grains	AVS/SEM	No. of containers	Type	Station ID	Comments
		-001	PS03-1	4/26/11 1100	sed					X	X	X	X	X		grab		starts by moor E / across dard
		-002	PS03-2	1125						X	X	X	X	X				
		-003	PS03-3							X	X	X	X	X				
		-004	PS03-4							X	X	X	X	X				
		-005	PS03-5							X	X	X	X	X				
		-006	PS03-6							X	X	X	X	X				
		-007	PS03-7	1050		X	X	X	X	X	X					S. core		*6 44 ft
		-008	PS03-8	1100						X	X	X	X	X				S. mooring E end (All Grains)
		-009	PS09-1	1230						X	X	X	X	X		grab		squeeze core A
		-010	PS09-2							X	X	X	X	X				short core
		-011	PS09-3							X	X	X	X	X				behind barge (all show)
		-012	PS09-4	1235						X	X	X	X	X				end of 004 raison
		-013	PS09-5							X	X	X	X	X				second transect
		-014	PS09-6							X	X	X	X	X				
		-015	PS09-7	1220		X	X	X	X	X	X					S. core		squeeze core B 50 ft

Relinquished by:	Signature	Date	Time	Received by:	Signature	Date	Time	Total # of Containers
		4/28/11				4/28/11		
	Printed Name	Company			Printed Name	Company		Shipment Method:
		MSL				MSL		Shipment Method: Hand
Relinquished by:	Signature	Date	Time	Received by:	Signature	Date	Time	Sample Disposition:
								Distribution:
	Printed Name	Company			Printed Name	Company		1) 2 copies to the Laboratory
								2) 1 copy to project manager
								3) Return completed original to Battelle Marine Sciences Laboratory

SAMPLE CHAIN OF CUSTODY FORM

Date: 4/27/11
 Page: 2 of
 COC Number:

Battelle

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

Project No.:	EVENT:	Laboratory: Battelle MSL
Project Name:		Address: 1529 W. Sequim Bay Road Sequim, WA 98382
Project Manager: Jill Brandenberger Phone: (360) 681-3668	Testing Parameters	Attention: Jill Brandenberger Observations, Instructions

Lab. Use only: Lab ID	Sample ID	Sample Label	Collection Date/Time	Matrix	Testing Parameters										Type	Station ID	Comments
					metals PW	DOC PW	D. sul Rde PW	metals ICP-MS	TOC	Org	screening	G.S.	AVS/SEM	No. of containers			
Sec Lab COC for MSL codes by	-016	PS09-9	4/27/11 1225	sed				X	X	X	X	X	X		core		50ft / same as squeeze
	-017	PS10-1	4/27/11 1330						X	X	X	X			grab		2 transects 1-3 near caisson
	-018	PS10-2							X	X	X	X					mid caisson
	-019	PS10-3							X	X	X	X					40ft
	-020	PS10-4							X	X	X	X					2nd row
	-021	PS10-5							X	X	X	X					
	-022	PS10-6							X	X	X	X					
	-023	PS10-7	1320					X	X	X	X		X		core		consolidated bottom 50ft
	-024	PS10.1-1	4/27/11 1410						X	X	X	X			grab		
	-025	PS10.1-2							X	X	X	X					
	-026	PS10.1-3							X	X	X	X					30 ft
	-027	PS10.1-4							X	X	X	X					
	-028	PS10.1-5							X	X	X	X					42 ft
	-029	PS10.1-6							X	X	X	X					30 ft
	-030	PS10.1-7	1400					X	X	X	X	X	X		core		38 ft. consol. distal

Relinquished by: <u>[Signature]</u> Signature: _____ Date: <u>4/27/11</u> Time: _____ Printed Name: _____ Company: <u>MSL</u>	Received by: <u>[Signature]</u> Signature: _____ Date: <u>4/28/11</u> Time: _____ Printed Name: _____ Company: <u>C.S. Sullivan</u>	Total # of Containers: _____ Shipment Method: <u>Hand</u> Sample Disposition: _____ Distribution: 1) 2 copies to the Laboratory 2) 1 copy to project manager 3) Return completed original to Battelle Marine Sciences Laboratory
Relinquished by: _____ Signature: _____ Date: _____ Time: _____ Printed Name: _____ Company: _____	Received by: _____ Signature: _____ Date: _____ Time: _____ Printed Name: _____ Company: _____	

SAMPLE CHAIN OF CUSTODY FORM

Date: 4/27/11
 Page: 3 of
 COC Number:

Battelle

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

Project No.:	EVENT:	Laboratory: Battelle MSL
Project Name:		Address: 1529 W. Sequim Bay Road Sequim, WA 98382
Project Manager: Jill Brandenberger Phone: (360) 681-3668	Testing Parameters	Attention: Jill Brandenberger Observations, Instructions

Lab. Use only: Lab ID	Sample ID	Sample Label	Collection Date/Time	Matrix	Testing Parameters										StationID	Comments
					metals PLO	DOC PLO	D. sulfide	metals	TOC	Org	Seawater	G.S.	AMS/SEM	No. of containers		
See Lab Col for MSL Woods	-031	PS11-1	4/27/11 1445	sed					x	x	x	x			grab	38ft 1st transect / closer to capison
	-032	PS11-2							x	x	x	x				
	-033	PS11-3							x	x	x	x				46ft
	-034	PS11-4	1508						x	x	x	x				2nd transect
	-035	PS11-5	1505						x	x	x	x				52 ft
	-036	PS11-6	1500						x	x	x	x				49 ft
	-037	PS11-7	1436				x		x	x	x		x		core	50ft.
	-038	PS08-1	1550						x	x	x	x			grab	
	-039	PS08-2	1555						x	x	x	y				
	-040	PS08-3	1600						x	x	x	y				32
	-041	PS08-4	1603						x	x	x	y				42
	-042	PS08-5	1607						x	x	x	y				40
	-043	PS08-6	1609						x	x	x	y				42
	-044	PS08-7	1				x		x	x	x		x		core	
	-045															

Relinquished by: <u>[Signature]</u> <u>4/27/11</u> Signature Date Time Printed Name Company	Received by: <u>[Signature]</u> <u>4/27/11</u> Signature Date Time Printed Name Company	Total # of Containers Shipment Method: <u>Hand</u> Sample Disposition: Distribution: 1) 2 copies to the Laboratory 2) 1 copy to project manager 3) Return completed original to Battelle Marine Sciences Laboratory
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SAMPLE CUSTODY RECORD

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

Date: 4/28/2011

Core collected 4/27/11

Core split 4/28/11

Pacific Northwest
NATIONAL LABORATORY

Battelle
The Business of Innovation

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

Project Name: Sed Quality Verification Study (Squeeze Core Splits)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered Core/Split at MSL

Preservation: Refrigerate

Line	Field Sample ID		Collection Date/Time	Matrix	No. of Containers	Test Parameters					Laboratory ID	Observations/Comments
						Metals	TOC	Organics				
1	SQV05-082	PS03	4/28/2011	SED	1	X					3151-280	0-3cm; Squeeze core A
2	SQV05-083	PS03	4/28/2011	SED	1	X					3151-281	3-6cm; Squeeze core A
3	SQV05-084	PS03	4/28/2011	SED	1	X					3151-282	6-9cm; Squeeze core A
4	SQV05-085	PS03	4/28/2011	SED	1	X					3151-283	9-13cm; Squeeze core A
5	SQV05-086	PS03	4/28/2011	SED	1	X					3151-284	13-19cm; Squeeze core A
6	SQV05-087	PS03	4/28/2011	SED	1	X					3151-285	19-25cm; Squeeze core A
7	SQV05-088	PS03	4/28/2011	SED	1		X				3151-292	0-3cm; Squeeze core A
8	SQV05-089	PS03	4/28/2011	SED	1		X				3151-293	3-6cm; Squeeze core A
9	SQV05-090	PS03	4/28/2011	SED	1		X				3151-294	6-9cm; Squeeze core A
10	SQV05-091	PS03	4/28/2011	SED	1		X				3151-295	9-13cm; Squeeze core A
11	SQV05-092	PS03	4/28/2011	SED	1		X				3151-296	13-19cm; Squeeze core A
12	SQV05-093	PS03	4/28/2011	SED	1		X				3151-297A	19-25cm; Squeeze core A
13	SQV05-094	PS03	4/28/2011	SED	1			X			3151-303	0-3cm; Squeeze core A
14	SQV05-095	PS03	4/28/2011	SED	1			X			3151-304	3-6cm; Squeeze core A
15	SQV05-096	PS03	4/28/2011	SED	1			X			3151-305	6-9cm; Squeeze core A

Relinquished By:

Company:

[Signature]

4/28/11

Signature/Printed Name

Date/Time

Received By:

Company:

MSL

[Signature] C. SUSLUK

4/28/11 1130

Signature/Printed Name

Date/Time

Relinquished By:

Company:

Signature/Printed Name

Date/Time

Received By:

Company:

Signature/Printed Name

Date/Time

SAMPLE CUSTODY RECORD

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

Date: 4/28/2011

Core collected 4/27/11

Core split 4/28/11

Pacific Northwest
NATIONAL LABORATORY

Battelle
The Business of Innovation

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

Project Name: Sed Quality Verification Study (Squeeze Core Splits)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered Core/Split at MSL

Preservation: Refrigerate

Line	Field Sample ID		Collection Date/Time	Matrix	No. of Containers	Test Parameters					Laboratory ID	Observations/Comments
						Metals	TOC	Organics				
1	SQV05-097	PS03	4/28/2011	SED	1			X			3151-306	9-13cm; Squeeze core A
2	SQV05-098	PS03	4/28/2011	SED	1			X			3151-307	13-19cm; Squeeze core A
3	SQV05-099	PS03	4/28/2011	SED	1			X			3151-308	19-25cm; Squeeze core A
4	SQV05-100	PS09	4/28/2011	SED	1	X					3151-286	0-3cm; Squeeze core B 50ft
5	SQV05-101	PS09	4/28/2011	SED	1	X					3151-287	3-6cm; Squeeze core B 50ft
6	SQV05-102	PS09	4/28/2011	SED	1	X					3151-288	6-9cm; Squeeze core B 50ft
7	SQV05-103	PS09	4/28/2011	SED	1	X					3151-289	9-13cm; Squeeze core B 50ft
8	SQV05-104	PS09	4/28/2011	SED	1	X					3151-290	13-19cm; Squeeze core B 50ft
9	SQV05-105	PS09	4/28/2011	SED	1	X					3151-291	19-25cm; Squeeze core B 50ft
10	SQV05-106	PS09	4/28/2011	SED	1		X				3151-297B	0-3cm; Squeeze core B 50ft
11	SQV05-107	PS09	4/28/2011	SED	1		X				3151-298	3-6cm; Squeeze core B 50ft
12	SQV05-108	PS09	4/28/2011	SED	1		X				3151-299	6-9cm; Squeeze core B 50ft
13	SQV05-109	PS09	4/28/2011	SED	1		X				3151-300	9-13cm; Squeeze core B 50ft
14	SQV05-110	PS09	4/28/2011	SED	1		X				3151-301	13-19cm; Squeeze core B 50ft
15	SQV05-111	PS09	4/28/2011	SED	1		X				3151-302	19-25cm; Squeeze core B 50ft

Relinquished By:	Company:
	4/28/11
Signature/Printed Name	Date/Time

Received By:	Company:
	MSL 4/28/11
Signature/Printed Name	Date/Time

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

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

SAMPLE CUSTODY RECORD

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

Date: 4/28/2011

Core collected 4/27/11

Core split 4/28/11

Pacific Northwest
NATIONAL LABORATORY

Battelle
The Business of Innovation

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

Project Name: Sed Quality Verification Study (Squeeze Core Splits)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered Core/Split at MSL

Preservation: Refrigerate

Line	Field Sample ID		Collection Date/Time	Matrix	No. of Containers	Test Parameters					Laboratory ID	Observations/Comments
						Metals	TOC	Organics				
1	SQV05-112	PS09	4/28/2011	SED	1			X			3151-309	0-3cm; Squeeze core B 50ft
2	SQV05-113	PS03	4/28/2011	SED	1			X			3151-310	3-6cm; Squeeze core B 50ft
3	SQV05-114	PS03	4/28/2011	SED	1			X			3151-311	6-9cm; Squeeze core B 50ft
4	SQV05-115	PS09	4/28/2011	SED	1			X			3151-312	9-13cm; Squeeze core B 50ft
5	SQV05-116	PS09	4/28/2011	SED	1			X			3151-313	13-19cm; Squeeze core B 50ft
6	SQV05-117	PS09	4/28/2011	SED	1			X			3151-314	19-25cm; Squeeze core B 50ft
7	--end of list--											
8												
9												
10												
11												
12												
13												
14												
15												

Relinquished By: [Signature] Company: _____
Signature/Printed Name Date/Time 4/28/11 1130

Received By: [Signature] Company: MSL
Signature/Printed Name Date/Time 4/28/11 1130

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

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

SAMPLE LOGIN

Project Manager: Brandenberger
Date Received: 4/28/2011
Batch: SQV05
Login Designee: CSuslick

Project: **Sed Qual Validation Study (SQV05)**



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

Sponsor ID	Site Description		Type	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SQV05-082	PS03	0-3cm	Squeeze Core	3151-280	SED	Deep Freezer	Metals	04/27/11
SQV05-083	PS03	3-6cm	Squeeze Core	3151-281	SED	Deep Freezer	Metals	04/27/11
SQV05-084	PS03	6-9cm	Squeeze Core	3151-282	SED	Deep Freezer	Metals	04/27/11
SQV05-085	PS03	9-13cm	Squeeze Core	3151-283	SED	Deep Freezer	Metals	04/27/11
SQV05-086	PS03	13-19cm	Squeeze Core	3151-284	SED	Deep Freezer	Metals	04/27/11
SQV05-087	PS03	19-25cm	Squeeze Core	3151-285	SED	Deep Freezer	Metals	04/27/11
SQV05-088	PS03	0-3cm	Squeeze Core	3151-292	SED	Walkin Cooler	TOC	04/27/11
SQV05-089	PS03	3-6cm	Squeeze Core	3151-293	SED	Walkin Cooler	TOC	04/27/11
SQV05-090	PS03	6-9cm	Squeeze Core	3151-294	SED	Walkin Cooler	TOC	04/27/11
SQV05-091	PS03	9-13cm	Squeeze Core	3151-295	SED	Walkin Cooler	TOC	04/27/11
SQV05-092	PS03	13-19cm	Squeeze Core	3151-296	SED	Walkin Cooler	TOC	04/27/11
SQV05-093	PS03	19-25cm	Squeeze Core	3151-296	SED	Walkin Cooler	TOC	04/27/11
SQV05-094	PS03	0-3cm	Squeeze Core	3151-303	SED	Walkin Freezer	Organics	04/27/11
SQV05-095	PS03	3-6cm	Squeeze Core	3151-304	SED	Walkin Freezer	Organics	04/27/11
SQV05-096	PS03	6-9cm	Squeeze Core	3151-305	SED	Walkin Freezer	Organics	04/27/11
SQV05-097	PS03	9-13cm	Squeeze Core	3151-306	SED	Walkin Freezer	Organics	04/27/11
SQV05-098	PS03	13-19cm	Squeeze Core	3151-307	SED	Walkin Freezer	Organics	04/27/11
SQV05-099	PS03	19-25cm	Squeeze Core	3151-308	SED	Walkin Freezer	Organics	04/27/11
SQV05-100	PS09	0-3cm	Squeeze Core	3151-286	SED	Deep Freezer	Metals	04/27/11
SQV05-101	PS09	3-6cm	Squeeze Core	3151-287	SED	Deep Freezer	Metals	04/27/11
SQV05-102	PS09	6-9cm	Squeeze Core	3151-288	SED	Deep Freezer	Metals	04/27/11
SQV05-103	PS09	9-13cm	Squeeze Core	3151-289	SED	Deep Freezer	Metals	04/27/11
SQV05-104	PS09	13-19cm	Squeeze Core	3151-290	SED	Deep Freezer	Metals	04/27/11
SQV05-105	PS09	19-25cm	Squeeze Core	3151-291	SED	Deep Freezer	Metals	04/27/11

SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 4/28/2011

Batch: SQV05

Login Designee: CSuslick

Project: **Sed Qual Validation Study (SQV05)**



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

Sponsor ID	Site Description		Type	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SQV05-106	PS09	0-3cm	Squeeze Core	3151-297	SED	Walkin Cooler	TOC	04/27/11
SQV05-107	PS09	3-6cm	Squeeze Core	3151-298	SED	Walkin Cooler	TOC	04/27/11
SQV05-108	PS09	6-9cm	Squeeze Core	3151-299	SED	Walkin Cooler	TOC	04/27/11
SQV05-109	PS09	9-13cm	Squeeze Core	3151-300	SED	Walkin Cooler	TOC	04/27/11
SQV05-110	PS09	13-19cm	Squeeze Core	3151-301	SED	Walkin Cooler	TOC	04/27/11
SQV05-111	PS09	19-25cm	Squeeze Core	3151-302	SED	Walkin Cooler	TOC	04/27/11
SQV05-112	PS09	0-3cm	Squeeze Core	3151-309	SED	Walkin Freezer	Organics	04/27/11
SQV05-113	PS03	3-6cm	Squeeze Core	3151-310	SED	Walkin Freezer	Organics	04/27/11
SQV05-114	PS03	6-9cm	Squeeze Core	3151-311	SED	Walkin Freezer	Organics	04/27/11
SQV05-115	PS09	9-13cm	Squeeze Core	3151-312	SED	Walkin Freezer	Organics	04/27/11
SQV05-116	PS09	13-19cm	Squeeze Core	3151-313	SED	Walkin Freezer	Organics	04/27/11
SQV05-117	PS09	19-25cm	Squeeze Core	3151-314	SED	Walkin Freezer	Organics	04/27/11

SAMPLE CUSTODY RECORD

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

Date: 4/28/2011



Battelle
The Business of Innovation

Core collected 4/27/11

Core split 4/28/11

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

Project Name: Sed Quality Verification Study (Clear/Short Core Splits)
Project Manager: Brandenberger
Phone Number:

Shipment Method: Hand Delivered Core/Split at MSL
Preservation: Refrigerate

Project Manager: <u>Brandenberger</u>					No. of Containers	Test Parameters					Pacific Northwest Division Marine Sciences Laboratory 1529 West Sequim Bay Road Sequim, Washington 98382	
Phone Number: _____						Metals	TOC	Organics conf + AVS/SEM	Screening			
Shipment Method: <u>Hand Delivered Core/Split at MSL</u>												
Preservation: <u>Refrigerate</u>												
Line	Field Sample ID		Collection Date/Time	Matrix							Laboratory ID	Observations/Comments
1	SQV05-118	PS03	4/28/2011	SED	1	X					3151-315	0-3cm; Clear core 008
2	SQV05-119	PS03	4/28/2011	SED	1	X					3151-316	3-6cm; Clear core 008
3	SQV05-120	PS03	4/28/2011	SED	1	X					3151-317	6-9cm; Clear core 008
4	SQV05-121	PS03	4/28/2011	SED	1	X					3151-318	9-13cm; Clear core 008
5	SQV05-122	PS03	4/28/2011	SED	1	X					3151-319	13-19cm; Clear core 008
6	SQV05-123	PS03	4/28/2011	SED	1	X					3151-320	19-25cm; Clear core 008
7	SQV05-124	PS03	4/28/2011	SED	1		X				3151-351	0-3cm; Clear core 008
8	SQV05-125	PS03	4/28/2011	SED	1		X				3151-352	3-6cm; Clear core 008
9	SQV05-126	PS03	4/28/2011	SED	1		X				3151-353	6-9cm; Clear core 008
10	SQV05-127	PS03	4/28/2011	SED	1		X				3151-354	9-13cm; Clear core 008
11	SQV05-128	PS03	4/28/2011	SED	1		X				3151-355	13-19cm; Clear core 008
12	SQV05-129	PS03	4/28/2011	SED	1		X				3151-356	19-25cm; Clear core 008
13	SQV05-130	PS03	4/28/2011	SED	1			X			3151-387	0-3cm; Clear core 008
14	SQV05-131	PS03	4/28/2011	SED	1			X			3151-388	3-6cm; Clear core 008
15	SQV05-132	PS03	4/28/2011	SED	1			X			3151-389	6-9cm; Clear core 008
16	SQV05-132	PS03	4/28/2011	SED	1			X			3151-390	9-13cm; Clear core 008
17	SQV05-133	PS03	4/28/2011	SED	1			X			3151-391	13-19cm; Clear core 008
18	SQV05-134	PS03	4/28/2011	SED	1			X			3151-392	19-25cm; Clear core 008
19	SQV05-135	PS09	4/28/2011	SED	1	X					3151-321	0-3cm; Clear core 016
20	SQV05-136	PS09	4/28/2011	SED	1	X					3151-322	3-6cm; Clear core 016
21	SQV05-137	PS09	4/28/2011	SED	1	X					3151-323	6-9cm; Clear core 016
22	SQV05-138	PS09	4/28/2011	SED	1	X					3151-324	9-13cm; Clear core 016
23	SQV05-139	PS09	4/28/2011	SED	1	X					3151-325	13-19cm; Clear core 016

SAMPLE CUSTODY RECORD

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

Date: 4/28/2011



Battelle
The Business of Innovation

Core collected 4/27/11

Core split 4/28/11

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

Project Name: Sed Quality Verification Study (Clear/Short Core Splits)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered Core/Split at MSL

Preservation: Refrigerate

Line	Field Sample ID		Collection Date/Time	Matrix	No. of Containers	Test Parameters					Laboratory ID	Observations/Comments
						Metals	TOC	Organics conf + AVS/SEM	Screening			
24	SQV05-140	PS09	4/28/2011	SED	1	X					3151-326	19-23cm; Clear core 016
25	SQV05-141	PS09	4/28/2011	SED	1		X				3151-357	0-3cm; Clear core 016
26	SQV05-142	PS09	4/28/2011	SED	1		X				3151-358	3-6cm; Clear core 016
27	SQV05-143	PS09	4/28/2011	SED	1		X				3151-359	6-9cm; Clear core 016
28	SQV05-144	PS09	4/28/2011	SED	1		X				3151-360	9-13cm; Clear core 016
29	SQV05-145	PS09	4/28/2011	SED	1		X				3151-361	13-19cm; Clear core 016
30	SQV05-146	PS09	4/28/2011	SED	1		X				3151-362	19-23cm; Clear core 016
31	SQV05-147	PS09	4/28/2011	SED	1			X			3151-393	0-3cm; Clear core 016
32	SQV05-148	PS09	4/28/2011	SED	1			X			3151-394	3-6cm; Clear core 016
33	SQV05-149	PS09	4/28/2011	SED	1			X			3151-395	6-9cm; Clear core 016
34	SQV05-150	PS09	4/28/2011	SED	1			X			3151-396	9-13cm; Clear core 016
35	SQV05-151	PS09	4/28/2011	SED	1			X			3151-397	13-19cm; Clear core 016
36	SQV05-152	PS09	4/28/2011	SED	1			X			3151-398	19-23cm; Clear core 016
37	SQV05-153	PS10	4/28/2011	SED	1	X					3151-327	0-3cm; Clear core 023
38	SQV05-154	PS10	4/28/2011	SED	1	X					3151-328	3-6cm; Clear core 023
39	SQV05-155	PS10	4/28/2011	SED	1	X					3151-329	6-9cm; Clear core 023
40	SQV05-156	PS10	4/28/2011	SED	1	X					3151-330	9-13cm; Clear core 023
41	SQV05-157	PS10	4/28/2011	SED	1	X					3151-331	13-19cm; Clear core 023
42	SQV05-158	PS10	4/28/2011	SED	1	X					3151-332	19-25cm; Clear core 023
43	SQV05-159	PS10	4/28/2011	SED	1		X				3151-363	0-3cm; Clear core 023
44	SQV05-160	PS10	4/28/2011	SED	1		X				3151-364	3-6cm; Clear core 023
45	SQV05-161	PS10	4/28/2011	SED	1		X				3151-365	6-9cm; Clear core 023
46	SQV05-162	PS10	4/28/2011	SED	1		X				3151-366	9-13cm; Clear core 023

SAMPLE CUSTODY RECORD

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

Date: 4/28/2011



Battelle
The Business of Innovation

Core collected 4/27/11

Core split 4/28/11

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

Project Name: Sed Quality Verification Study (Clear/Short Core Splits)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered Core/Split at MSL

Preservation: Refrigerate

Line	Field Sample ID		Collection Date/Time	Matrix	No. of Containers	Test Parameters					Laboratory ID	Observations/Comments
						Metals	TOC	Organics conf + AVS/SEM	Screening			
47	SQV05-163	PS10	4/28/2011	SED	1		X				3151-367	13-19cm; Clear core 023
48	SQV05-164	PS10	4/28/2011	SED	1		X				3151-368	19-25cm; Clear core 023
49	SQV05-165	PS10	4/28/2011	SED	1			X			3151-399	0-3cm; Clear core 023
50	SQV05-166	PS10	4/28/2011	SED	1			X			3151-400	3-6cm; Clear core 023
51	SQV05-167	PS10	4/28/2011	SED	1			X			3151-401	6-9cm; Clear core 023
52	SQV05-168	PS10	4/28/2011	SED	1			X			3151-402	9-13cm; Clear core 023
53	SQV05-169	PS10	4/28/2011	SED	1			X			3151-403	13-19cm; Clear core 023
54	SQV05-170	PS10	4/28/2011	SED	1			X			3151-404	19-25cm; Clear core 023
55	SQV05-171	PS10.1	4/28/2011	SED	1	X					3151-333	0-3cm; Clear core 030
56	SQV05-172	PS10.1	4/28/2011	SED	1	X					3151-334	3-6cm; Clear core 030
57	SQV05-173	PS10.1	4/28/2011	SED	1	X					3151-335	6-9cm; Clear core 030
58	SQV05-174	PS10.1	4/28/2011	SED	1	X					3151-336	9-13cm; Clear core 030
59	SQV05-175	PS10.1	4/28/2011	SED	1	X					3151-337	13-19cm; Clear core 030
60	SQV05-176	PS10.1	4/28/2011	SED	1	X					3151-338	19-24cm; Clear core 030
61	SQV05-177	PS10.1	4/28/2011	SED	1		X				3151-369	0-3cm; Clear core 030
62	SQV05-178	PS10.1	4/28/2011	SED	1		X				3151-370	3-6cm; Clear core 030
63	SQV05-179	PS10.1	4/28/2011	SED	1		X				3151-371	6-9cm; Clear core 030
64	SQV05-180	PS10.1	4/28/2011	SED	1		X				3151-372	9-13cm; Clear core 030
65	SQV05-181	PS10.1	4/28/2011	SED	1		X				3151-373	13-19cm; Clear core 030
66	SQV05-182	PS10.1	4/28/2011	SED	1		X				3151-374	19-24cm; Clear core 030
67	SQV05-183	PS10.1	4/28/2011	SED	1			X			3151-405	0-3cm; Clear core 030
68	SQV05-184	PS10.1	4/28/2011	SED	1			X			3151-406	3-6cm; Clear core 030
69	SQV05-185	PS10.1	4/28/2011	SED	1			X			3151-407	6-9cm; Clear core 030

SAMPLE CUSTODY RECORD

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

Date: 4/28/2011



Battelle
The Business of Innovation

Core collected 4/27/11

Core split 4/28/11

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

Project Name: Sed Quality Verification Study (Clear/Short Core Splits)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered Core/Split at MSL

Preservation: Refrigerate

Project Manager: <u>Brandenberger</u>					No. of Containers	Test Parameters					Pacific Northwest Division Marine Sciences Laboratory 1529 West Sequim Bay Road Sequim, Washington 98382	
Phone Number: _____						Metals	TOC	Organics conf + AVS/SEM	Screening			
Shipment Method: <u>Hand Delivered Core/Split at MSL</u>												
Preservation: <u>Refrigerate</u>												
Line	Field Sample ID		Collection Date/Time	Matrix							Laboratory ID	Observations/Comments
70	SQV05-186	PS10.1	4/28/2011	SED	1			X			3151-408	9-13cm; Clear core 030
71	SQV05-187	PS10.1	4/28/2011	SED	1			X			3151-409	13-19cm; Clear core 030
72	SQV05-188	PS10.1	4/28/2011	SED	1			X			3151-410	19-24cm; Clear core 030
73	SQV05-189	PS11	4/28/2011	SED	1	X					3151-339	0-3cm; Clear core 037
74	SQV05-190	PS11	4/28/2011	SED	1	X					3151-340	3-6cm; Clear core 037
75	SQV05-191	PS11	4/28/2011	SED	1	X					3151-341	6-9cm; Clear core 037
76	SQV05-192	PS11	4/28/2011	SED	1	X					3151-342	9-13cm; Clear core 037
77	SQV05-193	PS11	4/28/2011	SED	1	X					3151-343	13-19cm; Clear core 037
78	SQV05-194	PS11	4/28/2011	SED	1	X					3151-344	19-25cm; Clear core 037
79	SQV05-195	PS11	4/28/2011	SED	1		X				3151-375	0-3cm; Clear core 037
80	SQV05-196	PS11	4/28/2011	SED	1		X				3151-376	3-6cm; Clear core 037
81	SQV05-197	PS11	4/28/2011	SED	1		X				3151-377	6-9cm; Clear core 037
82	SQV05-198	PS11	4/28/2011	SED	1		X				3151-378	9-13cm; Clear core 037
83	SQV05-199	PS11	4/28/2011	SED	1		X				3151-379	13-19cm; Clear core 037
84	SQV05-200	PS11	4/28/2011	SED	1		X				3151-380	19-25cm; Clear core 037
85	SQV05-201	PS11	4/28/2011	SED	1			X			3151-411	0-3cm; Clear core 037
86	SQV05-202	PS11	4/28/2011	SED	1			X			3151-412	3-6cm; Clear core 037
87	SQV05-203	PS11	4/28/2011	SED	1			X			3151-413	6-9cm; Clear core 037
88	SQV05-204	PS11	4/28/2011	SED	1			X			3151-414	9-13cm; Clear core 037
89	SQV05-205	PS11	4/28/2011	SED	1			X			3151-415	13-19cm; Clear core 037
90	SQV05-206	PS11	4/28/2011	SED	1			X			3151-416	19-25cm; Clear core 037
91	SQV05-207	PS08	4/28/2011	SED	1	X					3151-345	0-3cm; Clear core 044
92	SQV05-208	PS08	4/28/2011	SED	1	X					3151-346	3-6cm; Clear core 044

SAMPLE CUSTODY RECORD

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

Date: 4/28/2011



Battelle
The Business of Innovation

Core collected 4/27/11

Core split 4/28/11

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

Project Name: Sed Quality Verification Study (Clear/Short Core Splits)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered Core/Split at MSL

Preservation: Refrigerate

Line	Field Sample ID		Collection Date/Time	Matrix	No. of Containers	Test Parameters					Laboratory ID	Observations/Comments
						Metals	TOC	Organics conf + AVS/SEM	Screening			
93	SQV05-209	PS08	4/28/2011	SED	1	X					3151-347	6-9cm; Clear core 044
94	SQV05-210	PS08	4/28/2011	SED	1	X					3151-348	9-13cm; Clear core 044
95	SQV05-211	PS08	4/28/2011	SED	1	X					3151-349	13-19cm; Clear core 044
96	SQV05-212	PS08	4/28/2011	SED	1	X					3151-350	19-25cm; Clear core 044
97	SQV05-213	PS08	4/28/2011	SED	1		X				3151-381	0-3cm; Clear core 044
98	SQV05-214	PS08	4/28/2011	SED	1		X				3151-382	3-6cm; Clear core 044
99	SQV05-215	PS08	4/28/2011	SED	1		X				3151-383	6-9cm; Clear core 044
100	SQV05-216	PS08	4/28/2011	SED	1		X				3151-384	9-13cm; Clear core 044
101	SQV05-217	PS08	4/28/2011	SED	1		X				3151-385	13-19cm; Clear core 044
102	SQV05-218	PS08	4/28/2011	SED	1		X				3151-386	19-25cm; Clear core 044
103	SQV05-219	PS08	4/28/2011	SED	1			X			3151-417	0-3cm; Clear core 044
104	SQV05-220	PS08	4/28/2011	SED	1			X			3151-418	3-6cm; Clear core 044
105	SQV05-221	PS08	4/28/2011	SED	1			X			3151-419	6-9cm; Clear core 044
106	SQV05-222	PS08	4/28/2011	SED	1			X			3151-420	9-13cm; Clear core 044
107	SQV05-223	PS08	4/28/2011	SED	1			X			3151-421	13-19cm; Clear core 044
108	SQV05-224	PS08	4/28/2011	SED	1			X			3151-422	19-25cm; Clear core 044

Relinquished By:

Company:

[Signature]

4/28/11 1600

Signature/Printed Name

Date/Time

Received By:

Company:

[Signature] C. Susser

4/28/11 1600

Signature/Printed Name

Date/Time

SAMPLE CUSTODY RECORD

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

Date: 4/28/2011



Battelle
The Business of Innovation

Core collected 4/27/11

Core split 4/28/11

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

Project Name: Sed Quality Verification Study (Clear/Short Core Splits)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered Core/Split at MSL

Preservation: Refrigerate

Project Manager: <u>Brandenberger</u>					No. of Containers	Test Parameters					Pacific Northwest Division Marine Sciences Laboratory 1529 West Sequim Bay Road Sequim, Washington 98382	
Phone Number: _____						Metals	TOC	Organics conf + AVS/SEM	Screening			
Shipment Method: <u>Hand Delivered Core/Split at MSL</u>												
Preservation: <u>Refrigerate</u>												
Line	Field Sample ID		Collection Date/Time	Matrix							Laboratory ID	Observations/Comments
Screening - Clear/Short Cores												
1	SQV05-225	PS03	4/28/2011	SED	1				X			0-3cm; Clear core 008
2	SQV05-226	PS03	4/28/2011	SED	1				X			3-6cm; Clear core 008
3	SQV05-227	PS03	4/28/2011	SED	1				X			6-9cm; Clear core 008
4	SQV05-228	PS03	4/28/2011	SED	1				X			9-13cm; Clear core 008
5	SQV05-229	PS03	4/28/2011	SED	1				X			13-19cm; Clear core 008
6	SQV05-230	PS03	4/28/2011	SED	1				X			19-25cm; Clear core 008
7	SQV05-231	PS09	4/28/2011	SED	1				X			0-3cm; Clear core 016
8	SQV05-232	PS09	4/28/2011	SED	1				X			3-6cm; Clear core 016
9	SQV05-233	PS09	4/28/2011	SED	1				X			6-9cm; Clear core 016
10	SQV05-234	PS09	4/28/2011	SED	1				X			9-13cm; Clear core 016
11	SQV05-235	PS09	4/28/2011	SED	1				X			13-19cm; Clear core 016
12	SQV05-236	PS09	4/28/2011	SED	1				X			19-23cm; Clear core 016
13	SQV05-237	PS10	4/28/2011	SED	1				X			0-3cm; Clear core 023
14	SQV05-238	PS10	4/28/2011	SED	1				X			3-6cm; Clear core 023
15	SQV05-239	PS10	4/28/2011	SED	1				X			6-9cm; Clear core 023
16	SQV05-240	PS10	4/28/2011	SED	1				X			9-13cm; Clear core 023
17	SQV05-241	PS10	4/28/2011	SED	1				X			13-19cm; Clear core 023
18	SQV05-242	PS10	4/28/2011	SED	1				X			19-25cm; Clear core 023
19	SQV05-243	PS10.1	4/28/2011	SED	1				X			0-3cm; Clear core 030
20	SQV05-244	PS10.1	4/28/2011	SED	1				X			3-6cm; Clear core 030
21	SQV05-245	PS10.1	4/28/2011	SED	1				X			6-9cm; Clear core 030
22	SQV05-246	PS10.1	4/28/2011	SED	1				X			9-13cm; Clear core 030

SAMPLE CUSTODY RECORD

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

Date: 4/28/2011



Battelle
The Business of Innovation

Core collected 4/27/11

Core split 4/28/11

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

Project Name: Sed Quality Verification Study (Clear/Short Core Splits)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered Core/Split at MSL

Preservation: Refrigerate

Line	Field Sample ID		Collection Date/Time	Matrix	No. of Containers	Test Parameters					Laboratory ID	Observations/Comments
						Metals	TOC	Organics conf + AVS/SEM	Screening			
23	SQV05-247	PS10.1	4/28/2011	SED	1				X			13-19cm; Clear core 030
24	SQV05-248	PS10.1	4/28/2011	SED	1				X			19-24cm; Clear core 030
25	SQV05-249	PS11	4/28/2011	SED	1				X			0-3cm; Clear core 037
26	SQV05-250	PS11	4/28/2011	SED	1				X			3-6cm; Clear core 037
27	SQV05-251	PS11	4/28/2011	SED	1				X			6-9cm; Clear core 037
28	SQV05-252	PS11	4/28/2011	SED	1				X			9-13cm; Clear core 037
29	SQV05-253	PS11	4/28/2011	SED	1				X			13-19cm; Clear core 037
30	SQV05-254	PS11	4/28/2011	SED	1				X			19-25cm; Clear core 037
31	SQV05-255	PS08	4/28/2011	SED	1				X			0-3cm; Clear core 044
32	SQV05-256	PS08	4/28/2011	SED	1				X			3-6cm; Clear core 044
33	SQV05-257	PS08	4/28/2011	SED	1				X			6-9cm; Clear core 044
34	SQV05-258	PS08	4/28/2011	SED	1				X			9-13cm; Clear core 044
35	SQV05-259	PS08	4/28/2011	SED	1				X			13-19cm; Clear core 044
36	SQV05-260	PS08	4/28/2011	SED	1				X			19-25cm; Clear core 044

Core ID:	PS09 / SQV ⁰⁵ -016
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[illegible]

Core ID:	PS03-SQV05-08
----------	---------------

[illegible]

Core ID:	PS10
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PS16

SAV05-022

Date: 4/27/11

[illegible]

Core ID:	SGV05-007
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Core ID: SGV05-007

Page 217 of 272

Core ID:	SQV05-015
----------	-----------

Core ID:

SQVOS-015

4/28/11 (Split date)

total core length 34 cm
horizon line = 4.5 cm down

Core ID:	PS10.1
----------	--------

Core ID: PS10.1

Depth (cm)	Description:	Date:
0-3	red layer on top	
3-6		
6-9		
9-143		
143-19		
19-25	only 4 cm	

Lat:

Long:

Water Depth =

length = 24 cm

Core ID:	DS08
----------	------

Core ID: DS08

SQV05-043

COORDINATES:	
Lat: _____	
Long: _____	
NOTES:	
Water Depth =	
core length = 25 cm	

Core ID:	PS11
----------	------

Core ID: PS11

SGV05-037

[illegible]

SAMPLE LOGIN

Project Manager: Brandenberger
Date Received: 4/28/2011
Batch: SQV05
Login Designee: CSuslick



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

Project: **Sed Qual Validation Study (SQV05)**

Sponsor ID	Site Description		Type	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SQV05-118	PS03	0-3cm	Clear Core	3151-315	SED	Deep Freezer	Metals	04/27/11
SQV05-119	PS03	3-6cm	Clear Core	3151-316	SED	Deep Freezer	Metals	04/27/11
SQV05-120	PS03	6-9cm	Clear Core	3151-317	SED	Deep Freezer	Metals	04/27/11
SQV05-121	PS03	9-13cm	Clear Core	3151-318	SED	Deep Freezer	Metals	04/27/11
SQV05-122	PS03	13-19cm	Clear Core	3151-319	SED	Deep Freezer	Metals	04/27/11
SQV05-123	PS03	19-25cm	Clear Core	3151-320	SED	Deep Freezer	Metals	04/27/11
SQV05-124	PS03	0-3cm	Clear Core	3151-351	SED	Walkin Cooler	TOC	04/27/11
SQV05-125	PS03	3-6cm	Clear Core	3151-352	SED	Walkin Cooler	TOC	04/27/11
SQV05-126	PS03	6-9cm	Clear Core	3151-353	SED	Walkin Cooler	TOC	04/27/11
SQV05-127	PS03	9-13cm	Clear Core	3151-354	SED	Walkin Cooler	TOC	04/27/11
SQV05-128	PS03	13-19cm	Clear Core	3151-355	SED	Walkin Cooler	TOC	04/27/11
SQV05-129	PS03	19-25cm	Clear Core	3151-356	SED	Walkin Cooler	TOC	04/27/11
SQV05-130	PS03	0-3cm	Clear Core	3151-387	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-131	PS03	3-6cm	Clear Core	3151-388	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-132	PS03	6-9cm	Clear Core	3151-389	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-132	PS03	9-13cm	Clear Core	3151-390	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-133	PS03	13-19cm	Clear Core	3151-391	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-134	PS03	19-25cm	Clear Core	3151-392	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-135	PS09	0-3cm	Clear Core	3151-321	SED	Deep Freezer	Metals	04/27/11
SQV05-136	PS09	3-6cm	Clear Core	3151-322	SED	Deep Freezer	Metals	04/27/11
SQV05-137	PS09	6-9cm	Clear Core	3151-323	SED	Deep Freezer	Metals	04/27/11
SQV05-138	PS09	9-13cm	Clear Core	3151-324	SED	Deep Freezer	Metals	04/27/11
SQV05-139	PS09	13-19cm	Clear Core	3151-325	SED	Deep Freezer	Metals	04/27/11
SQV05-140	PS09	19-23cm	Clear Core	3151-326	SED	Deep Freezer	Metals	04/27/11

SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 4/28/2011

Batch: SQV05

Login Designee: CSuslick

Project: **Sed Qual Validation Study (SQV05)**



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

Sponsor ID	Site Description		Type	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SQV05-141	PS09	0-3cm	Clear Core	3151-357	SED	Walkin Cooler	TOC	04/27/11
SQV05-142	PS09	3-6cm	Clear Core	3151-358	SED	Walkin Cooler	TOC	04/27/11
SQV05-143	PS09	6-9cm	Clear Core	3151-359	SED	Walkin Cooler	TOC	04/27/11
SQV05-144	PS09	9-13cm	Clear Core	3151-360	SED	Walkin Cooler	TOC	04/27/11
SQV05-145	PS09	13-19cm	Clear Core	3151-361	SED	Walkin Cooler	TOC	04/27/11
SQV05-146	PS09	19-23cm	Clear Core	3151-362	SED	Walkin Cooler	TOC	04/27/11
SQV05-147	PS09	0-3cm	Clear Core	3151-393	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-148	PS09	3-6cm	Clear Core	3151-394	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-149	PS09	6-9cm	Clear Core	3151-395	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-150	PS09	9-13cm	Clear Core	3151-396	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-151	PS09	13-19cm	Clear Core	3151-397	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-152	PS09	19-23cm	Clear Core	3151-398	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-153	PS10	0-3cm	Clear Core	3151-327	SED	Deep Freezer	Metals	04/27/11
SQV05-154	PS10	3-6cm	Clear Core	3151-328	SED	Deep Freezer	Metals	04/27/11
SQV05-155	PS10	6-9cm	Clear Core	3151-329	SED	Deep Freezer	Metals	04/27/11
SQV05-156	PS10	9-13cm	Clear Core	3151-330	SED	Deep Freezer	Metals	04/27/11
SQV05-157	PS10	13-19cm	Clear Core	3151-331	SED	Deep Freezer	Metals	04/27/11
SQV05-158	PS10	19-25cm	Clear Core	3151-332	SED	Deep Freezer	Metals	04/27/11
SQV05-159	PS10	0-3cm	Clear Core	3151-363	SED	Walkin Cooler	TOC	04/27/11
SQV05-160	PS10	3-6cm	Clear Core	3151-364	SED	Walkin Cooler	TOC	04/27/11
SQV05-161	PS10	6-9cm	Clear Core	3151-365	SED	Walkin Cooler	TOC	04/27/11
SQV05-162	PS10	9-13cm	Clear Core	3151-366	SED	Walkin Cooler	TOC	04/27/11
SQV05-163	PS10	13-19cm	Clear Core	3151-367	SED	Walkin Cooler	TOC	04/27/11
SQV05-164	PS10	19-25cm	Clear Core	3151-368	SED	Walkin Cooler	TOC	04/27/11

SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 4/28/2011

Batch: SQV05

Login Designee: CSuslick

Project: **Sed Qual Validation Study (SQV05)**



Marine Sciences Laboratory

1529 West Sequim Bay Road

Sequim, Washington 98382

PH: (360) 681-4565

Sponsor ID	Site Description		Type	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SQV05-165	PS10	0-3cm	Clear Core	3151-399	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-166	PS10	3-6cm	Clear Core	3151-400	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-167	PS10	6-9cm	Clear Core	3151-401	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-168	PS10	9-13cm	Clear Core	3151-402	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-169	PS10	13-19cm	Clear Core	3151-403	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-170	PS10	19-25cm	Clear Core	3151-404	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-171	PS10.1	0-3cm	Clear Core	3151-333	SED	Deep Freezer	Metals	04/27/11
SQV05-172	PS10.1	3-6cm	Clear Core	3151-334	SED	Deep Freezer	Metals	04/27/11
SQV05-173	PS10.1	6-9cm	Clear Core	3151-335	SED	Deep Freezer	Metals	04/27/11
SQV05-174	PS10.1	9-13cm	Clear Core	3151-336	SED	Deep Freezer	Metals	04/27/11
SQV05-175	PS10.1	13-19cm	Clear Core	3151-337	SED	Deep Freezer	Metals	04/27/11
SQV05-176	PS10.1	19-24cm	Clear Core	3151-338	SED	Deep Freezer	Metals	04/27/11
SQV05-177	PS10.1	0-3cm	Clear Core	3151-369	SED	Walkin Cooler	TOC	04/27/11
SQV05-178	PS10.1	3-6cm	Clear Core	3151-370	SED	Walkin Cooler	TOC	04/27/11
SQV05-179	PS10.1	6-9cm	Clear Core	3151-371	SED	Walkin Cooler	TOC	04/27/11
SQV05-180	PS10.1	9-13cm	Clear Core	3151-372	SED	Walkin Cooler	TOC	04/27/11
SQV05-181	PS10.1	13-19cm	Clear Core	3151-373	SED	Walkin Cooler	TOC	04/27/11
SQV05-182	PS10.1	19-24cm	Clear Core	3151-374	SED	Walkin Cooler	TOC	04/27/11
SQV05-183	PS10.1	0-3cm	Clear Core	3151-405	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-184	PS10.1	3-6cm	Clear Core	3151-406	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-185	PS10.1	6-9cm	Clear Core	3151-407	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-186	PS10.1	9-13cm	Clear Core	3151-408	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-187	PS10.1	13-19cm	Clear Core	3151-409	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-188	PS10.1	19-24cm	Clear Core	3151-410	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11

SAMPLE LOGIN

Project Manager: Brandenberger
Date Received: 4/28/2011
Batch: SQV05
Login Designee: CSuslick



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

Project: **Sed Qual Validation Study (SQV05)**

Sponsor ID	Site Description		Type	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SQV05-189	PS11	0-3cm	Clear Core	3151-339	SED	Deep Freezer	Metals	04/27/11
SQV05-190	PS11	3-6cm	Clear Core	3151-340	SED	Deep Freezer	Metals	04/27/11
SQV05-191	PS11	6-9cm	Clear Core	3151-341	SED	Deep Freezer	Metals	04/27/11
SQV05-192	PS11	9-13cm	Clear Core	3151-342	SED	Deep Freezer	Metals	04/27/11
SQV05-193	PS11	13-19cm	Clear Core	3151-343	SED	Deep Freezer	Metals	04/27/11
SQV05-194	PS11	19-25cm	Clear Core	3151-344	SED	Deep Freezer	Metals	04/27/11
SQV05-195	PS11	0-3cm	Clear Core	3151-375	SED	Walkin Cooler	TOC	04/27/11
SQV05-196	PS11	3-6cm	Clear Core	3151-376	SED	Walkin Cooler	TOC	04/27/11
SQV05-197	PS11	6-9cm	Clear Core	3151-377	SED	Walkin Cooler	TOC	04/27/11
SQV05-198	PS11	9-13cm	Clear Core	3151-378	SED	Walkin Cooler	TOC	04/27/11
SQV05-199	PS11	13-19cm	Clear Core	3151-379	SED	Walkin Cooler	TOC	04/27/11
SQV05-200	PS11	19-25cm	Clear Core	3151-380	SED	Walkin Cooler	TOC	04/27/11
SQV05-201	PS11	0-3cm	Clear Core	3151-411	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-202	PS11	3-6cm	Clear Core	3151-412	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-203	PS11	6-9cm	Clear Core	3151-413	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-204	PS11	9-13cm	Clear Core	3151-414	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-205	PS11	13-19cm	Clear Core	3151-415	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-206	PS11	19-25cm	Clear Core	3151-416	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-207	PS08	0-3cm	Clear Core	3151-345	SED	Deep Freezer	Metals	04/27/11
SQV05-208	PS08	3-6cm	Clear Core	3151-346	SED	Deep Freezer	Metals	04/27/11
SQV05-209	PS08	6-9cm	Clear Core	3151-347	SED	Deep Freezer	Metals	04/27/11
SQV05-210	PS08	9-13cm	Clear Core	3151-348	SED	Deep Freezer	Metals	04/27/11
SQV05-211	PS08	13-19cm	Clear Core	3151-349	SED	Deep Freezer	Metals	04/27/11
SQV05-212	PS08	19-25cm	Clear Core	3151-350	SED	Deep Freezer	Metals	04/27/11

SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 4/28/2011

Batch: SQV05

Login Designee: CSuslick

Project: **Sed Qual Validation Study (SQV05)**



Marine Sciences Laboratory

1529 West Sequim Bay Road

Sequim, Washington 98382

PH: (360) 681-4565

Sponsor ID	Site Description		Type	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SQV05-213	PS08	0-3cm	Clear Core	3151-381	SED	Walkin Cooler	TOC	04/27/11
SQV05-214	PS08	3-6cm	Clear Core	3151-382	SED	Walkin Cooler	TOC	04/27/11
SQV05-215	PS08	6-9cm	Clear Core	3151-383	SED	Walkin Cooler	TOC	04/27/11
SQV05-216	PS08	9-13cm	Clear Core	3151-384	SED	Walkin Cooler	TOC	04/27/11
SQV05-217	PS08	13-19cm	Clear Core	3151-385	SED	Walkin Cooler	TOC	04/27/11
SQV05-218	PS08	19-25cm	Clear Core	3151-386	SED	Walkin Cooler	TOC	04/27/11
SQV05-219	PS08	0-3cm	Clear Core	3151-417	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-220	PS08	3-6cm	Clear Core	3151-418	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-221	PS08	6-9cm	Clear Core	3151-419	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-222	PS08	9-13cm	Clear Core	3151-420	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-223	PS08	13-19cm	Clear Core	3151-421	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11
SQV05-224	PS08	19-25cm	Clear Core	3151-422	SED	Walkin Freezer	Organics, AVS-SEM	04/27/11

SAMPLE CUSTODY RECORD

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

Date: 4/28/2011



Battelle
The Business of Innovation

Initial Collection 4/27/11

Split at MSL 4/28/11

Project Name: Sed Quality Verification Study (Grabs)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered/Split at MSL

Preservation: Refrigerate

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

Line	Field Sample ID		Collection Date/Time	Matrix	No. of Containers	Test Parameters					Laboratory ID	Observations/Comments
						Screening	Grain Size	Metals	TOC	Organics		
1	SQV05-261	PS03-1	4/27/2011	SED	1	X					NA	
2	SQV05-262	PS03-1	4/27/2011	SED	1		X				3151-495	
3	SQV05-263	PS03-1	4/27/2011	SED	1			X			3151-423	
4	SQV05-264	PS03-1	4/27/2011	SED	1				X		3151-459	
5	SQV05-001	PS03-1	4/27/2011	SED	1					X	3151-531	
6	SQV05-265	PS03-2	4/27/2011	SED	1	X					NA	
7	SQV05-266	PS03-2	4/27/2011	SED	1		X				3151-496	
8	SQV05-267	PS03-2	4/27/2011	SED	1			X			3151-424	
9	SQV05-268	PS03-2	4/27/2011	SED	1				X		3151-460	
10	SQV05-002	PS03-2	4/27/2011	SED	1					X	3151-532	
11	SQV05-269	PS03-3	4/27/2011	SED	1	X					NA	
12	SQV05-270	PS03-3	4/27/2011	SED	1		X				3151-497	
13	SQV05-271	PS03-3	4/27/2011	SED	1			X			3151-425	
14	SQV05-272	PS03-3	4/27/2011	SED	1				X		3151-461	
15	SQV05-003	PS03-3	4/27/2011	SED	1					X	3151-533	
16	SQV05-273	PS03-4	4/27/2011	SED	1	X					NA	
17	SQV05-274	PS03-4	4/27/2011	SED	1		X				3151-498	
18	SQV05-275	PS03-4	4/27/2011	SED	1			X			3151-426	
19	SQV05-276	PS03-4	4/27/2011	SED	1				X		3151-462	
20	SQV05-004	PS03-4	4/27/2011	SED	1					X	3151-534	
21	SQV05-277	PS03-5	4/27/2011	SED	1	X					NA	
22	SQV05-278	PS03-5	4/27/2011	SED	1		X				3151-499	
23	SQV05-279	PS03-5	4/27/2011	SED	1			X			3151-427	
24	SQV05-280	PS03-5	4/27/2011	SED	1				X		3151-463	
25	SQV05-005	PS03-5	4/27/2011	SED	1					X	3151-535	

SAMPLE CUSTODY RECORD

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

Date: 4/28/2011



Battelle
The Business of Innovation

Initial Collection 4/27/11

Split at MSL 4/28/11

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

Project Name: Sed Quality Verification Study (Grabs)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered/Split at MSL

Preservation: Refrigerate

Line	Field Sample ID		Collection Date/Time	Matrix	No. of Containers	Test Parameters					Laboratory ID	Observations/Comments
						Screening	Grain Size	Metals	TOC	Organics		
26	SQV05-281	PS03-6	4/27/2011	SED	1	X					NA	
27	SQV05-282	PS03-6	4/27/2011	SED	1		X				3151-500	
28	SQV05-283	PS03-6	4/27/2011	SED	1			X			3151-428	
29	SQV05-284	PS03-6	4/27/2011	SED	1				X		3151-464	
30	SQV05-006	PS03-6	4/27/2011	SED	1					X	3151-536	
31	SQV05-285	PS09-1	4/27/2011	SED	1	X					NA	
32	SQV05-286	PS09-1	4/27/2011	SED	1		X				3151-501	
33	SQV05-287	PS09-1	4/27/2011	SED	1			X			3151-429	
34	SQV05-288	PS09-1	4/27/2011	SED	1				X		3151-465	
35	SQV05-009	PS09-1	4/27/2011	SED	1					X	3151-537	
36	SQV05-289	PS09-2	4/27/2011	SED	1	X					NA	
37	SQV05-290	PS09-2	4/27/2011	SED	1		X				3151-502	
38	SQV05-291	PS09-2	4/27/2011	SED	1			X			3151-430	
39	SQV05-292	PS09-2	4/27/2011	SED	1				X		3151-466	
40	SQV05-010	PS09-2	4/27/2011	SED	1					X	3151-538	
41	SQV05-293	PS09-3	4/27/2011	SED	1	X					NA	
42	SQV05-294	PS09-3	4/27/2011	SED	1		X				3151-503	
43	SQV05-295	PS09-3	4/27/2011	SED	1			X			3151-431	
44	SQV05-296	PS09-3	4/27/2011	SED	1				X		3151-467	
45	SQV05-011	PS09-3	4/27/2011	SED	1					X	3151-539	
46	SQV05-297	PS09-4	4/27/2011	SED	1	X					NA	
47	SQV05-298	PS09-4	4/27/2011	SED	1		X				3151-504	
48	SQV05-299	PS09-4	4/27/2011	SED	1			X			3151-432	
49	SQV05-300	PS09-4	4/27/2011	SED	1				X		3151-468	
50	SQV05-012	PS09-4	4/27/2011	SED	1					X	3151-540	

SAMPLE CUSTODY RECORD

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

Date: 4/28/2011



Battelle
The Business of Innovation

Initial Collection 4/27/11

Split at MSL 4/28/11

Project Name: Sed Quality Verification Study (Grabs)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered/Split at MSL

Preservation: Refrigerate

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

Line	Field Sample ID		Collection Date/Time	Matrix	No. of Containers	Test Parameters					Laboratory ID	Observations/Comments
						Screening	Grain Size	Metals	TOC	Organics		
51	SQV05-301	PS09-5	4/27/2011	SED	1	X					NA	
52	SQV05-302	PS09-5	4/27/2011	SED	1		X				3151-505	
53	SQV05-303	PS09-5	4/27/2011	SED	1			X			3151-433	
54	SQV05-304	PS09-5	4/27/2011	SED	1				X		3151-469	
55	SQV05-013	PS09-5	4/27/2011	SED	1					X	3151-541	
56	SQV05-305	PS09-6	4/27/2011	SED	1	X					NA	
57	SQV05-306	PS09-6	4/27/2011	SED	1		X				3151-506	
58	SQV05-307	PS09-6	4/27/2011	SED	1			X			3151-434	
59	SQV05-308	PS09-6	4/27/2011	SED	1				X		3151-470	
60	SQV05-014	PS09-6	4/27/2011	SED	1					X	3151-542	
61	SQV05-309	PS10-1	4/27/2011	SED	1	X					NA	
62	SQV05-310	PS10-1	4/27/2011	SED	1		X				3151-507	
63	SQV05-311	PS10-1	4/27/2011	SED	1			X			3151-435	
64	SQV05-312	PS10-1	4/27/2011	SED	1				X		3151-471	
65	SQV05-017	PS10-1	4/27/2011	SED	1					X	3151-543	
66	SQV05-313	PS10-2	4/27/2011	SED	1	X					NA	
67	SQV05-314	PS10-2	4/27/2011	SED	1		X				3151-508	
68	SQV05-315	PS10-2	4/27/2011	SED	1			X			3151-436	
69	SQV05-316	PS10-2	4/27/2011	SED	1				X		3151-472	
70	SQV05-018	PS10-2	4/27/2011	SED	1					X	3151-544	
71	SQV05-317	PS10-3	4/27/2011	SED	1	X					NA	
72	SQV05-318	PS10-3	4/27/2011	SED	1		X				3151-509	
73	SQV05-319	PS10-3	4/27/2011	SED	1			X			3151-437	
74	SQV05-320	PS10-3	4/27/2011	SED	1				X		3151-473	
75	SQV05-019	PS10-3	4/27/2011	SED	1					X	3151-545	

SAMPLE CUSTODY RECORD

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

Date: 4/28/2011



Battelle
The Business of Innovation

Initial Collection 4/27/11

Split at MSL 4/28/11

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

Project Name: Sed Quality Verification Study (Grabs)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered/Split at MSL

Preservation: Refrigerate

Line	Field Sample ID		Collection Date/Time	Matrix	No. of Containers	Test Parameters					Laboratory ID	Observations/Comments
						Screening	Grain Size	Metals	TOC	Organics		
76	SQV05-321	PS10-4	4/27/2011	SED	1	X					NA	
77	SQV05-322	PS10-4	4/27/2011	SED	1		X				3151-510	
78	SQV05-323	PS10-4	4/27/2011	SED	1			X			3151-438	
79	SQV05-324	PS10-4	4/27/2011	SED	1				X		3151-474	
80	SQV05-020	PS10-4	4/27/2011	SED	1					X	3151-546	
81	SQV05-325	PS10-5	4/27/2011	SED	1	X					NA	
82	SQV05-326	PS10-5	4/27/2011	SED	1		X				3151-511	
83	SQV05-327	PS10-5	4/27/2011	SED	1			X			3151-439	
84	SQV05-328	PS10-5	4/27/2011	SED	1				X		3151-475	
85	SQV05-021	PS10-5	4/27/2011	SED	1					X	3151-547	
86	SQV05-329	PS10-6	4/27/2011	SED	1	X					NA	
87	SQV05-330	PS10-6	4/27/2011	SED	1		X				3151-512	
88	SQV05-331	PS10-6	4/27/2011	SED	1			X			3151-440	
89	SQV05-332	PS10-6	4/27/2011	SED	1				X		3151-476	
90	SQV05-022	PS10-6	4/27/2011	SED	1					X	3151-548	
91	SQV05-333	PS10.1-1	4/27/2011	SED	1	X					NA	
92	SQV05-334	PS10.1-1	4/27/2011	SED	1		X				3151-513	
93	SQV05-335	PS10.1-1	4/27/2011	SED	1			X			3151-441	
94	SQV05-336	PS10.1-1	4/27/2011	SED	1				X		3151-477	
95	SQV05-024	PS10.1-1	4/27/2011	SED	1					X	3151-549	
96	SQV05-337	PS10.1-2	4/27/2011	SED	1	X					NA	
97	SQV05-338	PS10.1-2	4/27/2011	SED	1		X				3151-514	
98	SQV05-339	PS10.1-2	4/27/2011	SED	1			X			3151-442	
99	SQV05-340	PS10.1-2	4/27/2011	SED	1				X		3151-478	
100	SQV05-025	PS10.1-2	4/27/2011	SED	1					X	3151-550	

SAMPLE CUSTODY RECORD

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

Date: 4/28/2011



Initial Collection 4/27/11

Split at MSL 4/28/11

Project Name: Sed Quality Verification Study (Grabs)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered/Split at MSL

Preservation: Refrigerate

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

Line	Field Sample ID		Collection Date/Time	Matrix	No. of Containers	Test Parameters					Laboratory ID	Observations/Comments
						Screening	Grain Size	Metals	TOC	Organics		
101	SQV05-341	PS10.1-3	4/27/2011	SED	1	X					NA	
102	SQV05-342	PS10.1-3	4/27/2011	SED	1		X				3151-515	
103	SQV05-343	PS10.1-3	4/27/2011	SED	1			X			3151-443	
104	SQV05-344	PS10.1-3	4/27/2011	SED	1				X		3151-479	
105	SQV05-026	PS10.1-3	4/27/2011	SED	1					X	3151-551	
106	SQV05-345	PS10.1-4	4/27/2011	SED	1	X					NA	
107	SQV05-346	PS10.1-4	4/27/2011	SED	1		X				3151-516	
108	SQV05-347	PS10.1-4	4/27/2011	SED	1			X			3151-444	
109	SQV05-348	PS10.1-4	4/27/2011	SED	1				X		3151-480	
110	SQV05-027	PS10.1-4	4/27/2011	SED	1					X	3151-552	
111	SQV05-349	PS10.1-5	4/27/2011	SED	1	X					NA	
112	SQV05-350	PS10.1-5	4/27/2011	SED	1		X				3151-517	
113	SQV05-351	PS10.1-5	4/27/2011	SED	1			X			3151-445	
114	SQV05-352	PS10.1-5	4/27/2011	SED	1				X		3151-481	
115	SQV05-028	PS10.1-5	4/27/2011	SED	1					X	3151-553	
116	SQV05-353	PS10.1-6	4/27/2011	SED	1	X					NA	
117	SQV05-354	PS10.1-6	4/27/2011	SED	1		X				3151-518	
118	SQV05-355	PS10.1-6	4/27/2011	SED	1			X			3151-446	
119	SQV05-356	PS10.1-6	4/27/2011	SED	1				X		3151-482	
120	SQV05-029	PS10.1-6	4/27/2011	SED	1					X	3151-554	
121	SQV05-357	PS11-1	4/27/2011	SED	1	X					NA	
122	SQV05-358	PS11-1	4/27/2011	SED	1		X				3151-519	
123	SQV05-359	PS11-1	4/27/2011	SED	1			X			3151-447	
124	SQV05-360	PS11-1	4/27/2011	SED	1				X		3151-483	
125	SQV05-031	PS11-1	4/27/2011	SED	1					X	3151-555	

SAMPLE CUSTODY RECORD

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

Date: 4/28/2011



Battelle
The Business of Innovation

Initial Collection 4/27/11

Split at MSL 4/28/11

Project Name: Sed Quality Verification Study (Grabs)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered/Split at MSL

Preservation: Refrigerate

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

Line	Field Sample ID		Collection Date/Time	Matrix	No. of Containers	Test Parameters					Laboratory ID	Observations/Comments
						Screening	Grain Size	Metals	TOC	Organics		
126	SQV05-361	PS11-2	4/27/2011	SED	1	X					NA	
127	SQV05-362	PS11-2	4/27/2011	SED	1		X				3151-520	
128	SQV05-363	PS11-2	4/27/2011	SED	1			X			3151-448	
129	SQV05-364	PS11-2	4/27/2011	SED	1				X		3151-484	
130	SQV05-032	PS11-2	4/27/2011	SED	1					X	3151-556	
131	SQV05-365	PS11-3	4/27/2011	SED	1	X					NA	
132	SQV05-366	PS11-3	4/27/2011	SED	1		X				3151-521	
133	SQV05-367	PS11-3	4/27/2011	SED	1			X			3151-449	
134	SQV05-368	PS11-3	4/27/2011	SED	1				X		3151-485	
135	SQV05-033	PS11-3	4/27/2011	SED	1					X	3151-557	
136	SQV05-369	PS11-4	4/27/2011	SED	1	X					NA	
137	SQV05-370	PS11-4	4/27/2011	SED	1		X				3151-522	
138	SQV05-371	PS11-4	4/27/2011	SED	1			X			3151-450	
139	SQV05-372	PS11-4	4/27/2011	SED	1				X		3151-486	
140	SQV05-034	PS11-4	4/27/2011	SED	1					X	3151-558	
141	SQV05-373	PS11-5	4/27/2011	SED	1	X					NA	
142	SQV05-374	PS11-5	4/27/2011	SED	1		X				3151-523	
143	SQV05-375	PS11-5	4/27/2011	SED	1			X			3151-451	
144	SQV05-376	PS11-5	4/27/2011	SED	1				X		3151-487	
145	SQV05-035	PS11-5	4/27/2011	SED	1					X	3151-559	
146	SQV05-377	PS11-6	4/27/2011	SED	1	X					NA	
147	SQV05-378	PS11-6	4/27/2011	SED	1		X				3151-524	
148	SQV05-379	PS11-6	4/27/2011	SED	1			X			3151-452	
149	SQV05-380	PS11-6	4/27/2011	SED	1				X		3151-488	
150	SQV05-036	PS11-6	4/27/2011	SED	1					X	3151-560	

SAMPLE CUSTODY RECORD

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

Date: 4/28/2011



Battelle
The Business of Innovation

Initial Collection 4/27/11

Split at MSL 4/28/11

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

Project Name: Sed Quality Verification Study (Grabs)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered/Split at MSL

Preservation: Refrigerate

Line	Field Sample ID		Collection Date/Time	Matrix	No. of Containers	Test Parameters					Laboratory ID	Observations/Comments
						Screening	Grain Size	Metals	TOC	Organics		
151	SQV05-381	PS08-1	4/27/2011	SED	1	X					NA	
152	SQV05-382	PS08-1	4/27/2011	SED	1		X				3151-525	
153	SQV05-383	PS08-1	4/27/2011	SED	1			X			3151-453	
154	SQV05-384	PS08-1	4/27/2011	SED	1				X		3151-489	
155	SQV05-038	PS08-1	4/27/2011	SED	1					X	3151-561	
156	SQV05-385	PS08-2	4/27/2011	SED	1	X					NA	
157	SQV05-386	PS08-2	4/27/2011	SED	1		X				3151-526	
158	SQV05-387	PS08-2	4/27/2011	SED	1			X			3151-454	
159	SQV05-388	PS08-2	4/27/2011	SED	1				X		3151-490	
160	SQV05-039	PS08-2	4/27/2011	SED	1					X	3151-562	
161	SQV05-389	PS08-3	4/27/2011	SED	1	X					NA	
162	SQV05-390	PS08-3	4/27/2011	SED	1		X				3151-527	
163	SQV05-391	PS08-3	4/27/2011	SED	1			X			3151-455	
164	SQV05-392	PS08-3	4/27/2011	SED	1				X		3151-491	
165	SQV05-040	PS08-3	4/27/2011	SED	1					X	3151-563	
166	SQV05-393	PS08-4	4/27/2011	SED	1	X					NA	
167	SQV05-394	PS08-4	4/27/2011	SED	1		X				3151-528	
168	SQV05-395	PS08-4	4/27/2011	SED	1			X			3151-456	
169	SQV05-396	PS08-4	4/27/2011	SED	1				X		3151-492	
170	SQV05-041	PS08-4	4/27/2011	SED	1					X	3151-564	
171	SQV05-397	PS08-5	4/27/2011	SED	1	X					NA	
172	SQV05-398	PS08-5	4/27/2011	SED	1		X				3151-529	
173	SQV05-399	PS08-5	4/27/2011	SED	1			X			3151-457	
174	SQV05-400	PS08-5	4/27/2011	SED	1				X		3151-493	
175	SQV05-042	PS08-5	4/27/2011	SED	1					X	3151-565	

SAMPLE CUSTODY RECORD

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

Date: 4/28/2011



Battelle
The Business of Innovation

Initial Collection 4/27/11

Split at MSL 4/28/11

Project Name: Sed Quality Verification Study (Grabs)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered/Split at MSL

Preservation: Refrigerate

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

Line	Field Sample ID		Collection Date/Time	Matrix	No. of Containers	Test Parameters					Laboratory ID	Observations/Comments
						Screening	Grain Size	Metals	TOC	Organics		
176	SQV05-401	PS08-6	4/27/2011	SED	1	X					NA	
177	SQV05-402	PS08-6	4/27/2011	SED	1		X				3151-530	
178	SQV05-403	PS08-6	4/27/2011	SED	1			X			3151-458	
179	SQV05-404	PS08-6	4/27/2011	SED	1				X		3151-494	
180	SQV05-043	PS08-6	4/27/2011	SED	1					X	3151-566	

Relinquished By:	Company:
	4/28/11 1600
Signature/Printed Name	Date/Time

Received By:	Company:
	MSL 4/28/11 1600
Signature/Printed Name	Date/Time

SAMPLE LOGIN

Project Manager: Brandenberger
 Date Received: 4/28/2011
 Batch: SQV05
 Login Designee: CSuslick



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

Project: **Sed Qual Validation Study (SQV05)**

Sponsor ID	Site Description	Type	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SQV05-262	PS03-1	GRAB	3151-495	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-263	PS03-1	GRAB	3151-423	SED	Deep Freezer	Metals	04/27/11
SQV05-264	PS03-1	GRAB	3151-459	SED	Walkin Cooler	TOC	04/27/11
SQV05-001	PS03-1	GRAB	3151-531	SED	Walkin Freezer	Organics	04/27/11
SQV05-266	PS03-2	GRAB	3151-496	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-267	PS03-2	GRAB	3151-424	SED	Deep Freezer	Metals	04/27/11
SQV05-268	PS03-2	GRAB	3151-460	SED	Walkin Cooler	TOC	04/27/11
SQV05-002	PS03-2	GRAB	3151-532	SED	Walkin Freezer	Organics	04/27/11
SQV05-270	PS03-3	GRAB	3151-497	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-271	PS03-3	GRAB	3151-425	SED	Deep Freezer	Metals	04/27/11
SQV05-272	PS03-3	GRAB	3151-461	SED	Walkin Cooler	TOC	04/27/11
SQV05-003	PS03-3	GRAB	3151-533	SED	Walkin Freezer	Organics	04/27/11
SQV05-274	PS03-4	GRAB	3151-498	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-275	PS03-4	GRAB	3151-426	SED	Deep Freezer	Metals	04/27/11
SQV05-276	PS03-4	GRAB	3151-462	SED	Walkin Cooler	TOC	04/27/11
SQV05-004	PS03-4	GRAB	3151-534	SED	Walkin Freezer	Organics	04/27/11
SQV05-278	PS03-5	GRAB	3151-499	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-279	PS03-5	GRAB	3151-427	SED	Deep Freezer	Metals	04/27/11
SQV05-280	PS03-5	GRAB	3151-463	SED	Walkin Cooler	TOC	04/27/11
SQV05-005	PS03-5	GRAB	3151-535	SED	Walkin Freezer	Organics	04/27/11
SQV05-282	PS03-6	GRAB	3151-500	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-283	PS03-6	GRAB	3151-428	SED	Deep Freezer	Metals	04/27/11
SQV05-284	PS03-6	GRAB	3151-464	SED	Walkin Cooler	TOC	04/27/11
SQV05-006	PS03-6	GRAB	3151-536	SED	Walkin Freezer	Organics	04/27/11

SAMPLE LOGIN

Project Manager: Brandenberger
 Date Received: 4/28/2011
 Batch: SQV05
 Login Designee: CSuslick



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

Project: **Sed Qual Validation Study (SQV05)**

Sponsor ID	Site Description	Type	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SQV05-286	PS09-1	GRAB	3151-501	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-287	PS09-1	GRAB	3151-429	SED	Deep Freezer	Metals	04/27/11
SQV05-288	PS09-1	GRAB	3151-465	SED	Walkin Cooler	TOC	04/27/11
SQV05-009	PS09-1	GRAB	3151-537	SED	Walkin Freezer	Organics	04/27/11
SQV05-290	PS09-2	GRAB	3151-502	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-291	PS09-2	GRAB	3151-430	SED	Deep Freezer	Metals	04/27/11
SQV05-292	PS09-2	GRAB	3151-466	SED	Walkin Cooler	TOC	04/27/11
SQV05-010	PS09-2	GRAB	3151-538	SED	Walkin Freezer	Organics	04/27/11
SQV05-294	PS09-3	GRAB	3151-503	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-295	PS09-3	GRAB	3151-431	SED	Deep Freezer	Metals	04/27/11
SQV05-296	PS09-3	GRAB	3151-467	SED	Walkin Cooler	TOC	04/27/11
SQV05-011	PS09-3	GRAB	3151-539	SED	Walkin Freezer	Organics	04/27/11
SQV05-298	PS09-4	GRAB	3151-504	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-299	PS09-4	GRAB	3151-432	SED	Deep Freezer	Metals	04/27/11
SQV05-300	PS09-4	GRAB	3151-468	SED	Walkin Cooler	TOC	04/27/11
SQV05-012	PS09-4	GRAB	3151-540	SED	Walkin Freezer	Organics	04/27/11
SQV05-302	PS09-5	GRAB	3151-505	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-303	PS09-5	GRAB	3151-433	SED	Deep Freezer	Metals	04/27/11
SQV05-304	PS09-5	GRAB	3151-469	SED	Walkin Cooler	TOC	04/27/11
SQV05-013	PS09-5	GRAB	3151-541	SED	Walkin Freezer	Organics	04/27/11
SQV05-306	PS09-6	GRAB	3151-506	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-307	PS09-6	GRAB	3151-434	SED	Deep Freezer	Metals	04/27/11
SQV05-308	PS09-6	GRAB	3151-470	SED	Walkin Cooler	TOC	04/27/11
SQV05-014	PS09-6	GRAB	3151-542	SED	Walkin Freezer	Organics	04/27/11

SAMPLE LOGIN

Project Manager: Brandenberger
Date Received: 4/28/2011
Batch: SQV05
Login Designee: CSuslick



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

Project: **Sed Qual Validation Study (SQV05)**

Sponsor ID	Site Description	Type	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SQV05-310	PS10-1	GRAB	3151-507	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-311	PS10-1	GRAB	3151-435	SED	Deep Freezer	Metals	04/27/11
SQV05-312	PS10-1	GRAB	3151-471	SED	Walkin Cooler	TOC	04/27/11
SQV05-017	PS10-1	GRAB	3151-543	SED	Walkin Freezer	Organics	04/27/11
SQV05-314	PS10-2	GRAB	3151-508	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-315	PS10-2	GRAB	3151-436	SED	Deep Freezer	Metals	04/27/11
SQV05-316	PS10-2	GRAB	3151-472	SED	Walkin Cooler	TOC	04/27/11
SQV05-018	PS10-2	GRAB	3151-544	SED	Walkin Freezer	Organics	04/27/11
SQV05-318	PS10-3	GRAB	3151-509	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-319	PS10-3	GRAB	3151-437	SED	Deep Freezer	Metals	04/27/11
SQV05-320	PS10-3	GRAB	3151-473	SED	Walkin Cooler	TOC	04/27/11
SQV05-019	PS10-3	GRAB	3151-545	SED	Walkin Freezer	Organics	04/27/11
SQV05-322	PS10-4	GRAB	3151-510	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-323	PS10-4	GRAB	3151-438	SED	Deep Freezer	Metals	04/27/11
SQV05-324	PS10-4	GRAB	3151-474	SED	Walkin Cooler	TOC	04/27/11
SQV05-020	PS10-4	GRAB	3151-546	SED	Walkin Freezer	Organics	04/27/11
SQV05-326	PS10-5	GRAB	3151-511	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-327	PS10-5	GRAB	3151-439	SED	Deep Freezer	Metals	04/27/11
SQV05-328	PS10-5	GRAB	3151-475	SED	Walkin Cooler	TOC	04/27/11
SQV05-021	PS10-5	GRAB	3151-547	SED	Walkin Freezer	Organics	04/27/11
SQV05-330	PS10-6	GRAB	3151-512	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-331	PS10-6	GRAB	3151-440	SED	Deep Freezer	Metals	04/27/11
SQV05-332	PS10-6	GRAB	3151-476	SED	Walkin Cooler	TOC	04/27/11
SQV05-022	PS10-6	GRAB	3151-548	SED	Walkin Freezer	Organics	04/27/11

SAMPLE LOGIN

Project Manager: Brandenberger
Date Received: 4/28/2011
Batch: SQV05
Login Designee: CSuslick



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

Project: **Sed Qual Validation Study (SQV05)**

Sponsor ID	Site Description	Type	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SQV05-334	PS10.1-1	GRAB	3151-513	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-335	PS10.1-1	GRAB	3151-441	SED	Deep Freezer	Metals	04/27/11
SQV05-336	PS10.1-1	GRAB	3151-477	SED	Walkin Cooler	TOC	04/27/11
SQV05-024	PS10.1-1	GRAB	3151-549	SED	Walkin Freezer	Organics	04/27/11
SQV05-338	PS10.1-2	GRAB	3151-514	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-339	PS10.1-2	GRAB	3151-442	SED	Deep Freezer	Metals	04/27/11
SQV05-340	PS10.1-2	GRAB	3151-478	SED	Walkin Cooler	TOC	04/27/11
SQV05-025	PS10.1-2	GRAB	3151-550	SED	Walkin Freezer	Organics	04/27/11
SQV05-342	PS10.1-3	GRAB	3151-515	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-343	PS10.1-3	GRAB	3151-443	SED	Deep Freezer	Metals	04/27/11
SQV05-344	PS10.1-3	GRAB	3151-479	SED	Walkin Cooler	TOC	04/27/11
SQV05-026	PS10.1-3	GRAB	3151-551	SED	Walkin Freezer	Organics	04/27/11
SQV05-346	PS10.1-4	GRAB	3151-516	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-347	PS10.1-4	GRAB	3151-444	SED	Deep Freezer	Metals	04/27/11
SQV05-348	PS10.1-4	GRAB	3151-480	SED	Walkin Cooler	TOC	04/27/11
SQV05-027	PS10.1-4	GRAB	3151-552	SED	Walkin Freezer	Organics	04/27/11
SQV05-350	PS10.1-5	GRAB	3151-517	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-351	PS10.1-5	GRAB	3151-445	SED	Deep Freezer	Metals	04/27/11
SQV05-352	PS10.1-5	GRAB	3151-481	SED	Walkin Cooler	TOC	04/27/11
SQV05-028	PS10.1-5	GRAB	3151-553	SED	Walkin Freezer	Organics	04/27/11
SQV05-354	PS10.1-6	GRAB	3151-518	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-355	PS10.1-6	GRAB	3151-446	SED	Deep Freezer	Metals	04/27/11
SQV05-356	PS10.1-6	GRAB	3151-482	SED	Walkin Cooler	TOC	04/27/11
SQV05-029	PS10.1-6	GRAB	3151-554	SED	Walkin Freezer	Organics	04/27/11

SAMPLE LOGIN

Project Manager: Brandenberger
Date Received: 4/28/2011
Batch: SQV05
Login Designee: CSuslick



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

Project: **Sed Qual Validation Study (SQV05)**

Sponsor ID	Site Description	Type	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SQV05-358	PS11-1	GRAB	3151-519	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-359	PS11-1	GRAB	3151-447	SED	Deep Freezer	Metals	04/27/11
SQV05-360	PS11-1	GRAB	3151-483	SED	Walkin Cooler	TOC	04/27/11
SQV05-031	PS11-1	GRAB	3151-555	SED	Walkin Freezer	Organics	04/27/11
SQV05-362	PS11-2	GRAB	3151-520	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-363	PS11-2	GRAB	3151-448	SED	Deep Freezer	Metals	04/27/11
SQV05-364	PS11-2	GRAB	3151-484	SED	Walkin Cooler	TOC	04/27/11
SQV05-032	PS11-2	GRAB	3151-556	SED	Walkin Freezer	Organics	04/27/11
SQV05-366	PS11-3	GRAB	3151-521	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-367	PS11-3	GRAB	3151-449	SED	Deep Freezer	Metals	04/27/11
SQV05-368	PS11-3	GRAB	3151-485	SED	Walkin Cooler	TOC	04/27/11
SQV05-033	PS11-3	GRAB	3151-557	SED	Walkin Freezer	Organics	04/27/11
SQV05-370	PS11-4	GRAB	3151-522	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-371	PS11-4	GRAB	3151-450	SED	Deep Freezer	Metals	04/27/11
SQV05-372	PS11-4	GRAB	3151-486	SED	Walkin Cooler	TOC	04/27/11
SQV05-034	PS11-4	GRAB	3151-558	SED	Walkin Freezer	Organics	04/27/11
SQV05-374	PS11-5	GRAB	3151-523	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-375	PS11-5	GRAB	3151-451	SED	Deep Freezer	Metals	04/27/11
SQV05-376	PS11-5	GRAB	3151-487	SED	Walkin Cooler	TOC	04/27/11
SQV05-035	PS11-5	GRAB	3151-559	SED	Walkin Freezer	Organics	04/27/11
SQV05-378	PS11-6	GRAB	3151-524	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-379	PS11-6	GRAB	3151-452	SED	Deep Freezer	Metals	04/27/11
SQV05-380	PS11-6	GRAB	3151-488	SED	Walkin Cooler	TOC	04/27/11
SQV05-036	PS11-6	GRAB	3151-560	SED	Walkin Freezer	Organics	04/27/11

SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 4/28/2011

Batch: SQV05

Login Designee: CSuslick

Project: **Sed Qual Validation Study (SQV05)**



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

Sponsor ID	Site Description	Type	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
SQV05-382	PS08-1	GRAB	3151-525	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-383	PS08-1	GRAB	3151-453	SED	Deep Freezer	Metals	04/27/11
SQV05-384	PS08-1	GRAB	3151-489	SED	Walkin Cooler	TOC	04/27/11
SQV05-038	PS08-1	GRAB	3151-561	SED	Walkin Freezer	Organics	04/27/11
SQV05-386	PS08-2	GRAB	3151-526	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-387	PS08-2	GRAB	3151-454	SED	Deep Freezer	Metals	04/27/11
SQV05-388	PS08-2	GRAB	3151-490	SED	Walkin Cooler	TOC	04/27/11
SQV05-039	PS08-2	GRAB	3151-562	SED	Walkin Freezer	Organics	04/27/11
SQV05-390	PS08-3	GRAB	3151-527	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-391	PS08-3	GRAB	3151-455	SED	Deep Freezer	Metals	04/27/11
SQV05-392	PS08-3	GRAB	3151-491	SED	Walkin Cooler	TOC	04/27/11
SQV05-040	PS08-3	GRAB	3151-563	SED	Walkin Freezer	Organics	04/27/11
SQV05-394	PS08-4	GRAB	3151-528	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-395	PS08-4	GRAB	3151-456	SED	Deep Freezer	Metals	04/27/11
SQV05-396	PS08-4	GRAB	3151-492	SED	Walkin Cooler	TOC	04/27/11
SQV05-041	PS08-4	GRAB	3151-564	SED	Walkin Freezer	Organics	04/27/11
SQV05-398	PS08-5	GRAB	3151-529	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-399	PS08-5	GRAB	3151-457	SED	Deep Freezer	Metals	04/27/11
SQV05-400	PS08-5	GRAB	3151-493	SED	Walkin Cooler	TOC	04/27/11
SQV05-042	PS08-5	GRAB	3151-565	SED	Walkin Freezer	Organics	04/27/11
SQV05-402	PS08-6	GRAB	3151-530	SED	Walkin Cooler	Grain Size	04/27/11
SQV05-403	PS08-6	GRAB	3151-458	SED	Deep Freezer	Metals	04/27/11
SQV05-404	PS08-6	GRAB	3151-494	SED	Walkin Cooler	TOC	04/27/11
SQV05-043	PS08-6	GRAB	3151-566	SED	Walkin Freezer	Organics	04/27/11

SAMPLE LOGIN

Project Manager: Brandenberger

Date Received: 4/28/2011

Batch: SQV05

Login Designee: CSuslick

Project: **Sed Qual Validation Study (SQV05)**



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

Sponsor ID	Site Description		Type	Battelle Code	Matrix	Storage Location	Requested Parameters	Collection Date
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SAMPLE CHAIN OF CUSTODY FORM

Date: 4/29/2011Page: 1 of 1

COC Number: _____

Battelle

Marine Sciences Laboratory
1529 West Sequim Bay Road
Sequim, Washington 98382Project No.: SQVProject Name: ENVVEST

Project Manager: Jill Brandenberger

Phone: (360) 681-3668

EVENT:

Johnston, Guerrero
Dred Team

Laboratory: Battelle MSL

Address: 1529 W. Sequim Bay Road
Sequim, WA 98382

Attention: Jill Brandenberger

Observations, Instructions

Testing Parameters

Lab. Use only: Lab ID	Sample ID	Sample Label	Collection Date/Time	Matrix	No. of containers	StationID	Comments
	<u>SQV05</u>		<u>4/29/2011</u>			<u>SQVPS06</u>	
	<u>SQV05-1000</u>	<u>Jar 1 48ft.</u>	<u>1021</u>	<u>sed</u>		<u>PS06</u>	<u>Dry Dock 6 Entrance P7</u>
	<u>1001</u>	<u>Jar 2 46ft</u>	<u>1029</u>				
	<u>1002</u>	<u>Jar 3 52ft</u>	<u>1033</u>				
	<u>1003</u>	<u>Jar 4 56ft</u>	<u>1050</u>				
	<u>1004</u>	<u>Jar 5 40ft</u>	<u>1204</u>				
	<u>1005</u>	<u>Jar 6 28ft</u>	<u>1207</u>				
	<u>1006</u>	<u>Core 1 54ft</u>	<u>1055</u>				
	<u>1007</u>	<u>Core 2 (Dup) 54ft</u>	<u>1102</u>			<u>PS07</u>	<u>Duplicate Core</u>
	<u>1008</u>	<u>Jar 1 36ft</u>	<u>1130</u>				<u>Finger Pier / shells</u>
	<u>1009</u>	<u>Jar 2 36</u>	<u>1134</u>				
	<u>1010</u>	<u>Jar 3 38'</u>	<u>1142</u>				
	<u>1011</u>	<u>Jar 4 38'</u>	<u>1145</u>				
	<u>1012</u>	<u>Jar 5 45'</u>	<u>1147</u>				
	<u>1013</u>	<u>Jar 6 38'</u>	<u>1152</u>				<u>at end of NRV1 Barge</u>
	<u>1014</u>	<u>Core 40' #25</u>	<u>1125</u>				

Relinquished by:

RK Jolito

Signature

4/29/2011

Date

1230

Time

Printed Name

Company

Received by:

C. Susana

Signature

Printed Name

Total # of Containers

Shipment Method:

Shipment Method:

Sample Disposition:

Relinquished by:

Signature

Date

Time

Printed Name

Company

Received by:

Signature

Printed Name

Distribution:

- 1) 2 copies to the Laboratory
- 2) 1 copy to project manager
- 3) Return completed original to Battelle Marine Sciences Laboratory

SAMPLE CUSTODY RECORD

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

Date: 4/29/2011



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

Project Name: Sed Quality Verification Study (Clear/Short Core Splits)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered Core/Split at MSL

Preservation: Refrigerate

Line	Field Sample ID		Collection Date/Time	Matrix	No. of	Metals	TOC	Organic + AVS	Screen		Laboratory ID	Observations/Comments
1	SQV05-1015	PS06	4/29/2011	SED	1	X					3151-789	0-3cm
2	SQV05-1016	PS06	4/29/2011	SED	1	X					3151-790	3-6cm
3	SQV05-1017	PS06	4/29/2011	SED	1	X					3151-791	6-9cm
4	SQV05-1018	PS06	4/29/2011	SED	1	X					3151-792	9-13cm
5	SQV05-1019	PS06	4/29/2011	SED	1	X					3151-793	13-19cm
6	SQV05-1020	PS06	4/29/2011	SED	1	X					3151-794	19-25cm
7	SQV05-1021	PS06	4/29/2011	SED	1		X				3151-807	0-3cm
8	SQV05-1022	PS06	4/29/2011	SED	1		X				3151-808	3-6cm
9	SQV05-1023	PS06	4/29/2011	SED	1		X				3151-809	6-9cm
10	SQV05-1024	PS06	4/29/2011	SED	1		X				3151-810	9-13cm
11	SQV05-1025	PS06	4/29/2011	SED	1		X				3151-811	13-19cm
12	SQV05-1026	PS06	4/29/2011	SED	1		X				3151-812	19-25cm
13	SQV05-1027	PS06	4/29/2011	SED	1			X			3151-825	0-3cm
14	SQV05-1028	PS06	4/29/2011	SED	1			X			3151-826	3-6cm
15	SQV05-1029	PS06	4/29/2011	SED	1			X			3151-827	6-9cm
16	SQV05-1030	PS06	4/29/2011	SED	1			X			3151-828	9-13cm
17	SQV05-1031	PS06	4/29/2011	SED	1			X			3151-829	13-19cm
18	SQV05-1032	PS06	4/29/2011	SED	1			X			3151-830	19-25cm
19	SQV05-1033	PS06DUP	4/29/2011	SED	1	X					3151-795	0-3cm
20	SQV05-1034	PS06DUP	4/29/2011	SED	1	X					3151-796	3-6cm
21	Not collected	PS06DUP had a sand plug and could not be extruded beyond 6 cm									3151-797	6-9cm
22	Not collected	PS06DUP had a sand plug and could not be extruded beyond 6 cm									3151-798	9-13cm
23	Not collected	PS06DUP had a sand plug and could not be extruded beyond 6 cm									3151-799	13-19cm

SAMPLE CUSTODY RECORD

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

Date: 4/29/2011



Battelle
The Business of Innovation

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

Project Name: Sed Quality Verification Study (Clear/Short Core Splits)
Project Manager: Brandenberger
Phone Number:
Shipment Method: Hand Delivered Core/Split at MSL
Preservation: Refrigerate

Line	Field Sample ID		Collection Date/Time	Matrix	No. of	Metals	TOC	Organ + AVS	Screen		Laboratory	
											ID	Observations/Comments
24	Not collected	PS06DUP	had a sand plug and could not be extruded beyond 6 cm								3151-800	19-25cm
25	SQV05-1035	PS06DUP	4/29/2011	SED	1		X				3151-813	0-3cm
26	SQV05-1036	PS06DUP	4/29/2011	SED	1		X				3151-814	3-6cm
27	Not collected	PS06DUP	had a sand plug and could not be extruded beyond 6 cm								3151-815	6-9cm
28	Not collected	PS06DUP	had a sand plug and could not be extruded beyond 6 cm								3151-816	9-13cm
29	Not collected	PS06DUP	had a sand plug and could not be extruded beyond 6 cm								3151-817	13-19cm
30	Not collected	PS06DUP	had a sand plug and could not be extruded beyond 6 cm								3151-818	19-25cm
31	SQV05-1037	PS06DUP	4/29/2011	SED	1			X			3151-831	0-3cm
32	SQV05-1038	PS06DUP	4/29/2011	SED	1			X			3151-832	3-6cm
33	Not collected	PS06DUP	had a sand plug and could not be extruded beyond 6 cm								3151-833	6-9cm
34	Not collected	PS06DUP	had a sand plug and could not be extruded beyond 6 cm								3151-834	9-13cm
35	Not collected	PS06DUP	had a sand plug and could not be extruded beyond 6 cm								3151-835	13-19cm
36	Not collected	PS06DUP	had a sand plug and could not be extruded beyond 6 cm								3151-836	19-25cm
37	SQV05-1039	PS07	4/29/2011	SED	1	X					3151-801	0-3cm
38	SQV05-1040	PS07	4/29/2011	SED	1	X					3151-802	3-6cm
39	SQV05-1041	PS07	4/29/2011	SED	1	X					3151-803	6-9cm
40	SQV05-1042	PS07	4/29/2011	SED	1	X					3151-804	9-13cm
41	SQV05-1043	PS07	4/29/2011	SED	1	X					3151-805	13-19cm
42	SQV05-1044	PS07	4/29/2011	SED	1	X					3151-806	19-25cm
43	SQV05-1045	PS07	4/29/2011	SED	1		X				3151-819	0-3cm
44	SQV05-1046	PS07	4/29/2011	SED	1		X				3151-820	3-6cm
45	SQV05-1047	PS07	4/29/2011	SED	1		X				3151-821	6-9cm
46	SQV05-1048	PS07	4/29/2011	SED	1		X				3151-822	9-13cm

SAMPLE CUSTODY RECORD

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

Date: 4/29/2011



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

Project Name: Sed Quality Verification Study (Clear/Short Core Splits)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered Core/Split at MSL

Preservation: Refrigerate

Line	Field Sample ID		Collection Date/Time	Matrix	No. of Containers	Test Parameters					Laboratory ID	Observations/Comments
						Metals	TOC	Organics conf + AVS/SEM	Screening			
47	SQV05-1049	PS07	4/29/2011	SED	1		X				3151-823	13-19cm
48	SQV05-1050	PS07	4/29/2011	SED	1		X				3151-824	19-25cm
49	SQV05-1051	PS07	4/29/2011	SED	1			X			3151-837	0-3cm
50	SQV05-1052	PS07	4/29/2011	SED	1			X			3151-838	3-6cm
51	SQV05-1053	PS07	4/29/2011	SED	1			X			3151-839	6-9cm
52	SQV05-1054	PS07	4/29/2011	SED	1			X			3151-840	9-13cm
53	SQV05-1055	PS07	4/29/2011	SED	1			X			3151-841	13-19cm
54	SQV05-1056	PS07	4/29/2011	SED	1			X			3151-842	19-25cm

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

Received By:	Company: MSL
Signature/Printed Name C. Susu	Date/Time 4/29/11

SAMPLE LOGIN

Pacific Northwest
NATIONAL LABORATORY

Battelle
The Business of Innovation

Project Manager: Brandenberger

Date Received: 4/29/2011

Batch: SQV05 - Clear Core splits (core collected 4/29/11)

Login Designee: Suslick

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

Project: **ENVVEST Sed Eval Study**

SPONSOR CODE	Site Description	Station ID	BATTELLE CODE	MATRIX	STORAGE LOCATION	PARAMETERS REQUESTED	COLLECTION DATE	INITIALS
SQV05-1015	0-3cm	PS06	3151-789	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1016	3-6cm	PS06	3151-790	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1017	6-9cm	PS06	3151-791	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1018	9-13cm	PS06	3151-792	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1019	13-19cm	PS06	3151-793	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1020	19-25cm	PS06	3151-794	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1021	0-3cm	PS06	3151-807	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1022	3-6cm	PS06	3151-808	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1023	6-9cm	PS06	3151-809	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1024	9-13cm	PS06	3151-810	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1025	13-19cm	PS06	3151-811	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1026	19-25cm	PS06	3151-812	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1027	0-3cm	PS06	3151-825	SED	Walkin Freezer	Organics Conf, AVS/SEM	04/29/11	CS
SQV05-1028	3-6cm	PS06	3151-826	SED	Walkin Freezer	Organics Conf, AVS/SEM	04/29/11	CS
SQV05-1029	6-9cm	PS06	3151-827	SED	Walkin Freezer	Organics Conf, AVS/SEM	04/29/11	CS
SQV05-1030	9-13cm	PS06	3151-828	SED	Walkin Freezer	Organics Conf, AVS/SEM	04/29/11	CS
SQV05-1031	13-19cm	PS06	3151-829	SED	Walkin Freezer	Organics Conf, AVS/SEM	04/29/11	CS
SQV05-1032	19-25cm	PS06	3151-830	SED	Walkin Freezer	Organics Conf, AVS/SEM	04/29/11	CS
SQV05-1033	0-3cm	PS06DUP	3151-795	SED	Deep Freezer	Metals	04/29/11	CS

SAMPLE LOGIN

Pacific Northwest
NATIONAL LABORATORY

Battelle
The Business of Innovation

Project Manager: Brandenberger
Date Received: 4/29/2011
Batch: SQV05 - Clear Core splits (core collected 4/29/11)
Login Designee: Suslick

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

Project: **ENVVEST Sed Eval Study**

SQV05-1034	3-6cm	PS06DUP	3151-796	SED	Deep Freezer	Metals	04/29/11	CS
Not collected	6-9cm	PS06DUP	3151-797	SED		Metals	04/29/11	CS
Not collected	9-13cm	PS06DUP	3151-798	SED		Metals	04/29/11	CS
Not collected	13-19cm	PS06DUP	3151-799	SED		Metals	04/29/11	CS
Not collected	19-25cm	PS06DUP	3151-800	SED		Metals	04/29/11	CS
SQV05-1035	0-3cm	PS06DUP	3151-813	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1036	3-6cm	PS06DUP	3151-814	SED	Walkin Freezer	TOC	04/29/11	CS
Not collected	6-9cm	PS06DUP	3151-815	SED		TOC	04/29/11	CS
Not collected	9-13cm	PS06DUP	3151-816	SED		TOC	04/29/11	CS
Not collected	13-19cm	PS06DUP	3151-817	SED		TOC	04/29/11	CS
Not collected	19-25cm	PS06DUP	3151-818	SED		TOC	04/29/11	CS
SQV05-1037	0-3cm	PS06DUP	3151-831	SED	Walkin Freezer	Organics Conf, AVS/SEM	04/29/11	CS
SQV05-1038	3-6cm	PS06DUP	3151-832	SED	Walkin Freezer	Organics Conf, AVS/SEM	04/29/11	CS
Not collected	6-9cm	PS06DUP	3151-833	SED		Organics Conf, AVS/SEM	04/29/11	CS
Not collected	9-13cm	PS06DUP	3151-834	SED		Organics Conf, AVS/SEM	04/29/11	CS
Not collected	13-19cm	PS06DUP	3151-835	SED		Organics Conf, AVS/SEM	04/29/11	CS
Not collected	19-25cm	PS06DUP	3151-836	SED		Organics Conf, AVS/SEM	04/29/11	CS
SQV05-1039	0-3cm	PS07	3151-801	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1040	3-6cm	PS07	3151-802	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1041	6-9cm	PS07	3151-803	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1042	9-13cm	PS07	3151-804	SED	Deep Freezer	Metals	04/29/11	CS

SAMPLE LOGIN

Pacific Northwest
NATIONAL LABORATORY

Battelle
The Business of Innovation

Project Manager: Brandenberger

Date Received: 4/29/2011

Batch: SQV05 - Clear Core splits (core collected 4/29/11)

Login Designee: Suslick

Marine Sciences Laboratory

1529 West Sequim Bay Road

Sequim, Washington 98382

PH: (360) 681-4565

Project: **ENVVEST Sed Eval Study**

SQV05-1043	13-19cm	PS07	3151-805	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1044	19-25cm	PS07	3151-806	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1045	0-3cm	PS07	3151-819	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1046	3-6cm	PS07	3151-820	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1047	6-9cm	PS07	3151-821	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1048	9-13cm	PS07	3151-822	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1049	13-19cm	PS07	3151-823	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1050	19-25cm	PS07	3151-824	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1051	0-3cm	PS07	3151-837	SED	Walkin Freezer	Organics Conf, AVS/SEM	04/29/11	CS
SQV05-1052	3-6cm	PS07	3151-838	SED	Walkin Freezer	Organics Conf, AVS/SEM	04/29/11	CS
SQV05-1053	6-9cm	PS07	3151-839	SED	Walkin Freezer	Organics Conf, AVS/SEM	04/29/11	CS
SQV05-1054	9-13cm	PS07	3151-840	SED	Walkin Freezer	Organics Conf, AVS/SEM	04/29/11	CS
SQV05-1055	13-19cm	PS07	3151-841	SED	Walkin Freezer	Organics Conf, AVS/SEM	04/29/11	CS
SQV05-1056	19-25cm	PS07	3151-842	SED	Walkin Freezer	Organics Conf, AVS/SEM	04/29/11	CS

NOTE: PS06DUP had a sand plug and could not be extruded beyond 6 cm

SAMPLE LOGIN

Project Manager: Brandenberger
 Date Received: 4/29/2011
 Batch: SQV05 - GRAB splits (collected 4/29/11)
 Login Designee: Suslick



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

Project: **ENVVEST Sed Eval Study**

SPONSOR CODE	Site Description	Station ID	BATTELLE CODE	MATRIX	STORAGE LOCATION	PARAMETERS REQUESTED	COLLECTION DATE	INITIALS
	PS06-1	PS06	NA	SED	(shipped to Joel G)	Screening	04/29/11	CS
SQV05-1057	PS06-1	PS06	3151-735	SED	Walkin Ref	Grain Size	04/29/11	CS
SQV05-1058	PS06-1	PS06	3151-717	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1059	PS06-1	PS06	3151-753	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1060	PS06-1	PS06	3151-771	SED	Walkin Freezer	Organics	04/29/11	CS
	PS06-2	PS06	NA	SED	(shipped to Joel G)	Screening	04/29/11	CS
SQV05-1061	PS06-2	PS06	3151-736	SED	Walkin Ref	Grain Size	04/29/11	CS
SQV05-1062	PS06-2	PS06	3151-718	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1063	PS06-2	PS06	3151-754	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1064	PS06-2	PS06	3151-772	SED	Walkin Freezer	Organics	04/29/11	CS
	PS06-3	PS06	NA	SED	(shipped to Joel G)	Screening	04/29/11	CS
SQV05-1065	PS06-3	PS06	3151-737	SED	Walkin Ref	Grain Size	04/29/11	CS
SQV05-1066	PS06-3	PS06	3151-719	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1067	PS06-3	PS06	3151-755	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1068	PS06-3	PS06	3151-773	SED	Walkin Freezer	Organics	04/29/11	CS
	PS06-4	PS06	NA	SED	(shipped to Joel G)	Screening	04/29/11	CS
SQV05-1069	PS06-4	PS06	3151-738	SED	Walkin Ref	Grain Size	04/29/11	CS
SQV05-1070	PS06-4	PS06	3151-720	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1071	PS06-4	PS06	3151-756	SED	Walkin Freezer	TOC	04/29/11	CS

SAMPLE LOGIN

Project Manager: Brandenberger
 Date Received: 4/29/2011
 Batch: SQV05 - GRAB splits (collected 4/29/11)
 Login Designee: Suslick



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

Project: **ENVVEST Sed Eval Study**

SQV05-1072	PS06-4	PS06	3151-774	SED	Walkin Freezer	Organics	04/29/11	CS
	PS06-5	PS06	NA	SED	(shipped to Joel G)	Screening	04/29/11	CS
SQV05-1073	PS06-5	PS06	3151-739	SED	Walkin Ref	Grain Size	04/29/11	CS
SQV05-1074	PS06-5	PS06	3151-721	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1075	PS06-5	PS06	3151-757	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1076	PS06-5	PS06	3151-775	SED	Walkin Freezer	Organics	04/29/11	CS
	PS06-6	PS06	NA	SED	(shipped to Joel G)	Screening	04/29/11	CS
SQV05-1077	PS06-6	PS06	3151-740	SED	Walkin Ref	Grain Size	04/29/11	CS
SQV05-1078	PS06-6	PS06	3151-722	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1079	PS06-6	PS06	3151-758	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1080	PS06-6	PS06	3151-776	SED	Walkin Freezer	Organics	04/29/11	CS
	PS07-1	PS07	NA	SED	(shipped to Joel G)	Screening	04/29/11	CS
SQV05-1081	PS07-1	PS07	3151-741	SED	Walkin Ref	Grain Size	04/29/11	CS
SQV05-1082	PS07-1	PS07	3151-723	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1083	PS07-1	PS07	3151-759	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1084	PS07-1	PS07	3151-777	SED	Walkin Freezer	Organics	04/29/11	CS
	PS07-2	PS07	NA	SED	(shipped to Joel G)	Screening	04/29/11	CS
SQV05-1085	PS07-2	PS07	3151-742	SED	Walkin Ref	Grain Size	04/29/11	CS
SQV05-1086	PS07-2	PS07	3151-724	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1087	PS07-2	PS07	3151-760	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1088	PS07-2	PS07	3151-778	SED	Walkin Freezer	Organics	04/29/11	CS

SAMPLE LOGIN

Pacific Northwest
NATIONAL LABORATORY

Battelle
The Business of Innovation

Project Manager: Brandenberger

Date Received: 4/29/2011

Batch: SQV05 - GRAB splits (collected 4/29/11)

Login Designee: Suslick

Project: **ENVVEST Sed Eval Study**

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

	PS07-3	PS07	NA	SED	(shipped to Joel G)	Screening	04/29/11	CS
SQV05-1089	PS07-3	PS07	3151-743	SED	Walkin Ref	Grain Size	04/29/11	CS
SQV05-1090	PS07-3	PS07	3151-725	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1091	PS07-3	PS07	3151-761	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1092	PS07-3	PS07	3151-779	SED	Walkin Freezer	Organics	04/29/11	CS
	PS07-4	PS07	NA	SED	(shipped to Joel G)	Screening	04/29/11	CS
SQV05-1093	PS07-4	PS07	3151-744	SED	Walkin Ref	Grain Size	04/29/11	CS
SQV05-1094	PS07-4	PS07	3151-726	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1095	PS07-4	PS07	3151-762	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1096	PS07-4	PS07	3151-780	SED	Walkin Freezer	Organics	04/29/11	CS
	PS07-5	PS07	NA	SED	(shipped to Joel G)	Screening	04/29/11	CS
SQV05-1097	PS07-5	PS07	3151-745	SED	Walkin Ref	Grain Size	04/29/11	CS
SQV05-1098	PS07-5	PS07	3151-727	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1099	PS07-5	PS07	3151-763	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1100	PS07-5	PS07	3151-781	SED	Walkin Freezer	Organics	04/29/11	CS
	PS07-6	PS07	NA	SED	(shipped to Joel G)	Screening	04/29/11	CS
SQV05-1101	PS07-6	PS07	3151-746	SED	Walkin Ref	Grain Size	04/29/11	CS
SQV05-1102	PS07-6	PS07	3151-728	SED	Deep Freezer	Metals	04/29/11	CS
SQV05-1103	PS07-6	PS07	3151-764	SED	Walkin Freezer	TOC	04/29/11	CS
SQV05-1104	PS07-6	PS07	3151-782	SED	Walkin Freezer	Organics	04/29/11	CS

SAMPLE CUSTODY RECORD

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

Date: 4/29/2011



Battelle
The Business of Innovation

Project Name: Sed Quality Verification Study (Grabs)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered/Split at MSL

Preservation: Refrigerate

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

Line	Field Sample ID		Collection Date/Time	Matrix	No. of Containers	Test Parameters					Laboratory ID	Observations/Comments
						Screening	Grain Size	Metals	TOC	Organics		
1	PS06-1		4/29/2011	SED	1	X					NA	
2	SQV05-1057	PS06-1	4/29/2011	SED	1		X				3151-735	
3	SQV05-1058	PS06-1	4/29/2011	SED	1			X			3151-717	
4	SQV05-1059	PS06-1	4/29/2011	SED	1				X		3151-753	
5	SQV05-1060	PS06-1	4/29/2011	SED	1					X	3151-771	
6	PS06-2		4/29/2011	SED	1	X					NA	
7	SQV05-1061	PS06-2	4/29/2011	SED	1		X				3151-736	
8	SQV05-1062	PS06-2	4/29/2011	SED	1			X			3151-718	
9	SQV05-1063	PS06-2	4/29/2011	SED	1				X		3151-754	
10	SQV05-1064	PS06-2	4/29/2011	SED	1					X	3151-772	
11	PS06-3		4/29/2011	SED	1	X					NA	
12	SQV05-1065	PS06-3	4/29/2011	SED	1		X				3151-737	
13	SQV05-1066	PS06-3	4/29/2011	SED	1			X			3151-719	
14	SQV05-1067	PS06-3	4/29/2011	SED	1				X		3151-755	
15	SQV05-1068	PS06-3	4/29/2011	SED	1					X	3151-773	
16	PS06-4		4/29/2011	SED	1	X					NA	
17	SQV05-1069	PS06-4	4/29/2011	SED	1		X				3151-738	
18	SQV05-1070	PS06-4	4/29/2011	SED	1			X			3151-720	
19	SQV05-1071	PS06-4	4/29/2011	SED	1				X		3151-756	
20	SQV05-1072	PS06-4	4/29/2011	SED	1					X	3151-774	
21	PS06-5		4/29/2011	SED	1	X					NA	
22	SQV05-1073	PS06-5	4/29/2011	SED	1		X				3151-739	
23	SQV05-1074	PS06-5	4/29/2011	SED	1			X			3151-721	
24	SQV05-1075	PS06-5	4/29/2011	SED	1				X		3151-757	
25	SQV05-1076	PS06-5	4/29/2011	SED	1					X	3151-775	

SAMPLE CUSTODY RECORD

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

Date: 4/29/2011



Battelle
The Business of Innovation

Project Name: Sed Quality Verification Study (Grabs)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered/Split at MSL

Preservation: Refrigerate

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

Line	Field Sample ID	Collection Date/Time	Matrix	No. of Containers	Test Parameters					Laboratory ID	Observations/Comments
					Screening	Grain Size	Metals	TOC	Organics		
26	PS06-6	4/29/2011	SED	1	X					NA	
27	SQV05-1077 PS06-6	4/29/2011	SED	1		X				3151-740	
28	SQV05-1078 PS06-6	4/29/2011	SED	1			X			3151-722	
29	SQV05-1079 PS06-6	4/29/2011	SED	1				X		3151-758	
30	SQV05-1080 PS06-6	4/29/2011	SED	1					X	3151-776	
31	PS07-1	4/29/2011	SED	1	X					NA	
32	SQV05-1081 PS07-1	4/29/2011	SED	1		X				3151-741	
33	SQV05-1082 PS07-1	4/29/2011	SED	1			X			3151-723	
34	SQV05-1083 PS07-1	4/29/2011	SED	1				X		3151-759	
35	SQV05-1084 PS07-1	4/29/2011	SED	1					X	3151-777	
36	PS07-2	4/29/2011	SED	1	X					NA	
37	SQV05-1085 PS07-2	4/29/2011	SED	1		X				3151-742	
38	SQV05-1086 PS07-2	4/29/2011	SED	1			X			3151-724	
39	SQV05-1087 PS07-2	4/29/2011	SED	1				X		3151-760	
40	SQV05-1088 PS07-2	4/29/2011	SED	1					X	3151-778	
41	PS07-3	4/29/2011	SED	1	X					NA	
42	SQV05-1089 PS07-3	4/29/2011	SED	1		X				3151-743	
43	SQV05-1090 PS07-3	4/29/2011	SED	1			X			3151-725	
44	SQV05-1091 PS07-3	4/29/2011	SED	1				X		3151-761	
45	SQV05-1092 PS07-3	4/29/2011	SED	1					X	3151-779	
46	PS07-4	4/29/2011	SED	1	X					NA	
47	SQV05-1093 PS07-4	4/29/2011	SED	1		X				3151-744	
48	SQV05-1094 PS07-4	4/29/2011	SED	1			X			3151-726	
49	SQV05-1095 PS07-4	4/29/2011	SED	1				X		3151-762	
50	SQV05-1096 PS07-4	4/29/2011	SED	1					X	3151-780	

SAMPLE CUSTODY RECORD

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

Date: 4/29/2011



Battelle
The Business of Innovation

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

Project Name: Sed Quality Verification Study (Grabs)

Project Manager: Brandenberger

Phone Number:

Shipment Method: Hand Delivered/Split at MSL

Preservation: Refrigerate

Line	Field Sample ID		Collection Date/Time	Matrix	No. of Containers	Test Parameters					Laboratory ID	Observations/Comments
						Screening	Grain Size	Metals	TOC	Organics		
51	PS07-5		4/29/2011	SED	1	X					NA	
52	SQV05-1097	PS07-5	4/29/2011	SED	1		X				3151-745	
53	SQV05-1098	PS07-5	4/29/2011	SED	1			X			3151-727	
54	SQV05-1099	PS07-5	4/29/2011	SED	1				X		3151-763	
55	SQV05-1100	PS07-5	4/29/2011	SED	1					X	3151-781	
56	PS07-6		4/29/2011	SED	1	X					NA	
57	SQV05-1101	PS07-6	4/29/2011	SED	1		X				3151-746	
58	SQV05-1102	PS07-6	4/29/2011	SED	1			X			3151-728	
59	SQV05-1103	PS07-6	4/29/2011	SED	1				X		3151-764	
60	SQV05-1104	PS07-6	4/29/2011	SED	1					X	3151-782	

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

Received By:	Company: MSC
Signature/Printed Name	Date/Time 4/29/11

K1106259

PROJECT ENVVEST				CHAIN OF CUSTODY FORM													
Project Name: Sediment Quality Verification Study				Testing Parameters per QAPP													
SAMPLE TEAM: Navy, Battelle																	
DATE: 7/11/2011																	
Laboratory: Columbia Analytical																	
Sample ID	STATION ID	Collection Date/Time	Matrix	TOC											No. of containers	COMMENTS	
SQV05-088	PS03 0-3 S	4/27/11 0:00	Sediment	1	X										1	3151-292	
SQV05-089	PS03 3-6 S	4/27/11 0:00	Sediment	2	X										1	3151-293	
SQV05-090	PS03 6-9 S	4/27/11 0:00	Sediment	3	X										1	3151-294	
SQV05-091	PS03 9-13 S	4/27/11 0:00	Sediment	4	X										1	3151-295	
SQV05-092	PS03 13-19 S	4/27/11 0:00	Sediment	5	X										1	3151-296	
SQV05-093	PS03 19-25 S	4/27/11 0:00	Sediment	6	X										1	3151-297A	
SQV05-106	PS09 0-3 S	4/27/11 0:00	Sediment	7	X										1	3151-297B	
SQV05-107	PS09 3-6 S	4/27/11 0:00	Sediment	8	X										1	3151-298	
SQV05-108	PS09 6-9 S	4/27/11 0:00	Sediment	9	X										1	3151-299	
SQV05-109	PS09 9-13 S	4/27/11 0:00	Sediment	10	X										1	3151-300	
SQV05-110	PS09 13-19 S	4/27/11 0:00	Sediment	11	X										1	3151-301	
SQV05-111	PS09 19-25 S	4/27/11 0:00	Sediment	12	X										1	3151-302	
SQV05-124	PS03 0-3 C	4/27/11 0:00	Sediment	13	X										1	3151-351	
SQV05-125	PS03 3-6 C	4/27/11 0:00	Sediment	14	X										1	3151-352	
SQV05-126	PS03 6-9 C	4/27/11 0:00	Sediment	15	X										1	3151-353	
SQV05-127	PS03 9-13 C	4/27/11 0:00	Sediment	16	X										1	3151-354	
SQV05-128	PS03 13-19 C	4/27/11 0:00	Sediment	17	X										1	3151-355	
SQV05-129	PS03 19-25 C	4/27/11 0:00	Sediment	18	X										1	3151-356	
SQV05-141	PS09 0-3 C	4/27/11 0:00	Sediment	19	X										1	3151-357	
SQV05-142	PS09 3-6 C	4/27/11 0:00	Sediment	20	X										1	3151-358	
SQV05-143	PS09 6-9 C	4/27/11 0:00	Sediment	21	X										1	3151-359	
SQV05-144	PS09 9-13 C	4/27/11 0:00	Sediment	22	X										1	3151-360	
SQV05-145	PS09 13-19 C	4/27/11 0:00	Sediment	23	X										1	3151-361	
SQV05-146	PS09 19-23 C	4/27/11 0:00	Sediment	24	X										1	3151-362	
SQV05-159	PS10 0-3 C	4/27/11 0:00	Sediment	25	X										1	3151-363	
SQV05-160	PS10 3-6 C	4/27/11 0:00	Sediment	26	X										1	3151-364	
SQV05-161	PS10 6-9 C	4/27/11 0:00	Sediment	27	X										1	3151-365	
SQV05-162	PS10 9-13 C	4/27/11 0:00	Sediment	28	X										1	3151-366	

Rec'd 4/12/11 3900
320

K1106259

PROJECT ENVVEST				CHAIN OF CUSTODY FORM															
Project Name: Sediment Quality Verification Study				Testing Parameters per QAPP															
SAMPLE TEAM: Navy, Battelle																			
DATE: 7/11/2011																			
Laboratory: Columbia Analytical																			
SQV05-163	PS10 13-19 C	4/27/11 0:00	Sediment	29	X												1	3151-367	
SQV05-164	PS10 19-25 C	4/27/11 0:00	Sediment	30	X												1	3151-368	
SQV05-177	PS10.1 0-3 C	4/27/11 0:00	Sediment	31	X												1	3151-369	
SQV05-178	PS10.1 3-6 C	4/27/11 0:00	Sediment	32	X												1	3151-370	
SQV05-179	PS10.1 6-9 C	4/27/11 0:00	Sediment	33	X												1	3151-371	
SQV05-180	PS10.1 9-13 C	4/27/11 0:00	Sediment	34	X												1	3151-372	
SQV05-181	PS10.1 13-19 C	4/27/11 0:00	Sediment	35	X												1	3151-373	
SQV05-182	PS10.1 19-24 C	4/27/11 0:00	Sediment	36	X												1	3151-374	
SQV05-195	PS11 0-3C	4/27/11 0:00	Sediment	37	X												1	3151-375	
SQV05-196	PS11 3-6 C	4/27/11 0:00	Sediment	38	X												1	3151-376	
SQV05-197	PS11 6-9 C	4/27/11 0:00	Sediment	39	X												1	3151-377	
SQV05-198	PS11 9-13 C	4/27/11 0:00	Sediment	40	X												1	3151-378	
SQV05-199	PS11 13-19 C	4/27/11 0:00	Sediment	41	X												1	3151-379	
SQV05-200	PS11 19-25 C	4/27/11 0:00	Sediment	42	X												1	3151-380	
SQV05-213	PS08 0-3 C	4/27/11 0:00	Sediment	43	X												1	3151-381	
SQV05-214	PS08 3-6 C	4/27/11 0:00	Sediment	44	X												1	3151-382	
SQV05-215	PS08 6-9 C	4/27/11 0:00	Sediment	45	X												1	3151-383	
SQV05-216	PS08 9-13 C	4/27/11 0:00	Sediment	46	X												1	3151-384	
SQV05-217	PS08 13-19 C	4/27/11 0:00	Sediment	47	X												1	3151-385	
SQV05-218	PS08 19-25 C	4/27/11 0:00	Sediment	48	X												1	3151-386	
SQV05-1021	PS06 0-3	4/29/11 0:00	Sediment	49	X												1	3151-807	
SQV05-1022	PS06 3-6	4/29/11 0:00	Sediment	50	X												1	3151-808	
SQV05-1023	PS06 6-9	4/29/11 0:00	Sediment	51	X												1	3151-809	
SQV05-1024	PS06 9-13	4/29/11 0:00	Sediment	52	X												1	3151-810	
SQV05-1025	PS06 13-19	4/29/11 0:00	Sediment	53	X												1	3151-811	
SQV05-1026	PS06 19-25	4/29/11 0:00	Sediment	54	X												1	3151-812	
SQV05-1035	PS06DUP 0-3	4/29/11 0:00	Sediment	55	X												1	3151-813	
SQV05-1036	PS06DUP 3-6	4/29/11 0:00	Sediment	56	X												1	3151-814	
SQV05-1045	PS07 0-3	4/29/11 0:00	Sediment	57	X												1	3151-819	
SQV05-1046	PS07 3-6	4/29/11 0:00	Sediment	58	X												1	3151-820	
SQV05-1047	PS07 6-9	4/29/11 0:00	Sediment	59	X												1	3151-821	
SQV05-1048	PS07 9-13	4/29/11 0:00	Sediment	60	X												1	3151-822	
SQV05-1049	PS07 13-19	4/29/11 0:00	Sediment	61	X												1	3151-823	
SQV05-1050	PS07 19-25	4/29/11 0:00	Sediment	62	X												1	3151-824	
SQV05-264	PS03-1	4/27/11 0:00	Sediment	63	X												1	3151-459	

SOP#: MSL-A-001

Rec'd 7/12/11 C900
828

Page 2 of 4

K1106299

PROJECT ENVVEST				CHAIN OF CUSTODY FORM															
Project Name: Sediment Quality Verification Study				Testing Parameters per QAPP															
SAMPLE TEAM: Navy, Battelle																			
DATE: 7/11/2011																			
Laboratory: Columbia Analytical																			
SQV05-268	PS03-2	4/27/11 0:00	Sediment	64	X												1	3151-460	
SQV05-272	PS03-3	4/27/11 0:00	Sediment	65	X												1	3151-461	
SQV05-276	PS03-4	4/27/11 0:00	Sediment	66	X												1	3151-462	
SQV05-280	PS03-5	4/27/11 0:00	Sediment	67	X												1	3151-463	
SQV05-284	PS03-6	4/27/11 0:00	Sediment	68	X												1	3151-464	
SQV05-288	PS09-1	4/27/11 0:00	Sediment	69	X												1	3151-465	
SQV05-292	PS09-2	4/27/11 0:00	Sediment	70	X												1	3151-466	
SQV05-296	PS09-3	4/27/11 0:00	Sediment	71	X												1	3151-467	
SQV05-300	PS09-4	4/27/11 0:00	Sediment	72	X												1	3151-468	
SQV05-304	PS09-5	4/27/11 0:00	Sediment	73	X												1	3151-469	
SQV05-308	PS09-6	4/27/11 0:00	Sediment	74	X												1	3151-470	
SQV05-312	PS10-1	4/27/11 0:00	Sediment	75	X												1	3151-471	
SQV05-316	PS10-2	4/27/11 0:00	Sediment	76	X												1	3151-472	
SQV05-320	PS10-3	4/27/11 0:00	Sediment	77	X												1	3151-473	
SQV05-324	PS10-4	4/27/11 0:00	Sediment	78	X												1	3151-474	
SQV05-328	PS10-5	4/27/11 0:00	Sediment	79	X												1	3151-475	
SQV05-332	PS10-6	4/27/11 0:00	Sediment	80	X												1	3151-476	
SQV05-336	PS10.1-1	4/27/11 0:00	Sediment	81	X												1	3151-477	
SQV05-340	PS10.1-2	4/27/11 0:00	Sediment	82	X												1	3151-478	
SQV05-344	PS10.1-3	4/27/11 0:00	Sediment	83	X												1	3151-479	
SQV05-348	PS10.1-4	4/27/11 0:00	Sediment	84	X												1	3151-480	
SQV05-352	PS10.1-5	4/27/11 0:00	Sediment	85	X												1	3151-481	
SQV05-356	PS10.1-6	4/27/11 0:00	Sediment	86	X												1	3151-482	
SQV05-360	PS11-1	4/27/11 0:00	Sediment	87	X												1	3151-483	
SQV05-364	PS11-2	4/27/11 0:00	Sediment	88	X												1	3151-484	
SQV05-368	PS11-3	4/27/11 0:00	Sediment	89	X												1	3151-485	
SQV05-372	PS11-4	4/27/11 0:00	Sediment	90	X												1	3151-486	
SQV05-376	PS11-5	4/27/11 0:00	Sediment	91	X												1	3151-487	
SQV05-380	PS11-6	4/27/11 0:00	Sediment	92	X												1	3151-488	
SQV05-384	PS08-1	4/27/11 0:00	Sediment	93	X												1	3151-489	
SQV05-388	PS08-2	4/27/11 0:00	Sediment	94	X												1	3151-490	
SQV05-392	PS08-3	4/27/11 0:00	Sediment	95	X												1	3151-491	
SQV05-396	PS08-4	4/27/11 0:00	Sediment	96	X												1	3151-492	
SQV05-400	PS08-5	4/27/11 0:00	Sediment	97	X												1	3151-493	
SQV05-404	PS08-6	4/27/11 0:00	Sediment	98	X												1	3151-494	

SOP#: MSL-A-001

Rec'd 7/12/11 0900
SDN

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E1106259

PROJECT ENVVEST				CHAIN OF CUSTODY FORM															
Project Name: Sediment Quality Verification Study				Testing Parameters per QAPP															
SAMPLE TEAM: Navy, Battelle																			
DATE: 7/11/2011																			
Laboratory: Columbia Analytical																			
SQV05-1059	PS06-1	4/29/11 0:00	Sediment	99	X													1	3151-753
SQV05-1063	PS06-2	4/29/11 0:00	Sediment	100	X													1	3151-754
SQV05-1067	PS06-3	4/29/11 0:00	Sediment	101	X													1	3151-755
SQV05-1071	PS06-4	4/29/11 0:00	Sediment	102	X													1	3151-756
SQV05-1075	PS06-5	4/29/11 0:00	Sediment	103	X													1	3151-757
SQV05-1079	PS06-6	4/29/11 0:00	Sediment	104	X													1	3151-758
SQV05-1083	PS07-1	4/29/11 0:00	Sediment	105	X													1	3151-759
SQV05-1087	PS07-2	4/29/11 0:00	Sediment	106	X													1	3151-760
SQV05-1091	PS07-3	4/29/11 0:00	Sediment	107	X													1	3151-761
SQV05-1095	PS07-4	4/29/11 0:00	Sediment	108	X													1	3151-762
SQV05-1099	PS07-5	4/29/11 0:00	Sediment	109	X													1	3151-763
SQV05-1103	PS07-6	4/29/11 0:00	Sediment	110	X													1	3151-764
--end of list																			

Total: 110

Relinquished By:	Company: Battelle MSL
C. Suslick	7/11/2011
Signature/Printed Name	Date/Time

Received By:	Company: CAS
SHOPKINS	7/12/11 0900
Signature/Printed Name	Date/Time

11

Rec'd 4/12/11 0900
SW

Columbia Analytical Services, Inc.
Cooler Receipt and Preservation Form

PC H2

Client / Project: Battelle Service Request K11 6259
Received: 7/12/11 Opened: 7/12/11 By: [Signature] Unloaded: 7/12/11 By: [Signature]

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

Cooler Temp °C	Temp Blank °C	Thermometer ID	Cooler/COC ID	NA	Tracking Number	NA	Filed
-0.2		289			8672 3108 4823		
1.6		302			" " 4845		
-0.2		223			" 3108 4834		

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

Sample ID on Bottle	Sample ID on COC	Identified by:

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

Notes, Discrepancies, & Resolutions: _____

SQV06_Pier 7 Transects

CP#3151

Project Name:

RSC Project - Pier 7 Sediment Quality Verification (SQV) Study

Page 1 of 3

Sample ID	# of containers	Date (dd-mm-yy)	Time (local)	LAB	Sample Type	Matrix	Location	Analysis	Pres.	COC #	
P7-T1-2	1			BMSL	grab	sediment	Pier 7, NSY Puget Sound	TBD	none	1	
P7-T1-3	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T1-4	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T1-5	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T2-1	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T2-2	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T2-4	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T2-5	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T3-1	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T3-2	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T3-3	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T3-4	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T4-1	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T4-2	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T4-3	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T4-4	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T4-5	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T5-1	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T5-2	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T5-3	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T5-4	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T5-5	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T6-1	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T6-2	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T6-3	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T6-4	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T6-5	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T7-1	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T7-2	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T7-3	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1	
P7-T7-4	1			BMSL	grab	sediment	Pier 7, NSY Puget Sound	TBD	none	1	
Relinquished by	Joel Guerrero			Date/Time	04-28-2011 / 1208			Relinquished by			
Received by	Carolyn Suslick			Date/Time	04-28-2011 / 1200			Received by			
Fedex Tracking number				Shipper:				J. Guerrero		Tele:	619.553.4169
Please check appropriate ship to box:				X	Drop-off: BMSL			C. Suslick		Tele:	360.681.3624
					Ship to:					Tele:	

MET	ORL	GS
573	621	669
603	651	699

Samples rec'd @ MSL 4/25/11, held @ 4°C until split on 4/29/11. COCs read on 4/29/11 @ MSL water assigned @ splits - see logline sheet.

Project Name:

RSC Project - Pier 7 Sediment Quality Verification (SQV) Study

Page 2 of 3

CF#3151

Sample ID	# of containers	Date (dd-mm-yy)	Time (local)	LAB	Sample Type	Matrix	Location	Analysis	Pres.	COC #
P7-T7-5	1			BMSL	grab	sediment	Pier 7, NSY Puget Sound	TBD	none	1
P7-T7-6	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1
P7-T8-1	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1
P7-T8-2	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1
P7-T8-3	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1
P7-T9-1	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1
P7-T9-2	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1
P7-T9-3	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1
P7-T9-4	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1
P7-T9-5	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1
P7-T9-6	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1
P7-T10-1	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1
P7-T10-2	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1
P7-T10-3	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1
P7-T10-4	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1
P7-T10-5	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1
P7-T10-6	1			BMSL	grab	sediment	Pier7, NSY Puget Sound	TBD	none	1
Total = 48 samples										

From: Space & Naval Warfare (SPAWAR) Systems Center Pacific [SSC-PACIFIC]
 Advanced Systems & Applied Sciences Division
 Applied Systems & Environmental Sciences Branch, Code 71752
Project NSY Puget Sound - Drydock Caisson Sediment Assessment
Project Manager Dr. R.K. Johnston, PhD. - MESO NW Det.
Project POC Joel Guerrero
Position Environmental Chemist
Street Address 53475 Strothe Road
City, State, Zip Code San Diego, CA 92152
Telephone Number 619.553.5332 619.553.4169
Email Address #1 johnston@spawar.navy.mil
Email Address #2 joel.guerrero@navy.mil

To: Battelle Marine Sciences Laboratory (BMSL)
Laboratory Battelle Sequim Operations PNNL
Contact Dr. Jill Brandenberger, PhD.
 Carolyn Suslick
Position Sr Staff Scientist/Member Technical Staff
Street Address 1529 West Sequim Bay Road

City, State, Zip Code Sequim, WA 98382
Phone Number 360.681.4564
Fax Number 360.681.3699
Email Address # 1 jill.brandenberger@pnl.gov
Email Address # 2 carolyn.suslick@pnl.gov

Project Name: RSC Project - Pier 7 Sediment Quality Verification (SQV) Study

Instruction	Yes/No	Comment
1) Email COC	No	
2) Call/Fax Prior to Shipping	No	
3) Verify receipt of samples via Email	Yes	cc to R.K. Johnston/J.Guerrero
4) Special Processing Required	No	samples kept dark/cold

SAMPLE LOGIN



NOTE: A Rapid Screening split was also collected
4/29/11 and shipped to Joel G

Project Manager: Brandenberger

Date Received: 4/29/2011

Batch: SQV06 - Grain Size (collected 4/22/11; split 4/29/11)

Login Designee: Suslick

Marine Sciences Laboratory

1529 West Sequim Bay Road

Sequim, Washington 98382

PH: (360) 681-4565

Project: **ENVVEST Sed Eval Study**

SPONSOR CODE	Site Description	BATTELLE CODE	MATRIX	STORAGE LOCATION	PARAMETERS REQUESTED	COLLECTION DATE	INITIALS
P7-T1-2	PEIR 7	3151-573	sed	Deep Freezer	Metals	04/22/11	CS
P7-T1-3	PEIR 7	3151-574	sed	Deep Freezer	Metals	04/22/11	CS
P7-T1-4	PEIR 7	3151-575	sed	Deep Freezer	Metals	04/22/11	CS
P7-T1-5	PEIR 7	3151-576	sed	Deep Freezer	Metals	04/22/11	CS
P7-T2-1	PEIR 7	3151-577	sed	Deep Freezer	Metals	04/22/11	CS
P7-T2-2	PEIR 7	3151-578	sed	Deep Freezer	Metals	04/22/11	CS
P7-T2-4	PEIR 7	3151-579	sed	Deep Freezer	Metals	04/22/11	CS
P7-T2-5	PEIR 7	3151-580	sed	Deep Freezer	Metals	04/22/11	CS
P7-T3-1	PEIR 7	3151-581	sed	Deep Freezer	Metals	04/22/11	CS
P7-T3-2	PEIR 7	3151-582	sed	Deep Freezer	Metals	04/22/11	CS
P7-T3-3	PEIR 7	3151-583	sed	Deep Freezer	Metals	04/22/11	CS
P7-T3-4	PEIR 7	3151-584	sed	Deep Freezer	Metals	04/22/11	CS
P7-T4-1	PEIR 7	3151-585	sed	Deep Freezer	Metals	04/22/11	CS
P7-T4-2	PEIR 7	3151-586	sed	Deep Freezer	Metals	04/22/11	CS
P7-T4-3	PEIR 7	3151-587	sed	Deep Freezer	Metals	04/22/11	CS
P7-T4-4	PEIR 7	3151-588	sed	Deep Freezer	Metals	04/22/11	CS
P7-T4-5	PEIR 7	3151-589	sed	Deep Freezer	Metals	04/22/11	CS
P7-T5-1	PEIR 7	3151-590	sed	Deep Freezer	Metals	04/22/11	CS
P7-T5-2	PEIR 7	3151-591	sed	Deep Freezer	Metals	04/22/11	CS
P7-T5-3	PEIR 7	3151-592	sed	Deep Freezer	Metals	04/22/11	CS

SAMPLE LOGIN



*NOTE: A Rapid Screening split was also collected
4/29/11 and shipped to Joel G*

Project Manager: Brandenberger

Date Received: 4/29/2011

Batch: SQV06 - Grain Size (collected 4/22/11; split 4/29/11)

Login Designee: Suslick

Marine Sciences Laboratory

1529 West Sequim Bay Road

Sequim, Washington 98382

PH: (360) 681-4565

Project: **ENVVEST Sed Eval Study**

P7-T5-4	PEIR 7	3151-593	sed	Deep Freezer	Metals	04/22/11	CS
P7-T5-5	PEIR 7	3151-594	sed	Deep Freezer	Metals	04/22/11	CS
P7-T6-1	PEIR 7	3151-595	sed	Deep Freezer	Metals	04/22/11	CS
P7-T6-2	PEIR 7	3151-596	sed	Deep Freezer	Metals	04/22/11	CS
P7-T6-3	PEIR 7	3151-597	sed	Deep Freezer	Metals	04/22/11	CS
P7-T6-4	PEIR 7	3151-598	sed	Deep Freezer	Metals	04/22/11	CS
P7-T6-5	PEIR 7	3151-599	sed	Deep Freezer	Metals	04/22/11	CS
P7-T7-1	PEIR 7	3151-600	sed	Deep Freezer	Metals	04/22/11	CS
P7-T7-2	PEIR 7	3151-601	sed	Deep Freezer	Metals	04/22/11	CS
P7-T7-3	PEIR 7	3151-602	sed	Deep Freezer	Metals	04/22/11	CS
P7-T7-4	PEIR 7	3151-603	sed	Deep Freezer	Metals	04/22/11	CS
P7-T7-5	PEIR 7	3151-604	sed	Deep Freezer	Metals	04/22/11	CS
P7-T7-6	PEIR 7	3151-605	sed	Deep Freezer	Metals	04/22/11	CS
P7-T8-1	PEIR 7	3151-606	sed	Deep Freezer	Metals	04/22/11	CS
P7-T8-2	PEIR 7	3151-607	sed	Deep Freezer	Metals	04/22/11	CS
P7-T8-3	PEIR 7	3151-608	sed	Deep Freezer	Metals	04/22/11	CS
P7-T9-1	PEIR 7	3151-609	sed	Deep Freezer	Metals	04/22/11	CS
P7-T9-2	PEIR 7	3151-610	sed	Deep Freezer	Metals	04/22/11	CS
P7-T9-3	PEIR 7	3151-611	sed	Deep Freezer	Metals	04/22/11	CS
P7-T9-4	PEIR 7	3151-612	sed	Deep Freezer	Metals	04/22/11	CS
P7-T9-5	PEIR 7	3151-613	sed	Deep Freezer	Metals	04/22/11	CS

SAMPLE LOGIN



Project Manager: Brandenberger
 Date Received: 4/29/2011
 Batch: SQV06 - Grain Size (collected 4/22/11; split 4/29/11)
 Login Designee: Suslick

Project: **ENVVEST Sed Eval Study**

NOTE: A Rapid Screening split was also collected
 4/29/11 and shipped to Joel G

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

P7-T9-6	PEIR 7	3151-614	sed	Deep Freezer	Metals	04/22/11	CS
P7-T10-1	PEIR 7	3151-615	sed	Deep Freezer	Metals	04/22/11	CS
P7-T10-2	PEIR 7	3151-616	sed	Deep Freezer	Metals	04/22/11	CS
P7-T10-3	PEIR 7	3151-617	sed	Deep Freezer	Metals	04/22/11	CS
P7-T10-4	PEIR 7	3151-618	sed	Deep Freezer	Metals	04/22/11	CS
P7-T10-5	PEIR 7	3151-619	sed	Deep Freezer	Metals	04/22/11	CS
P7-T10-6	PEIR 7	3151-620	sed	Deep Freezer	Metals	04/22/11	CS
P7-T1-2	PEIR 7	3151-621	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T1-3	PEIR 7	3151-622	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T1-4	PEIR 7	3151-623	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T1-5	PEIR 7	3151-624	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T2-1	PEIR 7	3151-625	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T2-2	PEIR 7	3151-626	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T2-4	PEIR 7	3151-627	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T2-5	PEIR 7	3151-628	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T3-1	PEIR 7	3151-629	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T3-2	PEIR 7	3151-630	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T3-3	PEIR 7	3151-631	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T3-4	PEIR 7	3151-632	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T4-1	PEIR 7	3151-633	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T4-2	PEIR 7	3151-634	sed	Walkin Freezer	Organics	04/22/11	CS

SAMPLE LOGIN



NOTE: A Rapid Screening split was also collected
4/29/11 and shipped to Joel G

Project Manager: Brandenberger

Date Received: 4/29/2011

Batch: SQV06 - Grain Size (collected 4/22/11; split 4/29/11)

Login Designee: Suslick

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

Project: **ENVVEST Sed Eval Study**

P7-T4-3	PEIR 7	3151-635	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T4-4	PEIR 7	3151-636	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T4-5	PEIR 7	3151-637	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T5-1	PEIR 7	3151-638	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T5-2	PEIR 7	3151-639	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T5-3	PEIR 7	3151-640	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T5-4	PEIR 7	3151-641	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T5-5	PEIR 7	3151-642	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T6-1	PEIR 7	3151-643	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T6-2	PEIR 7	3151-644	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T6-3	PEIR 7	3151-645	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T6-4	PEIR 7	3151-646	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T6-5	PEIR 7	3151-647	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T7-1	PEIR 7	3151-648	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T7-2	PEIR 7	3151-649	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T7-3	PEIR 7	3151-650	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T7-4	PEIR 7	3151-651	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T7-5	PEIR 7	3151-652	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T7-6	PEIR 7	3151-653	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T8-1	PEIR 7	3151-654	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T8-2	PEIR 7	3151-655	sed	Walkin Freezer	Organics	04/22/11	CS

SAMPLE LOGIN



NOTE: A Rapid Screening split was also collected
4/29/11 and shipped to Joel G

Project Manager: Brandenberger

Date Received: 4/29/2011

Batch: SQV06 - Grain Size (collected 4/22/11; split 4/29/11)

Login Designee: Suslick

Marine Sciences Laboratory

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Sequim, Washington 98382

PH: (360) 681-4565

Project: **ENVVEST Sed Eval Study**

P7-T8-3	PEIR 7	3151-656	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T9-1	PEIR 7	3151-657	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T9-2	PEIR 7	3151-658	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T9-3	PEIR 7	3151-659	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T9-4	PEIR 7	3151-660	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T9-5	PEIR 7	3151-661	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T9-6	PEIR 7	3151-662	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T10-1	PEIR 7	3151-663	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T10-2	PEIR 7	3151-664	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T10-3	PEIR 7	3151-665	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T10-4	PEIR 7	3151-666	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T10-5	PEIR 7	3151-667	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T10-6	PEIR 7	3151-668	sed	Walkin Freezer	Organics	04/22/11	CS
P7-T1-2	PEIR 7	3151-669	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T1-3	PEIR 7	3151-670	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T1-4	PEIR 7	3151-671	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T1-5	PEIR 7	3151-672	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T2-1	PEIR 7	3151-673	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T2-2	PEIR 7	3151-674	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T2-4	PEIR 7	3151-675	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T2-5	PEIR 7	3151-676	sed	Walkin Cold room	Grain Size	04/22/11	CS

SAMPLE LOGIN



*NOTE: A Rapid Screening split was also collected
4/29/11 and shipped to Joel G*

Project Manager: Brandenberger

Date Received: 4/29/2011

Batch: SQV06 - Grain Size (collected 4/22/11; split 4/29/11)

Login Designee: Suslick

Marine Sciences Laboratory

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Project: **ENVVEST Sed Eval Study**

P7-T3-1	PEIR 7	3151-677	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T3-2	PEIR 7	3151-678	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T3-3	PEIR 7	3151-679	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T3-4	PEIR 7	3151-680	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T4-1	PEIR 7	3151-681	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T4-2	PEIR 7	3151-682	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T4-3	PEIR 7	3151-683	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T4-4	PEIR 7	3151-684	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T4-5	PEIR 7	3151-685	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T5-1	PEIR 7	3151-686	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T5-2	PEIR 7	3151-687	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T5-3	PEIR 7	3151-688	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T5-4	PEIR 7	3151-689	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T5-5	PEIR 7	3151-690	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T6-1	PEIR 7	3151-691	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T6-2	PEIR 7	3151-692	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T6-3	PEIR 7	3151-693	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T6-4	PEIR 7	3151-694	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T6-5	PEIR 7	3151-695	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T7-1	PEIR 7	3151-696	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T7-2	PEIR 7	3151-697	sed	Walkin Cold room	Grain Size	04/22/11	CS

SAMPLE LOGIN



*NOTE: A Rapid Screening split was also collected
4/29/11 and shipped to Joel G*

Project Manager: Brandenberger

Date Received: 4/29/2011

Batch: SQV06 - Grain Size (collected 4/22/11; split 4/29/11)

Login Designee: Suslick

Marine Sciences Laboratory

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Sequim, Washington 98382

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Project: **ENVVEST Sed Eval Study**

P7-T7-3	PEIR 7	3151-698	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T7-4	PEIR 7	3151-699	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T7-5	PEIR 7	3151-700	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T7-6	PEIR 7	3151-701	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T8-1	PEIR 7	3151-702	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T8-2	PEIR 7	3151-703	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T8-3	PEIR 7	3151-704	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T9-1	PEIR 7	3151-705	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T9-2	PEIR 7	3151-706	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T9-3	PEIR 7	3151-707	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T9-4	PEIR 7	3151-708	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T9-5	PEIR 7	3151-709	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T9-6	PEIR 7	3151-710	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T10-1	PEIR 7	3151-711	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T10-2	PEIR 7	3151-712	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T10-3	PEIR 7	3151-713	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T10-4	PEIR 7	3151-714	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T10-5	PEIR 7	3151-715	sed	Walkin Cold room	Grain Size	04/22/11	CS
P7-T10-6	PEIR 7	3151-716	sed	Walkin Cold room	Grain Size	04/22/11	CS

LOG-IN CHECKLIST

Reference SOP# MSL-A-001

Central File #:

3151

Sample No(s):

(assigned after split)

Batch:

SQV-06

Project Name:

SED Qual Study ENVEST

Project Manager:

JMB

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

Matrix:

SEDS

WP#

Yes

No

☐☐

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

☐☐

USDA Samples (see Compliance Agreement Checklist)

PM Verification:

☐☐

Filter Samples:

Amount:

Entire sample

Half of sample

☐☐

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

☐☐

Special instructions:

Sample Preservation Instructions:

See LIMS for archive/disposal information

TO BE COMPLETED UPON SAMPLE ARRIVAL/LOG-IN

Yes

No

N/A

Indicate in Appropriate Box

☐☒☐

Custody seal present

Seal intact?

YES

NO

☐☒☐Cooler temperature (acceptable range: $4 \pm 2^\circ\text{C}$ or solids: frozen)
(if multiple coolers, note temp. of each)

#1-11.3

#2-11.7C

#3-11.5

#4-11.7C

☒☐☐

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

Comment/Remedy:

OK - Hand delivered from field

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

Were samples filtered at MSL?

Sample condition(s):

Acceptable

Other (explain):

Container type:

Teflon

Poly

Glass

Cap. Vial

Other:

Notes:

Completed By:

COWSLIN

Date/Time:

4/25/11

SAMPLE PRESERVATION

☐

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

☐

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

Sample IDs:

☐

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

☐

Sample(s) were preserved at MSL

Type:

☐0.2% HNO₃

Notes:

Lot#

☐

0.5% HCl (Hg samples)

Notes:

Lot#

☒

Refrigerate/Freeze

Notes:

Metals - deep freeze, ORG - walk-in freezer GS - Coldroom

☐

Other

Notes:

Completed By:

COWSLIN

Date/Time:

4/25/11

Storage Shelf:

COWSLIN Walk-in freezer

REQUISITION AND INVOICE / SHIPPING DOCUMENT

Form Approved
OMB No. 0704-0246
Expires Jan 31, 2003

The public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

PLEASE DO NOT RETURN YOUR FORM TO THIS ADDRESS. RETURN COMPLETED FORM TO THE ADDRESS IN ITEM 2.

1. FROM (Include ZIP Code) N66001, Transportation Officer SPAWARSSCEN San Diego 53605 Hull Street San Diego, CA 92152-5000		SHEET NO. 1	NO. OF SHEETS 1	5. REQUISITION DATE 04/20/2011	6. REQUISITION NUMBER
Requester: Joel Guerrero (Code 71752)		7. DATE MATERIAL REQUIRED (YYYYMMDD) 2011/04/26			8. PRIORITY
Cost Center: 85P717500S Tel. No.: (619) 553-4169					
2. TO: (Include ZIP Code) Battelle Marine Sciences 1529 West Sequim Bay Road Sequim, WA 98382		9. AUTHORITY OR PURPOSE (Indicate why item is being shipped. Include project name, contract #, loan agreement #, etc.) Sediment Screening Equipment (RSC Project)			
		10. SIGNATURE (Section Head) S. Curtis/ Stacey Curtis 7175		11a. VOUCHER NUMBER & DATE (YYYYMMDD) N66001-1/1/11 BD36	
3. SHIP TO - MARK FOR Attn: Jill Brandenberger Tel: (360) 681-4564		12. DATE SHIPPED (YYYYMMDD) 2011/04/22		b.	
		13. MODE OF SHIPMENT FEDEX - 2 Day Air		14. BILL OF LADING NUMBER	
15. AIR MOVEMENT DESIGNATOR OR PORT REFERENCE NO.					

4. APPROPRIATIONS DATA SYMBOL & SUBHEAD MEMORANDUM	OBJ. CL.	BUR. CONT. NO.	SUBAL-LOT	AUTHORIZATION ACCT'G ACTIVITY	TRANS. TYPE	PROPERTY ACCT'G ACTIVITY	COUNTRY	COST CODE (WBS, Network- Network Acty; or TAC #) 100000467909 0062 CC: 85P717500S	AMOUNT
INVOICE									

ITEM NO. (a)	FEDERAL STOCK NUMBER, DESCRIPTION, AND CODING OF MATERIAL AND/OR SERVICES (b)	UNIT OF ISSUE (c)	QUANTITY REQUESTED (d)	SUPPLY ACTION (a)	TYPE CON-TAINER (f)	CON-TAINER NOS. (g)	UNIT PRICE (Unit Value) (h)	TOTAL COST (Total Value) (i)
	RSC Sampling Equipment: (L x W x H)							
1	One [1] ice chest (blue) with jars, 25 lbs 21 x 15 x 15	ea	Total No				\$ 250.00	\$ 250.00
2	Three [3] ice chests with jars, 25 lbs 19 x 12 x 14	ea	Items				100.00	300.00
	HAZMAT: N or Y Classified: U, C, S							\$ 550.00

16. TRANSPORTATION VIA MATS OR MSTs CHARGEABLE TO						17. SPECIAL HANDLING					
R E C E I P T I O N	18. ISSUED BY THOMAS R. CONWAY	TOTAL CON-TAINERS	TYPE CON-TAINER	DESCRIPTION	TOTAL WEIGHT	TOTAL CUBE	R E C E I P T	CONTAINERS RECEIVED EXCEPT AS NOTED	DATE (YYMMDD)	BY	SHEET TOTAL
	CHECKED BY							QUANTITIES RECEIVED EXCEPT AS NOTED	DATE (YYMMDD)	BY	GRAND TOTAL
	PACKED BY							POSTED	DATE (YYMMDD)	BY	20. RECEIVER'S VOUCHER NO.
	TOTAL										

REQUISITION AND INVOICE / SHIPPING DOCUMENT

Form Approved
OMB No. 0704-0246
Expires Jan 31, 2003

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Requester: Joel Guerrero (Code 71752)		7. DATE MATERIAL REQUIRED (YYYYMMDD) 2011/04/26			8. PRIORITY
Cost Center: 85P717500S Tel. No.: (619) 553-4169		9. AUTHORITY OR PURPOSE (Indicate why item is being shipped. Include project name, contract #, loan agreement #, etc.) Sediment Screening Equipment (RSC Project)			
2. TO: (Include ZIP Code) Battelle Marine Sciences 1529 West Sequim Bay Road Sequim, WA 98382		10. SIGNATURE (Section Head) S. Curtis/ Stacey Curtis 7175			11a. VOUCHER NUMBER & DATE (YYYYMMDD) N66001-1/11/BD36
3. SHIP TO - MARK FOR Attn: Jill Brandenberger Tel: (360) 681-4564		12. DATE SHIPPED (YYYYMMDD) 2011/04/22			b.
		13. MODE OF SHIPMENT FEDEX - 2 Day Air			14. BILL OF LADING NUMBER
15. AIR MOVEMENT DESIGNATOR OR PORT REFERENCE NO.					

4. APPROPRIATIONS DATA SYMBOL & SUBHEAD MEMORANDUM	OBJ. CL.	BUR. CONT. NO.	SUBAL-LOT	AUTHORIZATION ACCT'G ACTIVITY	TRANS. TYPE	PROPERTY ACCT'G ACTIVITY	COUNTRY	COST CODE (WBS, Network- Network Acty; or TAC #) 100000467909 0062 CC: 85P717500S	AMOUNT

ITEM NO. (a)	FEDERAL STOCK NUMBER, DESCRIPTION, AND CODING OF MATERIAL AND/OR SERVICES (b)	UNIT OF ISSUE (c)	QUANTITY REQUESTED (d)	SUPPLY ACTION (a)	TYPE CON-TAINER (f)	CON-TAINER NOS. (g)	UNIT PRICE (Unit Value) (h)	TOTAL COST (Total Value) (i)
	RSC Sampling Equipment: (L x W x H)							
1	One [1] ice chest (blue) with jars, 25 lbs 21 x 15 x 15	ea	Total No				\$ 250.00	\$ 250.00
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	HAZMAT: or Y Classified: U, C, S							\$ 550.00

16. TRANSPORTATION VIA MATS OR MSTs CHARGEABLE TO						17. SPECIAL HANDLING					
R E C E I P T	18. ISSUED BY THOMAS R. CONWAY	TOTAL CON-TAINERS	TYPE CON-TAINER	DESCRIPTION	TOTAL WEIGHT	TOTAL CUBE	R E C E I P T	19. CONTAINERS RECEIVED EXCEPT AS NOTED	DATE (YYMMDD)	BY	SHEET TOTAL
	CHECKED BY							QUANTITIES RECEIVED EXCEPT AS NOTED	DATE (YYMMDD)	BY	GRAND TOTAL
	PACKED BY							POSTED	DATE (YYMMDD)	BY	20. RECEIVER'S VOUCHER NO.
← TOTAL →											